Stock Market and Its Determinants: Three Empirical Studies

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I confirm that this dissertation is my own work in all parts. The only exception is Chapter Three, Does Global Fear Predict Fear in BRICS Stock Markets? Evidence from a Bayesian Graphical VAR Model, in which work that formed part of a jointly-authored publication has been included. My contribution is in all sections. I should like to thank Elie Bouri, Rangan Gupta, and Chi Keung Marco Lau for their guidance, advice, and expertise, which helped me publish this work in Emerging Markets Review. See below for more information:

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Abstract

This thesis consists of three empirical studies on what drives stock market dynamics. The first empirical study explores the effect of crude oil price changes on the stock market returns of oil-exporting countries and oil-importing countries as well as those of a number of global stock indices. Using the Ordinary Least Squares (OLS) approach as well as the more robust Quantile Regression (QR) approach to explore the relationship between crude oil and stock market dynamics. The empirical findings suggest that the QR approach provides further insights compared to the OLS approach. For instance, the QR approach is able to identify specific quantiles where a significant relation exists. In particular crude oil price increases tend to have a negative impact on the stock market returns for some oil-exporting countries (such as Mexico, Iraq, Ecuador, and Venezuela) and a positive effect for other oil-exporting countries (such as Brazil and Algeria). However, the OLS approach suggests that these relationships are insignificant at the level of the mean. Overall, the empirical findings confirm that the QR approach can reveal more information about the relationship between crude oil price changes and stock market return across different quantiles of their distribution.

The second study explores the extent to which implied volatility extracted from commodity markets and developed stock markets can predict the implied volatility of stock markets in BRICS countries. Using daily data from 2011 to 2016 and employing the newly developed Bayesian Graphical Vector Autoregressive (BGVAR) model of Ahelegbey et al. (2016) which does not suffer from over-parameterization and the identification problems associated with traditional VAR frameworks, this study finds that implied volatilities extracted from global and regional stock markets have a significant predictive power over the implied volatilities in BRICS stock markets. However, the predictive power of implied volatility from commodity markets are significant only in the case of South Africa.

The third empirical study analyses the relationship between illiquidity and stock market returns in the G7 and BRICS countries. More specifically, this study explore the extent to which the Amihud (2002) illiquidity measure can improve the explanatory power of three commonly used asset pricing models, namely the Capital Asset Pricing Model (CAPM), the Fama-French three-factor model and the Carhart four-factor model. The empirical analysis is based on 15

years of monthly data on the returns of seven stock portfolios: 100 largest companies (Largest100), small value (S/V), small neutral (S/N), small growth (S/G) stocks, big value (B/V) stocks, big neutral (B/N) stocks, and big growth (B/G) stocks. The findings suggest that incorporating illiquidity as an additional factor results in a significant improvement in the explanatory power of these asset pricing models across several of the sample countries (8 countries in the case of the CAPM and Carhart four-factor model, and 6 countries in the case of the Fama-French three-factor model). For example, in the US adding illiquidity to the CAPM leads to an increase of the goodness of fit by 2.6% in the B/V portfolio, and for the Fama-French three-factor model the goodness of fit increases by up to 3% in all portfolios Moreover, the goodness of fit increases in all portfolios in the US by adding illiquidity to the Carhart four-factor model, with an up to 36% increase in the B/N portfolio.

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Chapter – One

Introduction

1.1 Background to the study

Previous studies have shown that poverty can be reduced by economic growth (Kakwani, 1993; Adams, 2004). Therefore, it has been suggested that economic growth should be the main priority for developing countries, as it effectively enhances the well-being of people (Brady et al., 2007). To this end, understanding what drives the stock market is useful in promoting economic growth since the stock market is typically considered as a key indicator of the health of an economy (Nayak et al., 2015). A substantial literature has been written that investigates the factors that can lead to stock market development (see, for instance, Cho et al., 1986; Saci et al., 2009). Hence, the focus of this thesis is to investigate, in the following three empirical chapters, the extent to which stock market returns are driven by a set of factors, namely crude oil price changes, implied volatility from other stock markets, and illiquidity.

1.1.1 The effect of crude oil price changes on stock market returns

The effect of oil price shocks on the performance of stock market returns has attracted significant attention in the empirical literature. One strand of this literature documents that crude oil price shocks do not have a significant impact on stock market returns (Chen et al., 1986; Huang et al., 1996; El-Sharif et al., 2005; Apergis and Miller, 2009; Kilian and Park, 2009; Al Janabi et al., 2010; Filis et al., 2011; Guntner, 2014; Ghosh and Kanjilal, 2016; Bounaker and Raza, 2017; Reboredo et al., 2017). The second strand of the literature highlights a negative impact of crude oil price shocks on stock market performance (Jones and Kaul, 1996; Sadorsky, 1999; Barsky and Kilian, 2004; Bouri et al., 2016; Ghosh and Kanjilal, 2016; Ewing et al., 2018). A third strand of the literature reports a positive impact of shocks in crude oil prices on the performance of the stock market (Sadorsky, 2001; Kilian and Park, 2009; Narayan and Narayan, 2010; Zhang and Chen, 2011; Li et al., 2012; Chen and Lv, 2015; Zhu et al., 2016; Kang et al., 2017). Finally, a fourth strand of the literature documents that the existence of a positive or negative relationship between changes in crude oil prices and stock returns depends on market conditions (Cong et al., 2008; Narayan and Sharma, 2011; Phan et al., 2015b; Cai et al., 2017; Abul Basher et al., 2018).

The second chapter of this thesis examines the contemporaneous and lagged time-varying relationship between crude oil price changes and stock market returns using both Ordinary Least Squares (OLS) and the more robust Quantile Regression (QR) approach. This study explores the impact of different lags, along with the role of NBER recession episodes, in a sample of 87 oil-exporting and oil-importing countries. The findings indicate that the quantile approach provides a greater insight into the relationship between oil price changes and the stock market returns, especially in terms of identifying how this relationship varies across different quantiles of the stock market's distribution.

1.1.2 Implied volatility prediction in BRICS stock markets

BRICS stock markets are increasingly being used for portfolio diversification. These markets attract substantial capital inflows from foreign investors as BRICS economies continue to gain ground in international finance and enjoy higher economic growth than some developed economies that are mired in a slow growth environment (Bhuyan et al., 2016). Additionally, BRICS economies are major sources of demand and supply for strategic commodities, such as gold and crude oil. For example, China and India are key consumers of crude oil, whereas Russia is one of the largest producers of crude oil and natural gas. The first strand of the literature in the third chapter of the thesis considers the return and volatility linkages between developed stock markets and BRICS (Brazil, Russia, India, China and South Africa) stock markets, especially in terms of the benefits of diversification and risk management. Given the important role played by BRICS countries in driving the world commodity markets, a second strand of the literature focuses on the link between BRICS stock markets and commodity markets, in particular the markets for crude oil and gold.

A final strand of the literature focuses on the relationship between the implied volatility of stock markets and other financial variables. For instance, Maghyereh et al. (2016) use implied volatility indices and report that crude oil prices have a significant effect on developed and emerging stock markets. Furthermore, Sarwar (2016) examines implied volatility linkages between gold and US equities and shows that the US stock market's implied volatility index Granger causes implied volatility in gold, but not the other way around.

The third chapter contributes to the literature through the employment of a structural VAR model based on a graph representation of the conditional dependence among the implied volatilities, as in Ahelegbey et al. (2016). Given the lack of indications from economic theory on the linkage between implied volatility indices, this novel methodology avoids imposing any misleading or implausible restrictions that might be associated with a standard SVAR model. The main results provide evidence on the predictability of global implied volatility indices in individual BRICS countries based on the uncertainty in commodity and developed stock markets, although this predictability varies across different countries. For instance, evidence on the dominance of the US VIX was not present in Brazil and China, suggesting that local investors worry more about other local and regional stock market uncertainties than US market uncertainty. Moreover, the findings suggest that the predictive power of the implied volatilities of crude oil and gold are only relevant for market uncertainty in South Africa. Overall, these empirical results about the importance of some domestic factors in explaining implied volatility stand in contrast to some of the earlier literature that had argued that external factors tend to be more important than internal ones when trying to explain market returns and volatility in BRICS countries.

1.1.3 The relationship between illiquidity and stock market returns

The fourth chapter examines the link between illiquidity and stock market returns, which has attracted significant attention in the literature. For example, Chan et al. (2013) examine a large sample of individual stocks and find that a number of illiquidity measures (namely the effective proportional bid-ask spread, the price impact measure, and Amihud's illiquidity measure) are negatively related to stock market return co-movement and systematic volatility. Similarly, Saad and Samet (2017) document that the implied cost of equity increases with the illiquidity level and the co-variance between firm-level illiquidity and market illiquidity, but it decreases with the covariance between firm-level returns and market illiquidity and the co-variance between firm-level illiquidity and market returns. In a similar spirit, Baradarannia and Peat (2013) examine a sample of individual stocks trading in NYSE and find that expected returns increase when the level of stock illiquidity increases. Baradarannia and Peat (2013) further show that systematic liquidity risk plays a key role in the cross-sectional variation of expected stock returns.

Amihud et al. (2015) evaluate the illiquidity premium embedded in stock markets across 45 countries. After controlling for other priced factors and variations in global illiquidity, Amihud et al. (2015) find that the average illiquidity premium is significantly positive, while also documenting a commonality in illiquidity premium across countries. Additionally, Banti (2016) highlights the key role of illiquidity dynamics, especially during crises, and also demonstrates that stocks of small firms tend to be more heavily affected by funding limitations. Moreover, Banti (2016) finds that illiquidity changes in large firms' stocks trigger higher portfolio rebalancing and liquidity demand, while the currencies that are the usual targets of carry trades tend to be more commonly associated with stock illiquidity.

In another study, Florackis et al. (2014a) report a significantly negative relationship between stock market illiquidity and future UK GDP growth, after accounting for some common control variables, with this relationship being stronger during periods of high illiquidity and weak economic growth. Florackis et al. (2014a) also suggest that a regime-switching model of illiquid versus liquid market environments can produce more accurate out-of-sample forecasts of UK GDP growth relative to any other model. Finally, Hagstromer et al. (2013) find that the level and risk of illiquidity can explain expected asset returns, with a reported illiiquidity premium ranging from 1.74% to 2.08% annually. Hagstromer et al. (2013) also find that illiquidty risk varies considerably across time, with the associated illiquidity risk premium having risen steadily since the 1970s and being particularly pronounced during periods of financial distress.

The fourth chapter examines the relationship between illiquidity and stock markets in the G7 and BRICS countries. More specifically, this study incorporates illiquidity as an additional factor in three of the most commonly used asset pricing models (namely the CAPM, the Fama-French three-factor model, and the Carhart four-factor model). Examining a number of different stock portfolios, this study finds that adding illiquidity as an extra factor improves the explanatory power of all models across several of the sample countries, providing strong evidence for the importance of illiquidity in explaining the cross-section of expected stock returns.

1.2 Objectives

Asset allocation and portfolio formation are of particular interest to various types of market participants, such as broker-dealers, hedgers, speculators, individual investors, investment advisers, credit rating agencies, commercial banks, and other financial institutions. Motivated by a relative lack of empirical research in this area with respect to developing markets, this thesis investigates the impact of financial crises on the relationship between crude oil price changes and stock market performance, the impact of illiquidity on asset pricing models, and the predictive power of implied volatility in the commodity and major developed stock markets over the implied volatility in individual BRICS stock markets.

Overall, this thesis pursues the following research objectives: First, to explore the effect of crude oil price changes on stock market returns in oil-exporting and oil-importing countries at different stages of development, with a particular emphasis on whether a QR approach can provide more information about the nature of that relationship relative to the OLS approach. Second, to determine whether implied volatility in the commodity markets and major developed stock markets has any predictive ability over the implied volatility in individual BRICS stock markets. Finally, to investigate whether incorporating an illiquidity factor can improve the performance of existing asset pricing models in explaining stock returns in the G7 and BRICS countries.

1.3 Methods

The second chapter examines the relationship between crude oil price changes and stock market returns in 87 developed, fast-developing, and developing countries that are either oil-importing or oil-exporting (such as the G7, European countries, BRICS, N11, and OPEC countries). The empirical analysis is based on two approaches for estimating the relationship between crude oil price changes and stock returns, namely the simple Ordinary Least Squares (OLS) approach and the Quantile Regression (QR) approach. The QR approach represents a more robust framework that can potentially identify how the main relationship of interest varies across different quantiles of the variable's distribution. This study also explores the impact of financial distress on the relationship between crude oil price changes and stock returns by incorporating the NBER recession indicator in the regression model as it is reasonable to expect that crisis period might be different (see for example, Hartmann et al. 2008; Chung et al. 2012). Finally, this study explores the effects of different lags (namely 1, 3, 6, 9, and 12 lags) of crude oil price changes on stock returns.

The third chapter investigates the predictive power of implied volatility in the commodity markets and major developed stock markets over the implied volatility in BRICS stock markets. This study follows Ahelegbey et al. (2016) and employs a SVAR model based on a graph representation of the conditional dependence among the variables of interest.

The fourth chapter explores the impact of illiquidity on stock market returns. More specifically, this study employs the three most commonly used asset pricing models (namely the Capital Asset Pricing Model, the Fama-French three-factor model and Carhart four-factor model). Each model is augmented by an additional factor that reflects illiquidity, and then the augmented models are estimated using stock return data in the G7 and BRICS stock markets, to understand whether illiquidity can improve the models' explanatory power in the cross-section of stock returns.

1.4 Research questions

Many studies have investigated the determinants of stock markets in developed countries. However, the relationship between oil price changes or illiquidity and stock market performance in developing countries has largely been ignored. In this sense, stylized facts from developed markets might not necessarily be appropriate when discussing stock market determinants in developing countries. This thesis attempts to address this lack of empirical evidence by focusing on the impact of crude oil price changes and illiquidity on stock market returns in developing countries, while also investigating the predictive power of implied volatility in the commodity and major developed stock markets over the implied volatility in individual BRICS stock markets. More specifically, this thesis addresses the following research questions:

1. What is the effect of crude oil price changes on stock market returns in oil-exporting and oil-importing countries at different stages of development?
2. Can the QR approach provide a greater insight into this relationship compared to the OLS approach?
3. Does this relationship depend on the number of lags selected and on the presence of financial distress (as reflected by NBER recession episodes)?
4. Does the implied volatility of the commodity and developed economies' equity markets have a significant predictive power over the implied volatilities of BRICS stock markets?
5. Is there a relationship between illiquidity and stock market returns in the G7 and the BRICS countries?
6. If illiquidity is a priced factor in the cross-section of stock returns, does its impact vary according to different asset pricing models and portfolios of different characteristics?

1.5 Contributions and findings

This thesis expands upon existing studies on the factors that affect stock market returns. More specifically, the second chapter examines the relationship between crude oil price changes and stock returns, and it contributes to the existing literature by expanding the analysis from developed markets into fast-developing and developing markets. The second chapter also contributes to the literature by employing the more robust Quantile Regression technique in addition to the OLS approach. The findings indicate that the quantile regression approach can provide substantially a greater insight into how the relationship between crude oil price changes and stock returns varies across different quantiles of the latter's distribution.

The third chapter contributes to the literature primarily by exploring the drivers of implied volatility in BRICS countries. More specifically, this chapter explores the extent to which implied volatility in developed markets and commodity markers can predict the implied volatility in developing BRICS countries. The third chapter also contributes to the literature by employing the recently developed methodology of Ahelegbey et al. (2016), which can detect more efficiently the presence of contemporaneous and lagged causality among the main variables of interest. The main findings suggest that implied volatilities extracted from developed stock markets and, to a lesser extent, from commodity markets have a significant predictive power over implied volatility in BRICS stock markets. The empirical results also highlight the importance of domestic factors in explaining implied volatility in BRICS countries, in contrast to findings in the existing literature, which argues that external risk factors tend to be more important in this context. For instance, there is no evidence on the dominance of the US VIX in Brazil and China, suggesting that local investors tend to be more concerned about other local and regional stock market uncertainties than uncertainty in the US market.

The fourth chapter contributes to the existing literature by exploring the role of an illiquidity factor in explaining the cross-section of stock returns in BRICS countries. While the related literature has focused almost exclusively on developed markets, this chapter expands the analysis to developing markets. The findings suggest that adding illiquidity as an additional factor in traditional asset pricing models significantly increases the explanatory power of the model and provides a greater insight into the drivers of stock returns. For instance, when estimating an extended version of the CAPM in the G7 markets, the illiquidity factor is found to have a positive and significant impact on Big Value (B/V) and Big Neutral (B/N) portfolios, suggesting that this factor is particularly important when pricing larger stocks. On the other hand, the illiquidity factor is found to significantly improve the explanatory power of the Fama-French three-factor model across all stock portfolios in Italy, Japan and the US. Finally, the illiquidity factor is found to significantly improve the explanatory power of the Carhart four-factor model in Italy and the US.

Chapter – Two

The impact of financial crises on the relationship between stock market returns and crude oil price changes: A comparative multi-country analysis

Abstract

This chapter examines the effect of crude oil and stock market dynamics in a sample of oil-exporting and oil-importing countries at different stages of development. This relationship is also explored in a sample of world equity indices, such as MSCI ACWI, MSCI World, MSCI EAFE, MSCI Emerging Markets, MSCI Europe, and MSCI USA. Particular emphasis is placed on the role of financial distress, as reflected by National Bureau of Economic Research (NBER) recession episodes. The empirical findings show that the Ordinary Least Squares (OLS) approach and a Quantile Regression (QR) approach produce relatively similar results. However, the QR approach is found to offer a greater insight into the relationship between crude oil price changes and stock returns, as it is a more robust and efficient estimator compared to the OLS. For example, the OLS results fail to identify any significant impact of crude oil price changes on stock returns for several oil-exporting countries, irrespective of whether the relationship was negative (Ecuador, Iraq, Mexico, and Venezuela) or positive (Algeria and Brazil). In contrast, the QR approach is able to identify specific quantiles for which crude oil price changes have a significant impact on stock returns, even if the relationship is insignificant at the level of the mean.

2.1 Introduction

The relationship between crude oil price changes and stock market returns has been attracting increasing attention in the literature. This is partly due to recent developments in the integration between financial markets and the financialization of commodity markets such as copper, gold, natural gas and crude oil (Mayer, 2012). This in turn provides new channels for diversification, hedging, and managing risk (see Tang and Xiong 2012; Vivian and Wohar 2012; Silvennoinen and Thorp 2013; Basher and Sadorsky 2016). In addition, the relationship between crude oil price changes and the stock market returns is a strategic field for government policies and the growth and development of individual countries (see for example, Krichene 2007; Elder and Serletis 2010). A large number of theoretical and empirical studies have explored the relationship between changes in the price of oil and the performance of the stock market (Hammoudeh and Choi 2007; Zhu et al. 2011; Kang et al. 2015; Pradhan et al. 2015; Gatfaoui 2016). However, there is no consensus regarding the specific nature of this relationship. For example, Sadorsky (1999), Papapetrou (2001), Nandha and Faff (2008), Driesprong et al. (2008), Ghosh and Kanjilal (2016), and Westerlund and Sharma (2018) indicate a negative relationship between the stock market returns and crude oil price changes, whereas Sadorsky (2001), El-Sharif et al. (2005), Kilian and Park (2009), Narayan and Narayan (2010), Zhang and Chen (2011), Li et al. (2012), Chen and Lv (2015), Zhu et al. (2016), and Kang et al. (2017) document a positive one.

However, the relationship between oil price changes and stock market performance in developing and oil-exporting countries has received relatively little attention in the literature. This study aims to address this gap in the literature, motivated by the possibility that the relationship between crude oil price changes and stock returns might be fundamentally different for these types of countries relative to what has been commonly reported for their developed oil-importing counterparts.

A rise in oil prices can lead to higher production costs since oil is the main energy source used in the production of many manufacturing products (Sek, 2017) or to a reduction in input for production (Iwayemi and Fowowe, 2011). This may, in turn, decrease investment options and other opportunities. At the same time, standard asset pricing theory predicts that crude oil price changes may lead to shocks in the stock market returns as they affect the consumption and investment opportunity set (Sim and Zhou, 2015). Oil prices also influence macroeconomic variables such as inflation, which can then affect stock market performance and financial market liquidity (Jones et al., 2004). Moreover, the impact of crude oil price changes on stock market performance is of vital importance because the stock market is one of the key sources of finance for companies. As a result, uncertainty in the crude oil market could translate into volatility in the stock market, with companies becoming riskier and, thus, investors requiring higher rates of return (Merton, 1973; Merton, 1980; Gatfaoui, 2016). Market participants such as broker-dealers, hedgers, speculators, individual investors, investment advisers, credit rating agencies, commercial banks, and other financial institutions are particularly interested in better understanding how fluctuations in crude oil prices can affect stock market performance. In order to further our understanding about the nature of this relationship, this chapter explores the contemporaneous and lagged time-varying association between crude oil price changes and stock market returns (also accounting for the NBER recession episode effects) in a selection of oil-exporting and oil-importing countries that are at different stages of development.

The chapter proceeds as follows. Section 2.2 provides a literature review. Section 2.3 presents the data and the empirical methodology. Section 2.4 discusses the empirical results, and Section 2.5 concludes.

2.1.1 Research objectives and questions

The main objective of this study is to explore the impact of crude oil price changes on stock market returns in oil-exporting and oil-importing countries at different stages of development. It is reasonable to expect that this impact would be different in oil-exporting and oil-importing countries that are in different stages of development. The main reason for this expected difference is that, since oil-exporting countries are dependent on oil income, their stock markets should be affected to a greater degree by changes in crude oil prices. Moreover, this study explores whether the simple Ordinary Least Squares (OLS) approach and the Quantile Regression (QR) approach might produce different results. In particular, the use of the QR approach is motivated by the fact that it has been shown to provide a more robust and efficient estimator compared to OLS, as it is more robust to outliers, abnormal observations, skewness, and heterogeneity. Overall, this study explores the following research questions:

1. What is the effect of crude oil price changes on stock market returns in oil-exporting and oil-importing countries at different stages of development?
2. Can the QR approach provide a greater insight into this relationship compared to the OLS approach?
3. Does this relationship depend on the number of lags selected and on the presence of financial distress (as reflected by NBER recession episodes)?

2.1.2 Research contributions and findings

This chapter contributes to the existing literature by expanding the analysis from developed countries to fast-developing and developing countries that are either oil-importing or oil-exporting. An additional contribution refers to the use of two different estimation techniques, namely OLS and QR. The empirical findings indicate that the quantile approach provides more insight into the relationship between crude oil price changes and the stock market returns, compared to the OLS framework that can only evaluate this relationship at the level of the mean. In addition, this chapter presents a summary of the relevant articles on the relationship between crude oil price changes and stock market returns and classified them into tables, see appendix A, according to their key findings. The summary of articles included their objectives, different techniques to measure the relationship, applied data and databases, and findings. Therefore, this study also traced the development of the past literature for use as a reference point by readers who are interested in this area.

2.2 Literature review

2.2.1 No relationship exists between crude oil price changes and stock returns

A large number of studies have examined the effect of oil price shocks on the performance of stock market returns. One strand of the literature argues that the relationship between crude oil price shocks and stock market returns is insignificant. For example, Chen et al. (1986) find that fluctuations in the price of crude oil have no effect on stock market performance, while Ghosh and Kanjilal (2016) confirm this result using data from India. Huang et al. (1996) report that returns of oil futures are not significantly related with the performance of the stock market, with the exception of stocks of crude oil companies. Furthermore, Filis et al. (2011) examine a sample of three oil-exporting economies (Canada, Mexico and Brazil) and three oil-importing economies (US, Germany and the Netherlands) and show that shocks related to the supply-side of oil price have no impact on the stock market. Al Janabi et al. (2010) focus on stock markets in the Gulf Cooperation Council (GCC) countries and find that neither the crude oil price index nor the gold price index have a significant impact on the stock price index in any of these markets. El-Sharif et al. (2005) confirm these results in the non-oil and gas sectors in the UK, while Kilian and Park (2009) demonstrate that shocks in the supply of crude oil are less significant compared to shocks in other variables, such as aggregate demand for entire industrial commodities and precautionary demand related to concerns of shortfalls in future oil supply.

Apergis and Miller (2009) examine eight developed economies and find that all types of shocks have very little contribution to changes in stock market returns. In addition, Boubaker and Raza (2017) explore the spillover effects of volatility and shocks between crude oil price changes and BRICS stock market returns. Although the results indicate that crude oil price and stock market returns are indirectly affected by the volatilities of one another, Boubaker and Raza (2017) were unable to distinguish between negative and positive correlations between the variables. In a similar spirit, Guntner (2014) reports that an unpredicted shortage in the supply of crude oil has no significant impact on the stock market, while Reboredo et al. (2017) find that the dependence between oil and renewable energy returns is relatively weak in the short run, albeit gradually strengthening in the long run.

Moreover, Reboredo and Ugolini (2016) document that, before the 2008 financial crisis, high jumps or declines in oil price changes had a small asymmetric impact on the stock market, but there was no impact from interquantile positive or negative oil price movements. However, Reboredo and Ugolini (2016) also report that, following the 2008 crisis, higher rises/declines in oil prices had a greater influence on the rise/decline in stock market quantiles, particularly in the lower quantiles. In the same line of study, Georgios and Theodore (2017) find that the stock and crude oil markets tend to move more closely together after a common financial shock. Sukcharoen et al. (2014) construct a new stock market index that excludes oil and gas stock firms, and they employ a copula approach to show that the relationship between crude oil price changes and stock market returns is largely insignificant.

In another study, Badeeb and Lean (2018) investigate potential non-linearities in the relationship between crude oil price changes and Islamic stock market returns, documenting a relatively weak relationship overall. Moreover, Badeeb and Lean (2018) find that oil price shocks have a positive linear impact on stock returns in the short term but a negative asymmetric impact in the longer term. In addition, Wei (2003) finds no significant effect of crude oil price changes on stock market returns during the energy crisis of 1973-1974. Finally, Zhang (2017) provides further empirical evidence that crude oil shocks have an insignificant impact on the majority of developed international financial markets.

2.2.2 Negative relationship between crude oil price changes and stock returns

Another strand of the literature argues that the impact of crude oil price shocks on stock market performance is significantly negative. For instance, Ghosh and Kanjilal (2016) find that oil fluctuations have a negative indirect impact, via the channel of fiscal deficit, inflation and depreciation of the rupee, on the stock market's performance in India when the crude oil price is higher. Sadorsky (1999) also demonstrates that positive changes in oil price cause a depression in the stock market. Driesprong et al. (2008) point out that, in most developed countries, performance in the stock market can be highly anticipated by movements in the price of crude oil and this relationship is significantly negative.

In another study, Westerlund and Sharma (2018) show that lagged crude oil price changes have a significant negative impact on current stock returns, while Papapetrou (2001) demonstrates that fluctuations in oil prices contribute to the performance of the real stock market. Moreover, Nandha and Faff (2008) find that, in most sectors, the stock market responds negatively to an increase in the price of crude oil, with the exception of the mining, gas and oil sectors. Aloui and Jammazi (2009) further show that the net rise in crude oil prices plays a leading role in determining the likelihood of change across regimes and the volatility of real market returns. Chen (2010) reports that an increase in oil price tends to increase the probability of a regime switch from a bull market to a bear market, but finds little evidence that it causes a bear state. In a similar spirit, Barsky and Kilian (2004) argue that an increase in the crude oil price may contribute towards a downturn in Middle Eastern economies, while Jones and Kaul (1996) find that oil price movements tend to have a significantly negative effect on the performance of stock market returns in developed countries. Bouri et al. (2016) use a multivariate GARCH model and they show that oil changes have a negative effect on the performance of three sectors, including the industrial sector. Furthermore, Ewing et al. (2018) show that the effect of global non-US oil supply changes on the real upstream stock market has increased since 2006, while the effect of negative US oil supply changes has been positive and relatively constant at about 3.60%.

Kilian and Park (2009) show that precautionary demand changes can lead to a large, immediate, and sharp rise in stock market performance, particularly due to unstable political conditions in the Middle East. Sim and Zhou (2015) use quantile-on-quantile (QQ) analysis to show that, when the economy as a whole does well in the US, equities can make profits even when there are negative changes in crude oil prices. In addition, Miller and Ratti (2009) examine this relationship in Canada, France, Germany, Italy, the UK and the US, finding a negative long-term relationship between stock market performance and global crude oil price changes. On the other hand, Joo and Park (2017) find that crude oil price uncertainty has a significantly negative and time-varying impact on stock market returns that is strongly linked with the degree of correlation between the stock market and oil returns.

2.2.3 Positive relationship between crude oil price changes and stock returns

A third strand of the literature highlights a positive impact of shocks in crude oil prices on the performance of the stock market. For instance, the empirical findings of Narayan and Narayan (2010) indicate the existence of a positive and statistically significant relationship between stock market returns and crude oil price changes in Vietnam. Kilian and Park (2009) claim that if unpredicted growth in the world economy causes a climb in oil prices, this will lead to a constant positive effect on the stock market's performance within the first year. Kang et al. (2017) find that, on average, oil demand-side shocks have a positive effect on the return of oil and gas companies, whereas shocks due to policy uncertainty have a negative effect on the returns of these companies.

Furthermore, Sadorsky (2001) reports that these oil price shocks can cause an increase in the performance of oil and gas stocks, while El-Sharif et al. (2005) demonstrate the existence of a positive relationship between oil price shocks and share prices returns within the oil and gas sector. Furthermore, Zhu et al. (2016) show that the relationship between the global crude oil market and Chinese industrial markets is positive and particularly strong during down-markets. This positive relationship between shocks in crude oil prices and the performance of the Chinese stock market is also confirmed in the empirical findings of Zhang and Chen (2011), Li et al. (2012) and Chen and Lv (2015).

Arouri and Rault (2012) demonstrate that an increase in crude oil prices has a positive impact on the performance of stock markets in most GCC nations. Guntner (2014) further shows that an increase in aggregate demand for oil consistently leads to a rise in real oil prices and in improved performance of real stock markets, especially in the case of oil exporting economies. Moreover, Arouri et al. (2012) document a strong positive effect of one-period lagged oil market changes on the conditional volatility of the stock sector, while Silvapulle et al. (2017) report a significantly positive impact of crude oil price changes on stock market returns across ten large oil-importing countries. Kayalar et al. (2017) provide further evidence on the positive relationship between stock market returns and WTI (West Texas Intermediate prices) especially amongst energy-exporting countries.

2.2.4 The existence of a positive or negative relationship is condition-dependent

Finally, a fourth strand of the literature argues that the existence of a positive or negative relationship between changes in crude oil prices and stock market performance is condition-dependent. For instance, Cai et al. (2017) highlight that oil prices and stock returns are relatively homogeneously correlated in East Asian countries, but only weakly correlated in China and Japan. Cong et al. (2008) examine the Chinese market and report an insignificant relationship between oil prices and stock returns across most sectors, while crude oil price volatility is found to have a significantly positive effect on stock returns in the mining and petrochemicals sector. Narayan and Sharma (2011) provide further evidence that the relationship between oil prices and stock returns depends on the sector to which the firm belongs, and this effect is significantly positive for small firms but becomes significantly negative for larger firms. Abul Basher et al. (2018) examine a large set of countries and conclude that the effect of oil price changes on stock returns varies widely across different countries.

In a similar vein, Phan et al. (2015b) find that the predictability of stock market returns based on crude oil price changes depends on both the data frequency as well as the specific sector to which a firm belongs. Antonakakis et al. (2017) find that aggregate demand changes create stronger co-movement between the oil market and the stock market, while both supply-side and oil-specific demand shocks lead to a negative correlation between these two markets. Moreover, Phan et al. (2015a) find that a rise in crude oil prices has a positive impact on stock market returns of oil-exporting countries but a negative impact in oil-importing ones. In addition, the magnitude of this impact is different across sub-sectors, while stock markets in oil-exporting economies tend to react much faster to changes in crude oil prices compared to those in oil-importing countries. Park and Ratti (2008) focus on thirteen European economies and the US. They show that stock markets tend to respond more strongly to fluctuations in real international crude oil prices compared to fluctuations in real national crude oil prices.

In another study, Doko Tchatoka et al. (2018) show that huge negative oil price changes tended to reinforce stock market returns when markets are performing well in China, Japan and India. A similar effect was observed with respect to huge positive oil price changes leading to higher stock market returns both for oil exporting countries (including Canada, Russia, and Norway) and moderately oil-dependent countries (such as Malaysia, the Philippines, and Thailand). Meanwhile, Mensi et al. (2017) identify a tail dependence between crude oil prices and several stock markets, while also reporting strong evidence of asymmetric spillovers from oil to stock markets and vice versa in the short- and long-run horizons.

Kilian (2009) applies a structural reduced-form VAR technique and finds that unexpected changes in crude oil supply have little effect on real economic activity. Conversely, international real economic performance is affected by unexpected shocks in aggregate demand and precautionary demand for crude. Furthermore, Peng et al. (2018) find evidence of an asymmetric relationship between extreme movements in crude oil prices and stock returns. Also, risk transmission from crude oil price changes to stock returns appears to vary across different industries. Arouri (2011) also finds that this relationship varies across different sectors but finds no asymmetry between the effect of price increases and price decreases.

Guntner (2014) indicates that shocks in precautionary demand have a negative effect on the performance of oil importing countries, with a statistically insignificant impact in Canada, and a significantly positive effect in Norway. Filis et al. (2011) find that fluctuations in oil prices are the result of international turmoil or of changes in the global business cycle, both for oil-exporting and oil-importing countries. Ftiti et al. (2015) focus on the G7 economies and highlight a more pronounced co-movement between oil prices and stock returns in the short- and medium-term compared to the long-term. Zhang et al. (2018) identify dynamics jumps in oil prices in China's bulk commodity markets at both the aggregate and industry level, suggesting an overreaction with respect to risk. Moreover, Zhang et al. (2018) argue that the effects of unexpected changes are positive and significantly asymmetric, while those of expected changes are negative and insignificantly asymmetric at the industry level.

In line with other studies, Lambertides et al. (2017) report that positive oil demand shocks lead to a negative stock return reaction, while crude oil supply shocks have a negative and marginally significant impact on stock order flow imbalances. Wang et al. (2013) show that oil price changes have a greater impact on oil-exporting countries compared to oil-importing ones, and the nature of this effect depends on whether that shock is driven by supply or demand. For example, although both oil supply and aggregate demand uncertainty can lead to a decline in stock markets in oil-exporting and oil-importing countries, the effect of demand uncertainty is stronger and more persistent in oil-exporting countries. Finally, You et al. (2017) report additional evidence that the effects of oil price shocks and economic policy uncertainty are asymmetric and highly related to stock market conditions.

2.3 Data and empirical methodology

2.3.1 Data

This study uses monthly data across eighty-seven developed, fast-developing, and developing countries, including both oil-importing and oil-exporting countries. In particular, the empirical analysis focuses the following groups of countries:

- **G7**: Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.
- **Europe**: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and Ukraine.
- **BRICS**: Brazil, Russia, India, China, and South Africa.
- **N11**: Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, Turkey, South Korea, and Vietnam.
- **OPEC**: Algeria, Ecuador, Iran, Iraq, Kuwait, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates (UAE) and Venezuela.

In addition to examining the stock markets of individual countries, this study also explores the relationship between crude oil price changes and a number of global equity indices:

- **MSCI ACWI**: this index consists of set of large- and mid-cap stocks across 23 developed and 23 emerging market country markets.
- **MSCI World**: this index consists of stocks across 23 developed markets.
- **MSCI EAFE**: this index consists of large-cap and mid-cap stocks across 21 developed markets, including countries in Europe, Australasia, and the Far East, excluding the US and Canada.
- **MSCI Emerging Markets**: this index consists of stocks across 23 countries that represent 10% of world market capitalisation.
- **MSCI Europe:** this index consists of large- and mid-cap stocks in 15 developed markets in Europe.
- **MSCI USA**: this index consists of stocks across large and mid-cap segments of the US market.

The sample period varies for each sample country (sample periods and the name of index in each country are reported in Table B.73). Data on crude oil prices and stock index levels were obtained from the Energy Information Administration (EIA), DataStream, and from the webpages of some sample countries' stock exchanges and central banks. All prices were obtained in local currencies.

2.3.2 Empirical methodology

The relationship between crude oil price changes and stock returns is examined using two main estimation techniques, namely the simple Ordinary Least Squares (OLS) approach and the Quantile Regression (QR) approach.

Originally developed by Carl Friedrich Gauss, OLS is an estimation technique that can be applied to examine the linear relationship between two or more variables. It is described by the following equaiton:

$$y_t = \alpha + \beta x_t + e_t \tag{2.1}$$

where y_t and x_t denote stock returns and oil price changes, respectively, while e_t is a random error term and α is intercept. y_t and x_t are calculated by the first differences of the logarithm of the price series. The estimated coefficients of the regression in the above equation are denoted by $\hat{\beta}$. OLS is considered the simplest approach for estimating a linear model. However, the associated estimators depend on a number of assumptions, primarily about the statistical properties of the random error term. Unlike the OLS approach, which describes the relationship between a set of explanatory variables and a dependent variable based on the conditional mean function $E(y|x)$, the Quantile Regression (QR) approach, developed by Koenker and Bassett (1978), can describe this linear relationship at different points in the conditional distribution of y using the conditional function $Q_q(y|x)$. The errors are independent and identically distributed based on an estimate of the asymptotic covariance matrix as in Koenker and Bassett (1978). The QR approach is described by the following formula:

$$y_t = a_q + \beta_q x_t + e_t \tag{2.2}$$

where β_q is the vector of unknown parameters related to the q^{th} quantile. The OLS technique minimises $\sum_t e_t^2$, i.e. the residual sum of squares of the model. In contrast, the QR approach minimises $\sum_t q|e_t| + \sum_t (1-q)|e_t|$, i.e. a sum of errors that assigns the asymmetric penalties $q|e_t|$ for underprediction and $(1-q)|e_t|$ for overprediction. The q^{th} QR estimator $\widehat{\beta_q}$ minimises over β_q the objective function:

$$Q(\beta_q) = \sum_{t:y_t \geq x_t' \beta}^{N} q|y_t - a_q - x_t'\beta_q| + \sum_{t:y_t < x_t' \beta}^{N} (1-q)|y_t - a_q - x_t'\beta_q| \tag{2.3}$$

where $0 < q < 1$. The subscript q in the vector of slope coefficients β_q indicates that the sensitivity of y with respect to x will vary across different quantiles q. This study estimates equation (2.3) across 19 percentiles (from 0.05 to 0.95, equally spaced at 0.05 intervals). These quantiles are further sub-grouped into low to medium (from 0.05 to 0.50), and medium to high (from 0.50 to 0.95).

In addition, this study explores the impact of financial distress on the relationship between crude oil price changes and stock returns. More specifically, financial distress is incorporated into the model by including NBER recession episodes as an intercept dummy variable. Finally, this study explores the effect of different lags of oil price changes by estimating the regression equation separately for different number of lags (namely 1, 3, 6, 9 and 12 lags), as shown below.

$$
\begin{aligned}
y_t &= \alpha + \beta x_t + \gamma D_t + \delta x_{t-1} + e_t \\
y_t &= \alpha + \beta x_t + \gamma D_t + \delta x_{t-3} + e_t \\
y_t &= \alpha + \beta x_t + \gamma D_t + \delta x_{t-6} + e_t \\
y_t &= \alpha + \beta x_t + \gamma D_t + \delta x_{t-9} + e_t \\
y_t &= \alpha + \beta x_t + \gamma D_t + \delta x_{t-12} + e_t
\end{aligned}
\tag{2.4}
$$

where D_t is a dummy variable that takes the value of one for NBER recession episodes and the value of zero otherwise, while x_{t-k} denotes the k^{th} lag of oil price changes.

2.4 Empirical analysis

2.4.1 Benchmark case

The results as reported in Tables 2.1 to 2.9 show the QR technique to provide more suitable inferences on the impact of crude oil price changes on stock market returns, as compared to OLS regressions. For example, in Spain, there is no relationship between crude oil price changes and stock returns using the OLS approach, but a significant relationship exists in percentiles 0.10, 0.15, 0.20, 0.25, 0.35, and 0.40, which reveals a significant impact of a rise in crude oil prices on the performance of the stock market on these percentiles. The percentile estimates that are different to those of other percentiles (for the same estimate) are of particular interest.

One can intuitively understand that the average crude oil price return can positively affect stock returns in oil-exporting countries. This is supported by the OLS results for most of the oil-exporting countries, namely, Canada, Colombia, Iran, Kuwait, Nigeria, Norway, Oman, Qatar, Russia, Saudi Arabia, and UAE. This is in line with the findings of Wang et al. (2013), indicating that oil price shocks have a greater impact in oil-exporting countries than in importing ones. This may be the result of stock markets being dominated by many oil-related companies, however, for other oil-exporting countries, the OLS regression shows an insignificant effect from the rise in crude oil prices on stock market returns, irrespective of whether the impact is negative (Ecuador, Iraq, Mexico, and Venezuela) or positive (Algeria and Brazil). This is consistent with the findings of Guntner (2014) for Canada and Zhang and Chen (2011) for China.

Although the QR analysis also affirms the statement in most cases, this technique provides more information about the relationship between the variables across different quantiles of their distribution. For all oil-exporting countries in this study, the benchmark QR analysis shows that there is a significant impact on the performance of the stock market when crude oil prices rise, at least in one quantile. The impact across almost all of these countries is positive, except for Algeria, Ecuador, Iraq, and Mexico, where we observe both positive and negative impacts in their quantile regressions. The only exception is Venezuela, as its only significant quantile has a negative sign. The positive effect could be due to the rise in aggregate demand, which consistently leads to real price increases of oil and the performance of real stock market returns, especially in oil exporters (Guntner, 2014). Therefore, the findings from the QR approach demonstrate that there is a need for proper investigation to determine the cause of these differences. In oil-importing countries, the results show that the effect of oil on the stock market is significant in both the OLS and in at least one quantile in the following countries:

For Europe, the countries are Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, France, Germany, Greece, Iceland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Romania, Serbia, Slovenia, and Ukraine. In Asia and Oceania, they are Australia, Bahrain, India, Jordan, Lebanon, New Zealand, Singapore, South Korea, Turkey, and Vietnam. In Africa, they are Egypt, the Ivory Coast, Mauritius, Morocco, South Africa, and Uganda. Finally, for South America, it is Argentina.

Interestingly, for the following countries, there is no relationship between crude oil price changes and stock market returns using the OLS, but a significant relationship exists in at least one quantile:

For Europe, the countries are Croatia, Finland, Hungary, Ireland, Malta, Poland, Portugal, Slovakia, Spain, Sweden, and Switzerland. In Asia and Oceania, they are Bangladesh, China, Indonesia, Japan, Malaysia, Pakistan, Philippines, Sri Lanka, Taiwan, and Thailand. In Africa, they are Kenya, Namibia, Tanzania, Tunisia, and Zambia. In North America, they are Costa Rica and the US. Finally, for South America, they are Chile and Peru.

In addition, there are exception countries –Botswana, Hong Kong, and the UK– where the effect is not significant with neither the OLS nor the QR. Therefore, using the QR approach to consider the effect of oil price increases on stock market returns in oil-importing countries suggests that there is a need for further and deeper investigation, as the analysis shows that the effect of oil varies across different quantiles. The results also indicate that the effect of crude oil changes in almost all the world indices, such as MSCI ACWI, MSCI World, MSCI EAFE, MSCI Emerging Markets, and MSCI Europe is positive and significant in OLS and in at least one quantile, except for MSCI USA, where the effect estimated by the OLS is not significant. These findings clearly show that the QR allows one to make much more differentiated statements compared to the OLS. In addition, sometimes the OLS estimates can mislead us as to what the true connection is between an independent and dependent variables, as the impacts can be very distinct for different parts of the distribution.

Table 2. 1: Benchmark case – G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	0.025	***0.054***	***0.036***	**0.025**	0.016	0.012	0.007	0.007	-0.001	0.006	0.011
Japan	0.020	0.018	-0.002	0.037	***0.054***	***0.056***	0.016	0.011	-0.000	0.005	0.019
Canada	***0.073***	***0.084***	***0.073***	***0.059***	**0.066**	**0.067**	**0.092**	**0.086**	**0.077**	**0.066**	0.045
Germany	*-0.038*	-0.066	-0.015	**-0.027**	**-0.038**	***-0.044***	**-0.039**	***-0.057***	***-0.053***	-0.043	-0.040
UK	0.014	0.009	0.036	0.043	0.056	0.028	0.036	0.027	0.027	0.003	0.010
France	***0.089***	0.063	0.087	**0.107**	**0.112**	***0.116***	***0.105***	***0.116***	***0.110***	***0.119***	***0.112***
Italy	***0.116***	**0.128**	***0.199***	**0.181**	***0.167***	***0.178***	***0.167***	***0.175***	***0.159***	***0.176***	***0.148***
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	0.025	0.011	0.015	0.013	0.026	0.024	0.006	0.003	0.025	0.010	-0.008
Japan	0.020	0.019	0.024	0.018	0.012	0.008	0.002	-0.004	0.007	0.039	0.061
Canada	***0.073***	0.045	***0.055***	***0.060***	***0.064***	**0.063**	**0.053**	***0.052***	0.045	***0.067***	0.034
Germany	***-0.038***	-0.040	-0.049	-0.054	-0.045	-0.044	***-0.081***	***-0.089***	***-0.060***	-0.037	0.004
UK	0.014	0.010	0.004	0.014	-0.006	-0.008	-0.001	-0.016	0.002	0.018	-0.014
France	***0.089***	***0.112***	*0.089*	*0.093*	***0.080***	***0.079***	0.073	0.044	-0.011	0.014	0.037
Italy	***0.116***	***0.148***	***0.113***	0.067	0.052	0.034	0.027	0.043	0.025	-0.017	-0.054

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 2: Benchmark case – Europe

Panel A: Low-Medium Quantiles

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Spain	0.036	0.057	***0.151***	***0.139***	***0.114***	***0.107***	0.070	**0.098**	**0.091**	0.071	0.023
Netherlands	***0.061***	***0.106***	***0.089***	**0.091**	**0.097**	0.052	***0.067***	***0.069***	***0.072***	***0.061***	***0.066***
Sweden	0.039	***0.119***	***0.169***	0.101	***0.076***	***0.060***	0.057	**0.084**	0.071	0.037	0.034
Poland	0.064	**0.194**	**0.181**	***0.128***	***0.119***	0.100	***0.138***	0.081	***0.123***	0.092	0.096
Belgium	***0.054***	***0.151***	0.138	0.061	0.053	0.049	0.037	0.052	0.048	0.029	0.040
Austria	***0.148***	***0.279***	***0.248***	***0.263***	***0.225***	***0.188***	***0.156***	***0.126***	***0.108***	***0.132***	***0.124***
Denmark	***0.059***	***0.085***	***0.131***	***0.098***	***0.094***	***0.086***	***0.084***	0.072	0.066	0.055	0.050
Ireland	0.006	0.013	0.031	-0.001	-0.005	0.027	0.034	0.054	***0.074***	***0.062***	0.053
Finland	0.052	***0.094***	0.118	0.064	***0.128***	***0.115***	***0.127***	***0.118***	***0.085***	***0.095***	***0.095***
Portugal	0.042	0.126	0.083	**0.100**	0.065	0.018	0.053	0.002	0.019	0.016	0.014
Greece	***0.095***	***0.209***	***0.261***	**0.200**	**0.175**	**0.178**	**0.107**	0.092	0.067	0.053	0.042
Czech	***0.130***	0.094	0.084	0.140	***0.145***	***0.147***	***0.135***	***0.160***	***0.173***	***0.164***	***0.182***
Romania	***0.196***	***0.298***	***0.416***	**0.358**	**0.153**	**0.158**	***0.187***	***0.157***	***0.168***	***0.150***	***0.137***
Hungary	0.076	***0.209***	0.132	***0.178***	***0.097***	***0.114***	***0.128***	***0.101***	*0.169*	*0.157*	***0.147***
Slovakia	0.001	-0.002	-0.032	0.000	-0.020	0.000	0.008	0.021	0.033	0.043	0.060
Luxembourg	***0.174***	***0.272***	***0.218***	***0.190***	***0.218***	***0.204***	***0.156***	***0.143***	***0.134***	***0.168***	***0.141***
Bulgaria	***0.232***	***0.417***	***0.405***	0.184	0.109	0.080	0.065	0.077	***0.113***	***0.120***	***0.153***
Croatia	0.074	0.071	***0.155***	0.058	0.039	0.070	0.079	***0.106***	***0.086***	***0.096***	***0.105***
Slovenia	**0.168**	**0.325**	***0.274***	***0.286***	***0.274***	***0.252***	0.121	0.115	0.085	0.049	0.015
Lithuania	***0.171***	***0.437***	**0.334**	**0.251**	**0.114**	**0.074**	**0.071**	**0.078**	0.058	***0.071***	***0.088***
Latvia	***0.089***	***0.264***	*0.216*	***0.123***	***0.095***	***0.079***	***0.081***	***0.072***	***0.064***	***0.073***	***0.063***
Estonia	***0.180***	***0.505***	***0.286***	***0.270***	0.142	0.081	***0.102***	***0.091***	0.072	**0.092**	0.073
Cyprus	***0.383***	***0.370***	***0.530***	***0.450***	***0.521***	***0.401***	***0.333***	**0.325**	**0.338**	***0.273***	***0.251***
Malta	0.027	***0.094***	-0.013	-0.007	0.005	0.008	0.009	-0.002	-0.006	0.009	0.006
Iceland	***0.253***	0.300	-0.017	0.046	0.047	0.033	0.016	0.024	0.016	0.051	***0.053***
Norway	***0.155***	0.077	**0.171**	**0.163**	**0.159**	***0.169***	***0.192***	***0.195***	***0.175***	***0.164***	***0.139***
Swiss	-0.030	***-0.089***	0.034	0.032	***0.068***	0.056	0.043	0.039	0.003	0.005	-0.015
Serbia	***0.318***	***0.582***	***0.524***	***0.452***	***0.384***	***0.385***	0.189	0.098	0.121	0.106	0.026
Ukraine	0.313	***0.431***	***0.501***	***0.552***	***0.386***	***0.378***	***0.318***	***0.322***	***0.240***	***0.262***	***0.257***

Panel B: Medium-High Quantiles

	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	0.036	0.023	0.000	0.000	-0.021	-0.027	-0.012	-0.007	-0.045	-0.036	0.003
Netherlands	***0.061***	**0.066**	0.062	0.030	-0.000	-0.014	-0.022	0.010	0.025	0.004	-0.011
Sweden	0.039	0.034	0.013	0.001	-0.011	-0.004	0.007	0.019	0.034	0.003	-0.096
Poland	0.064	0.096	0.070	0.076	0.087	0.084	0.077	0.057	-0.044	-0.054	-0.100
Belgium	***0.054***	0.040	0.046	0.009	0.005	0.011	0.030	0.036	0.013	0.023	-0.016
Austria	***0.148***	***0.124***	***0.100***	***0.075***	*0.075*	*0.094*	*0.065*	**0.085**	0.064	***0.094***	***0.243***
Denmark	**0.059**	0.050	0.024	0.006	0.013	0.042	-0.009	0.002	-0.023	-0.054	0.007
Ireland	0.006	0.053	0.030	0.025	0.005	-0.004	-0.042	-0.048	-0.051	-0.032	***-0.079***
Finland	0.052	***0.095***	0.048	0.051	0.049	0.031	0.021	-0.012	-0.084	-0.113	-0.130
Portugal	0.042	0.014	0.013	-0.009	-0.013	-0.013	0.014	-0.000	0.018	0.033	0.020
Greece	***0.095***	0.042	0.016	-0.012	-0.032	-0.018	0.021	0.019	-0.024	-0.012	0.069
Czech	***0.130***	***0.182***	***0.199***	***0.190***	*0.173*	*0.156*	***0.137***	0.123	0.084	0.078	***0.159***
Romania	***0.196***	**0.137**	**0.140**	**0.197**	**0.217**	**0.202**	**0.183**	***0.147***	***0.169***	***0.188***	0.168
Hungary	0.076	***0.147***	***0.127***	*0.150*	***0.155***	***0.163***	***0.145***	0.087	0.064	0.084	-0.031
Slovakia	0.001	0.060	***0.070***	***0.073***	0.061	0.032	0.000	-0.001	0.037	***0.098***	***0.150***
Luxembourg	***0.174***	***0.141***	**0.114**	**0.108**	**0.138**	***0.122***	0.085	***0.103***	0.075	0.084	0.074
Bulgaria	***0.232***	***0.153***	***0.171***	***0.188***	***0.163***	***0.193***	*0.220*	*0.208*	0.129	0.069	0.133
Croatia	0.074	***0.105***	***0.090***	0.076	0.083	0.054	0.039	0.009	0.048	0.097	0.024
Slovenia	**0.168**	0.015	0.018	0.060	0.071	0.092	0.086	0.089	0.019	0.148	0.161
Lithuania	***0.171***	***0.088***	***0.071***	***0.089***	***0.101***	***0.118***	***0.111***	0.069	0.083	0.069	-0.016
Latvia	***0.089***	**0.063**	**0.079**	***0.065***	0.048	0.037	0.018	-0.020	-0.072	***-0.152***	-0.076
Estonia	***0.180***	0.073	***0.083***	***0.108***	***0.091***	0.089	0.066	0.017	0.037	0.058	-0.054
Cyprus	***0.383***	***0.251***	0.179	0.089	0.134	0.209	***0.339***	***0.340***	***0.416***	***0.448***	0.309
Malta	0.027	0.006	0.005	-0.006	0.000	0.015	0.025	0.076	0.090	0.070	0.052
Iceland	***0.253***	***0.053***	0.042	0.043	0.030	0.019	0.041	0.012	0.007	0.060	0.065
Norway	***0.155***	***0.139***	***0.130***	***0.128***	***0.121***	***0.137***	**0.150**	**0.149**	***0.150***	***0.128***	***0.152***
Swiss	-0.030	-0.015	-0.016	-0.024	-0.029	-0.033	-0.038	***-0.058***	***-0.081***	**-0.104**	**-0.129**
Serbia	***0.318***	0.026	0.056	0.032	0.083	0.058	0.038	0.004	0.174	0.262	**0.411**
Ukraine	***0.313***	*0.257*	***0.244***	***0.225***	0.152	***0.214***	**0.158**	**0.146**	***0.182***	0.141	***0.292***

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 3: Benchmark case – BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	0.051	0.077	-0.028	0.047	0.094	***0.141***	**0.128**	**0.161**	***0.152***	***0.180***	***0.181***
Russia	***0.446***	**0.615**	**0.436**	**0.503**	***0.559***	***0.464***	***0.411***	***0.408***	***0.417***	***0.350***	***0.295***
India	***0.070***	***0.159***	***0.116***	0.050	0.015	-0.009	0.015	0.008	0.014	0.019	0.011
China	0.015	***0.291***	0.055	-0.017	0.007	0.016	0.023	-0.022	0.006	0.022	0.017
South Africa	***0.151***	***0.228***	***0.191***	**0.199**	**0.203**	***0.196***	***0.196***	*0.200*	*0.152*	***0.153***	***0.146***
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	0.051	***0.181***	***0.166***	***0.148***	***0.169***	0.136	0.158	0.098	0.036	-0.130	0.116
Russia	***0.446***	***0.295***	***0.266***	***0.233***	0.199	0.131	0.076	0.085	0.063	0.014	0.214
India	***0.070***	0.011	0.023	0.030	0.034	0.060	***0.104***	***0.100***	***0.082***	***0.080***	***0.095***
China	0.015	0.017	0.004	-0.024	-0.020	-0.037	-0.025	-0.060	0.010	0.019	-0.037
South Africa	***0.151***	***0.146***	***0.152***	***0.133***	***0.132***	***0.126***	***0.149***	***0.113***	***0.122***	***0.066***	0.030

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 4: Benchmark case – N11

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
South Korea	***0.080***	**0.154**	**0.104**	***0.074***	0.058	0.054	0.058	**0.079**	**0.100**	**0.078**	**0.076**
Mexico	-0.007	***-0.074***	-0.045	0.032	0.054	0.077	***0.113***	0.071	0.066	0.052	0.054
Indonesia	0.025	0.084	***0.101***	0.065	0.019	-0.002	0.004	0.001	0.006	0.000	0.018
Turkey	***0.222***	0.090	0.103	0.086	***0.134***	0.098	0.104	***0.150***	***0.185***	***0.204***	***0.228***
Philippines	-0.041	0.044	-0.015	-0.035	-0.023	-0.055	-0.034	0.024	0.002	-0.002	-0.002
Pakistan	0.029	***0.196***	***0.147***	0.051	0.040	0.008	-0.028	-0.022	-0.001	-0.003	-0.012
Bangladesh	0.013	0.124	0.046	***0.059***	0.047	0.059	0.042	0.008	0.009	-0.009	0.011
Egypt	***0.249***	***0.338***	***0.260***	***0.247***	***0.302***	***0.264***	***0.277***	*0.282*	*0.214*	***0.178***	***0.177***
Vietnam	***0.161***	0.405	0.201	0.216	***0.164***	**0.157**	**0.132**	***0.152***	0.105	***0.117***	*0.127*
Iran	**0.081**	**0.130**	**0.141**	**0.100**	**0.077**	**0.078**	**0.065**	0.050	0.051	***0.062***	***0.061***
Nigeria	**0.222**	**0.430**	**0.370**	***0.233***	***0.174***	***0.177***	0.177	0.156	0.156	0.131	***0.183***
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	***0.080***	***0.076***	***0.078***	***0.072***	***0.083***	0.065	***0.101***	***0.115***	0.091	-0.031	0.016
Mexico	-0.007	0.054	0.037	-0.003	0.018	-0.000	0.028	0.017	-0.005	-0.058	0.049
Indonesia	0.025	0.018	-0.009	-0.003	0.016	0.002	-0.015	0.003	0.001	0.048	-0.038
Turkey	***0.222***	***0.228***	***0.247***	***0.254***	***0.252***	***0.236***	**0.214**	**0.271**	**0.285**	**0.323**	0.246
Philippines	-0.041	-0.002	0.033	0.049	0.028	-0.004	-0.017	-0.019	-0.041	***-0.150***	***-0.246***
Pakistan	0.029	-0.012	-0.013	0.034	0.054	0.037	0.014	0.005	0.016	0.026	-0.034
Bangladesh	0.013	0.011	-0.007	-0.014	-0.010	-0.029	-0.045	-0.036	-0.028	-0.083	0.037
Egypt	*0.249*	*0.177*	***0.161***	***0.157***	***0.187***	***0.211***	***0.213***	0.171	0.082	0.159	0.130
Vietnam	***0.161***	**0.127**	**0.137**	0.080	0.038	-0.012	0.039	0.216	0.219	*0.265*	-0.003
Iran	***0.081***	***0.061***	***0.086***	0.050	0.054	***0.063***	**0.076**	**0.089**	***0.102***	0.051	-0.019
Nigeria	***0.222***	***0.183***	***0.184***	0.133	0.140	0.175	***0.212***	***0.194***	0.139	0.149	***0.294***

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 5: Benchmark case – OPEC

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Iran	***0.081***	***0.130***	***0.141***	***0.100***	***0.077***	***0.078***	***0.065***	0.050	0.051	***0.062***	***0.061***
Nigeria	***0.222***	***0.430***	**0.370**	**0.233**	**0.174**	***0.177***	*0.177*	0.156	0.156	0.131	***0.183***
Saudi Arabia	***0.204***	***0.252***	***0.249***	***0.270***	***0.238***	***0.229***	***0.216***	***0.208***	***0.208***	***0.178***	***0.150***
Iraq	-0.086	0.242	*0.108*	***0.140***	0.123	-0.020	-0.037	-0.050	0.002	-0.037	-0.015
Qatar	**0.169**	**0.274**	**0.168**	***0.145***	***0.164***	***0.126***	***0.109***	***0.130***	***0.107***	***0.097***	0.080
UAE	***0.149***	***0.315***	***0.224***	***0.215***	0.124	**0.149**	**0.138**	***0.146***	***0.119***	***0.108***	***0.134***
Kuwait	***0.123***	***0.229***	***0.214***	***0.250***	***0.192***	***0.170***	***0.187***	***0.154***	***0.141***	**0.141**	**0.104**
Algeria	0.005	0.089	0.020	0.020	-0.004	0.010	0.001	0.000	0.000	0.000	0.000
Ecuador	-0.017	***-0.047***	**-0.058**	**-0.051**	***-0.048***	*-0.053*	*-0.045*	***-0.037***	***-0.038***	-0.030	-0.026
Venezuela	-0.084	-0.077	-0.030	-0.046	-0.038	-0.041	-0.025	-0.001	-0.020	-0.047	-0.035
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	***0.081***	*0.061*	*0.086*	0.050	0.054	***0.063***	***0.076***	***0.089***	***0.102***	0.051	-0.019
Nigeria	***0.222***	***0.183***	***0.184***	0.133	0.140	*0.175*	***0.212***	***0.194***	0.139	0.149	***0.294***
Saudi Arabia	***0.204***	***0.150***	***0.162***	***0.168***	***0.180***	***0.184***	**0.201**	**0.186**	**0.187**	***0.163***	0.222
Iraq	-0.086	-0.015	-0.051	-0.010	-0.015	0.020	0.066	0.095	0.077	0.143	***-0.455***
Qatar	***0.169***	0.080	***0.122***	***0.163***	***0.192***	***0.218***	**0.236**	**0.200**	***0.179***	***0.207***	0.099
UAE	***0.149***	**0.134**	**0.133**	**0.142**	***0.120***	0.078	0.089	**0.133**	0.114	0.125	0.086
Kuwait	**0.123**	**0.104**	**0.099**	**0.077**	0.059	***0.067***	0.061	0.043	0.037	-0.061	-0.061
Algeria	0.005	0.000	0.000	0.000	-0.010	-0.017	***-0.039***	-0.024	0.002	0.050	***0.073***
Ecuador	-0.017	-0.026	-0.021	-0.006	0.005	0.009	0.011	0.020	0.036	***0.049***	0.027
Venezuela	-0.084	-0.035	-0.065	-0.003	-0.116	-0.080	***-0.191***	-0.174	-0.055	-0.308	0.063

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 6: Benchmark case –Asia and Oceania

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Australia	***0.080***	***0.180***	***0.188***	***0.192***	***0.168***	***0.128***	***0.096***	***0.059***	***0.055***	***0.065***	***0.050***
Hong Kong	0.022	-0.012	-0.032	0.053	0.007	0.021	0.024	0.028	0.002	0.025	0.013
Malaysia	0.044	0.035	0.035	0.018	0.061	**0.082**	**0.082**	***0.061***	***0.073***	0.051	0.053
New Zealand	***0.065***	***0.220***	***0.166***	***0.126***	***0.090***	***0.084***	***0.071***	0.052	0.053	0.012	0.004
Thailand	0.029	0.107	0.071	0.038	0.068	0.084	0.068	***0.083***	0.066	***0.074***	0.064
Singapore	***0.157***	**0.367**	**0.285**	**0.210**	***0.183***	0.123	0.095	0.105	***0.093***	0.053	***0.074***
Taiwan	-0.044	-0.020	0.010	-0.004	-0.012	-0.024	-0.032	-0.020	0.002	-0.024	-0.001
Bahrain	***0.053***	***0.213***	***0.069***	0.026	0.025	0.030	0.033	0.026	0.026	0.039	0.042
Jordan	***0.081***	***0.206***	0.059	0.037	-0.008	0.010	0.040	0.012	-0.000	0.017	0.016
Lebanon	***0.121***	***0.162***	***0.199***	0.074	***0.080***	***0.076***	0.045	0.041	0.044	0.023	0.030
Oman	***0.102***	***0.160***	***0.171***	**0.106**	**0.097**	**0.086**	***0.085***	0.070	***0.094***	***0.084***	0.067
Sri Lanka	0.028	0.066	***0.090***	***0.078***	0.031	0.045	0.045	0.032	0.028	0.014	0.017
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	***0.080***	*0.050*	*0.055*	***0.046***	0.037	0.023	0.015	0.032	0.011	0.045	0.005
Hong Kong	0.022	0.013	0.016	0.023	0.052	0.034	0.060	0.098	0.055	0.091	0.015
Malaysia	0.044	0.053	0.032	0.056	***0.075***	***0.082***	0.085	0.042	-0.004	0.008	0.013
New Zealand	***0.065***	0.004	0.020	0.032	0.029	0.026	0.002	0.013	0.003	-0.026	0.053
Thailand	0.029	0.064	0.036	0.040	0.026	0.019	0.024	-0.004	-0.009	-0.047	0.041
Singapore	***0.157***	***0.074***	**0.068**	**0.062**	***0.073***	***0.077***	***0.082***	***0.091***	***0.137***	***0.147***	***0.244***
Taiwan	-0.044	***0.050***	***0.055***	***0.046***	0.037	0.023	0.015	0.032	0.011	0.045	0.005
Bahrain	***0.053***	0.042	0.044	0.021	0.036	0.020	0.040	0.031	0.062	0.017	0.070
Jordan	**0.081**	0.016	0.027	0.019	0.033	0.039	0.029	0.007	0.001	0.008	0.024
Lebanon	**0.121**	0.030	0.040	***0.058***	**0.059**	**0.075**	**0.082**	***0.121***	*0.154*	*0.173*	***0.295***
Oman	***0.102***	0.067	0.072	0.067	0.066	0.073	0.052	0.075	0.108	0.081	***0.220***
Sri Lanka	0.028	0.017	0.030	0.035	0.024	0.011	0.006	0.046	0.050	-0.017	0.048

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 7: Benchmark case –Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	0.007	0.000	-0.019	-0.002	0.010	-0.001	0.004	0.017	0.016	0.027	0.025
Cote 'Ivoire	***0.073***	***0.116***	0.119	0.083	0.066	***0.081***	0.051	0.059	0.060	0.051	0.032
Kenya	0.008	-0.032	0.021	0.007	0.001	0.007	-0.004	-0.004	-0.011	-0.013	-0.000
Mauritius	*0.067*	***0.106***	0.031	***0.050***	***0.038***	0.034	0.023	0.035	***0.050***	***0.061***	***0.065***
Morocco	*0.085*	***0.130***	**0.146**	**0.080**	**0.103**	***0.109***	***0.114***	***0.113***	***0.125***	***0.106***	***0.118***
Namibia	-0.003	-0.012	-0.002	-0.014	-0.001	-0.006	-0.005	-0.007	-0.014	-0.018	-0.015
Tanzania	0.017	0.071	***0.086***	***0.068***	***0.038***	0.031	***0.035***	***0.039***	0.032	0.029	0.024
Tunisia	-0.000	0.030	0.029	***0.046***	0.039	0.031	0.015	-0.001	0.009	0.003	-0.001
Uganda	***0.126***	-0.051	0.020	0.065	0.095	***0.117***	***0.135***	**0.150**	**0.158**	***0.155***	***0.192***
Zambia	0.052	0.027	0.064	0.062	0.030	0.051	0.021	0.029	0.032	0.052	***0.066***
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	0.007	0.025	0.028	0.024	0.018	0.001	-0.002	-0.023	-0.028	-0.068	-0.130
Cote 'Ivoire	***0.073***	0.032	0.033	0.024	0.029	0.010	0.037	0.028	0.047	0.093	***0.293***
Kenya	0.008	-0.000	0.015	0.018	0.007	0.015	0.027	0.001	0.078	0.131	***0.286***
Mauritius	***0.067***	***0.065***	***0.059***	**0.075**	**0.078**	**0.078**	***0.083***	***0.107***	0.063	0.056	0.077
Morocco	***0.085***	***0.118***	***0.118***	***0.120***	***0.113***	0.078	0.050	0.059	0.049	0.008	-0.020
Namibia	-0.003	-0.015	-0.012	-0.008	-0.007	-0.004	-0.018	-0.019	***-0.028***	-0.014	0.029
Tanzania	0.017	0.024	0.018	0.015	0.009	0.015	0.024	0.031	-0.017	-0.067	-0.059
Tunisia	-0.000	-0.001	-0.011	-0.005	-0.002	0.006	0.009	0.016	-0.042	-0.047	***-0.155***
Uganda	***0.126***	*0.192*	*0.174*	***0.153***	0.093	0.098	0.082	***0.100***	***0.120***	**0.159**	**0.258**
Zambia	0.052	***0.066***	***0.074***	0.058	0.042	0.005	0.033	0.018	0.064	0.115	0.073

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 8: Benchmark case –American countries

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Chile	0.019	***0.080***	***0.072***	***0.059***	**0.059**	**0.067**	**0.064**	0.058	0.027	0.009	0.014
Argentina	***0.179***	***0.341***	***0.239***	***0.158***	***0.231***	***0.272***	***0.282***	***0.268***	***0.218***	***0.221***	***0.213***
Colombia	***0.177***	***0.258***	**0.228**	**0.201**	***0.208***	***0.214***	***0.216***	***0.162***	***0.145***	0.129	***0.151***
Costa Rica	0.030	0.056	0.008	-0.006	0.006	-0.003	-0.017	-0.020	-0.001	0.004	0.021
Peru	0.042	0.129	0.023	0.075	0.060	***0.091***	***0.086***	*0.081*	0.071	0.070	0.029
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	0.019	0.014	0.000	0.025	0.024	0.028	-0.001	1E-05	-0.028	-0.065	0.004
Argentina	***0.179***	**0.213**	**0.196**	***0.152***	0.111	0.086	0.050	0.051	0.032	***0.169***	0.077
Colombia	***0.177***	***0.151***	***0.160***	0.127	0.125	***0.186***	***0.191***	*0.129*	*0.155*	***0.130***	0.058
Costa Rica	0.030	0.021	0.028	0.037	0.019	0.009	-0.017	0.000	0.045	0.086	***0.151***
Peru	0.042	0.029	0.012	0.015	-0.000	-0.023	-0.035	-0.036	-0.076	-0.122	***-0.447***

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 9: Benchmark case – Global indices

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
MSCI ACWI	***0.056***	***0.136***	0.109	***0.155***	***0.116***	***0.125***	***0.106***	***0.096***	***0.082***	***0.066***	***0.062***
MSCI World	***0.036***	***0.066***	***0.046***	**0.037**	***0.030***	0.053	0.050	***0.061***	***0.060***	***0.050***	0.038
MSCI EAFE	***0.042***	**0.091**	**0.067**	***0.063***	***0.074***	***0.059***	0.066	0.057	0.047	0.026	0.019
MSCI EM	***0.114***	***0.309***	***0.229***	***0.222***	***0.174***	***0.126***	**0.131**	**0.101**	**0.107**	***0.095***	0.072
MSCI EU	**0.049**	***0.095***	***0.067***	***0.055***	0.069	0.060	***0.066***	0.050	0.047	0.042	0.030
MSCI USA	0.024	***0.048***	***0.036***	***0.025***	0.017	0.013	0.008	0.003	0.004	0.010	0.011
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	***0.056***	*0.062*	0.033	0.023	0.030	0.029	0.025	0.013	0.016	-0.016	-0.003
MSCI World	***0.036***	0.038	0.023	0.015	0.024	0.022	0.009	0.005	-0.017	-0.018	-0.001
MSCI EAFE	***0.042***	0.019	0.033	0.022	0.010	0.017	0.009	0.011	-0.001	-0.019	***-0.043***
MSCI EM	**0.114**	0.072	0.060	0.031	0.039	0.046	0.056	0.079	0.051	***0.062***	***0.083***
MSCI EU	**0.049**	0.030	0.029	0.023	0.023	0.020	0.013	0.007	-0.001	-0.007	0.027
MSCI USA	0.024	0.011	0.012	0.018	0.025	0.019	0.003	0.004	0.018	-0.003	-0.008

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

2.4.2 The benchmark case with the NBER recession indicator

Considering the benchmark case with the NBER recession indicator, the results of the OLS regression, as reported in Tables 2.10 to 2.18 indicate that in most oil-exporting countries, including Canada, Norway, Russia, Iran, Saudi Arabia, the UAE, Qatar, Kuwait, Oman, Nigeria, and Colombia, the rise of crude oil prices has a positive impact on share prices returns, which is consistent with the findings from the benchmark case without the recession (NBER). This is in line with the findings of Guntner (2014), who shows that a rise in aggregate demand consistently leads to a rise in the real price of oil and the performance of real stock market returns in all countries, especially the oil exporters. There is also a consistency for this effect in those countries in which OLS regression indicates an insignificant effect following a rise in crude oil prices on the performance of the stock market, such as Ecuador, Iraq, Mexico, and Venezuela (negative effect) and Algeria and Brazil (positive effect). This positive or negative impact may be due to the source of changes. For example, Filis et al. (2011) shows that the aggregate demand-side oil price changes have a positive impact and the precautionary demand oil price changes have a negative impact on stock markets.

The results from the QR analysis with the NBER recession indicator show a significant effect on the performance of stock returns from a rise in crude oil prices in at least one quantile. This is consistent with what is found in the same analysis without the recession indicator but with only two exceptions, Algeria and Venezuela, which have no significant impact in any of their quantiles. For the following oil-importing countries, the findings point to the significant impact of increases in crude oil prices on stock market returns in both OLS and at least one quantile, but in terms of sign, they are different:

For Europe, the countries are Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, France, Germany, Greece, Iceland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Romania, Serbia, Slovenia, and Ukraine. In Asia and Oceania, they are Australia, Bahrain, India, Jordan, Lebanon, New Zealand, Singapore, South Korea, Turkey, and Vietnam. In Africa, they are Egypt, Ivory Coast, Mauritius, Morocco, South Africa, and Uganda. For North America, it is Canada. Finally, for South America, it is Argentina. The reason for the negative sign in Germany but the positive sign in almost all the other countries may be because shocks are related to precautionary demand, leading to a downturn impact on the performance of stock returns of oil-importing nations. This is consistent with the findings of Guntner (2014).

However, interesting results can be seen in the following countries, where we see that there is no relationship between crude oil price changes and stock market returns using OLS but a significant relationship in at least one quantile:

For Europe, the countries are Croatia, Finland, Hungary, Ireland, Portugal, Poland, Slovakia, Spain, Switzerland and the UK. In Asia and Oceania, they are Bangladesh, Hong Kong, Indonesia, Japan, Malaysia, Philippines, Sri Lanka, Taiwan, and Thailand. In Africa, they are Kenya, Namibia, Tanzania, Tunisia, and Zambia. In North America, they are Costa Rica and the US. For South-America, they are Peru and Chile. In addition to that, there are exceptions – Botswana, China, Malta, Pakistan, and Sweden– where this effect is not significant neither with OLS nor with QR. This could be explained by arguing that shocks in crude oil supply are less significant compared to other shocks such as global demand for entire industrial commodities and precautionary demand associated with concerns regarding shortfalls in future oil supply, which is in line with the findings of Kilian and Park (2009). The findings for the effect of crude oil price changes on almost all the world indices, such as MSCI ACWI, MSCI World, MSCI EAFE, MSCI Emerging Markets, and MSCI Europe, are positive and significant in OLS and at least one quantile, except for MSCI USA, where the effect estimated by the OLS is not significant. This is exactly the same as in the benchmark case without a recession indicator.

Table 2. 10: Benchmark NBER recession episodes– G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	0.024	***0.085***	*0.068*	*0.048*	0.021	0.010	0.026	0.016	0.011	0.005	0.008
Japan	0.019	-0.000	0.006	0.012	0.038	0.011	-0.002	-0.017	0.000	0.008	0.022
Canada	***0.073***	***0.132***	***0.107***	***0.085***	***0.077***	***0.081***	***0.088***	***0.073***	***0.060***	***0.055***	***0.046***
Germany	***-0.039***	-0.009	-0.001	-0.004	-0.025	***-0.034***	***-0.039***	***-0.044***	***-0.051***	***-0.054***	***-0.056***
UK	0.012	***0.033***	***0.053***	0.049	0.033	0.021	0.020	0.019	0.029	0.008	0.009
France	***0.084***	***0.139***	0.091	0.043	0.086	***0.104***	***0.109***	***0.101***	***0.107***	***0.094***	***0.099***
Italy	***0.106***	0.100	***0.099***	**0.143**	**0.160**	**0.186**	***0.191***	*0.188*	*0.157*	***0.141***	***0.138***
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	0.024	0.008	0.013	0.012	0.027	0.025	0.008	0.010	0.033	0.004	-0.002
Japan	0.019	0.022	***0.040***	0.029	0.022	0.016	0.008	-0.000	0.004	0.038	0.063
Canada	***0.073***	***0.046***	**0.052**	**0.053**	**0.064**	***0.061***	***0.055***	***0.050***	0.043	***0.074***	0.048
Germany	**-0.039**	**-0.056**	***-0.064***	***-0.072***	***-0.065***	***-0.060***	**-0.075**	**-0.091**	***-0.058***	-0.038	0.001
UK	0.012	0.009	0.003	0.012	0.009	-0.000	0.001	-0.012	0.003	0.015	-0.014
France	***0.084***	**0.099**	**0.103**	***0.094***	***0.077***	0.065	0.076	0.045	-0.011	0.014	-0.010
Italy	***0.106***	**0.138**	0.074	0.055	0.040	0.038	0.056	0.041	0.034	0.004	-0.039

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 11: Benchmark NBER recession episodes– Europe

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Spain	0.030	***0.077***	***0.098***	**0.132**	**0.103**	**0.086**	0.071	***0.091***	0.071	0.055	0.018
Netherlands	***0.055***	***0.130***	***0.108***	***0.084***	***0.069***	***0.059***	0.036	0.058	***0.069***	0.057	0.029
Sweden	0.033	0.030	0.015	0.047	0.046	0.044	0.050	0.061	0.045	0.049	0.033
Poland	0.058	0.034	0.115	0.090	0.081	***0.111***	***0.114***	0.081	0.092	0.090	0.079
Belgium	***0.047***	***0.082***	***0.064***	0.030	0.056	0.035	0.034	0.049	0.021	0.029	0.038
Austria	***0.142***	***0.190***	**0.189**	**0.248**	**0.181**	***0.150***	**0.142**	**0.109**	**0.104**	***0.121***	***0.099***
Denmark	**0.053**	0.012	0.038	***0.054***	0.049	0.051	0.055	0.078	***0.093***	0.064	0.060
Ireland	-0.000	0.042	0.033	-0.026	-0.000	-0.000	0.011	0.035	***0.057***	0.045	0.017
Finland	0.044	0.004	0.009	***0.091***	**0.094**	**0.108**	***0.076***	***0.076***	0.059	***0.102***	***0.088***
Portugal	0.033	***0.093***	0.064	0.091	0.033	0.005	0.006	0.021	0.015	0.034	0.001
Greece	***0.087***	***0.160***	***0.208***	***0.185***	***0.153***	0.111	0.075	0.044	0.038	0.016	0.025
Czech	***0.122***	0.023	***0.119***	**0.151**	**0.152**	**0.134**	**0.143**	***0.158***	***0.156***	***0.158***	***0.152***
Romania	***0.185***	***0.320***	***0.270***	***0.237***	***0.175***	***0.178***	***0.194***	***0.174***	***0.151***	***0.148***	***0.121***
Hungary	0.069	***0.214***	0.104	***0.125***	0.103	***0.110***	**0.094**	**0.097**	***0.116***	***0.143***	***0.134***
Slovakia	0.001	0.068	-0.035	-0.040	-0.010	-0.001	-0.005	0.009	0.033	0.044	0.064
Luxembourg	***0.159***	0.120	0.139	**0.180**	**0.171**	**0.144**	**0.146**	**0.133**	**0.141**	**0.159**	**0.168**
Bulgaria	***0.205***	***0.210***	***0.170***	0.116	***0.135***	0.085	***0.130***	***0.122***	0.112	***0.143***	***0.163***
Croatia	0.065	0.058	-0.060	0.002	0.066	0.070	**0.099**	0.090	0.091	0.072	**0.093**
Slovenia	***0.153***	***0.139***	***0.167***	***0.167***	***0.159***	***0.133***	**0.127**	0.102	0.098	0.091	0.048
Lithuania	***0.153***	***0.274***	***0.260***	0.131	0.067	0.068	***0.084***	***0.061***	***0.064***	***0.065***	***0.075***
Latvia	***0.078***	0.042	**0.100**	**0.096**	***0.116***	***0.100***	***0.095***	***0.096***	***0.070***	***0.070***	***0.059***
Estonia	***0.168***	***0.433***	0.212	0.124	0.103	***0.101***	***0.098***	0.089	0.087	***0.099***	***0.083***
Cyprus	***0.373***	0.430	***0.334***	***0.251***	***0.299***	***0.314***	**0.289**	**0.303**	***0.302***	***0.278***	0.227
Malta	0.017	-0.027	-0.017	0.005	-0.006	-0.006	-0.003	-0.019	-0.010	0.001	-0.001
Iceland	***0.228***	-0.004	0.072	0.085	0.075	0.047	0.028	0.020	0.046	0.052	0.033
Norway	***0.149***	0.118	***0.143***	***0.122***	***0.109***	***0.133***	***0.163***	***0.178***	***0.149***	***0.136***	***0.133***
Swiss	-0.036	**-0.082**	**-0.048**	-0.042	0.003	0.020	0.027	0.014	0.012	-0.001	-0.016
Serbia	***0.298***	***0.387***	***0.387***	***0.408***	***0.337***	0.185	0.183	***0.174***	0.154	0.154	0.123
Ukraine	***0.297***	*0.559*	***0.386***	**0.370**	**0.394**	**0.355**	***0.315***	*0.327*	***0.257***	***0.223***	***0.263***

Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	0.030	0.018	-0.002	-0.005	-0.021	-0.034	-0.028	-0.007	-0.049	-0.022	-0.000
Netherlands	***0.055***	0.029	0.040	0.026	-0.001	-0.014	-0.022	0.003	0.020	-0.006	-0.013
Sweden	0.033	0.033	0.011	0.006	0.002	-0.021	0.004	0.019	0.034	-0.005	-0.115
Poland	0.058	0.079	0.079	0.067	0.081	0.084	0.066	0.049	-0.040	-0.054	-0.100
Belgium	***0.047***	0.038	0.020	0.003	-0.005	0.010	0.037	0.036	-0.002	0.005	-0.035
Austria	***0.142***	***0.099***	***0.089***	***0.077***	***0.073***	**0.094**	**0.062**	**0.085**	0.060	0.089	***0.148***
Denmark	***0.053***	0.060	0.037	0.025	0.013	0.022	0.000	0.002	-0.021	-0.054	0.010
Ireland	-0.000	0.017	0.025	0.013	0.000	-0.000	-0.043	-0.041	-0.052	-0.030	***-0.072***
Finland	0.044	**0.088**	0.069	0.081	0.063	0.040	0.021	-0.021	-0.084	-0.077	-0.102
Portugal	0.033	0.001	-0.012	-0.024	-0.024	-0.005	0.017	0.009	0.011	0.038	0.015
Greece	***0.087***	0.025	-0.002	0.008	-0.019	-0.013	0.021	0.019	-0.006	-0.003	0.069
Czech	***0.122***	***0.152***	***0.158***	***0.174***	***0.171***	***0.146***	***0.122***	0.123	0.084	0.073	0.085
Romania	***0.185***	***0.121***	***0.142***	**0.197**	**0.202**	**0.202**	***0.191***	***0.185***	***0.157***	***0.193***	***0.205***
Hungary	0.069	***0.134***	***0.150***	***0.152***	***0.140***	***0.138***	***0.168***	0.102	0.058	0.072	-0.031
Slovakia	0.001	0.064	0.066	0.065	0.056	0.029	0.015	0.026	0.027	0.089	***0.150***
Luxembourg	***0.159***	***0.168***	**0.119**	***0.109***	***0.140***	***0.122***	***0.088***	***0.103***	0.072	0.065	0.074
Bulgaria	***0.205***	***0.163***	***0.158***	***0.140***	***0.165***	***0.198***	***0.210***	***0.234***	0.126	0.144	***0.343***
Croatia	0.065	**0.093**	**0.104**	0.085	0.096	0.090	0.027	0.010	0.047	0.014	-0.036
Slovenia	***0.153***	0.048	0.062	0.066	0.078	0.091	0.074	0.102	0.110	0.171	***0.269***
Lithuania	***0.153***	***0.075***	**0.082**	**0.078**	**0.101**	***0.094***	***0.111***	0.089	0.056	0.109	0.021
Latvia	***0.078***	**0.059**	0.047	0.044	0.053	0.059	0.032	-0.002	-0.071	-0.127	-0.076
Estonia	***0.168***	***0.083***	***0.084***	***0.105***	***0.091***	0.084	0.067	0.026	0.003	-0.009	-0.039
Cyprus	***0.373***	0.227	0.179	0.099	0.134	0.234	***0.323***	***0.331***	*0.340*	*0.448*	0.349
Malta	0.017	-0.001	-8E-05	-0.010	0.007	0.030	0.042	0.017	0.071	0.087	0.048
Iceland	***0.228***	0.033	0.038	0.025	0.013	0.023	0.026	-0.004	-0.004	0.039	0.065
Norway	***0.149***	***0.133***	***0.133***	***0.128***	***0.122***	***0.137***	***0.150***	***0.145***	***0.151***	***0.128***	***0.131***
Swiss	-0.036	-0.016	-0.017	-0.033	-0.039	-0.030	-0.037	***-0.061***	***-0.061***	***-0.102***	***-0.129***
Serbia	***0.298***	0.123	0.103	0.134	0.088	0.063	-0.001	-0.001	0.179	***0.278***	***0.484***
Ukraine	***0.297***	***0.263***	***0.220***	*0.227*	*0.171*	*0.173*	0.119	***0.143***	**0.182**	**0.221**	0.043

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 12: Benchmark NBER recession episodes– BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	0.045	-0.130	-0.006	0.038	0.084	***0.126***	**0.124**	**0.152**	**0.161**	***0.187***	***0.203***
Russia	***0.442***	**0.642**	**0.439**	**0.477**	***0.473***	***0.432***	***0.432***	***0.402***	***0.417***	***0.326***	***0.296***
India	***0.068***	-0.005	***0.094***	0.038	0.028	-0.015	0.007	-0.002	-0.003	0.016	0.031
China	0.006	0.059	-0.074	-0.016	-0.001	0.018	0.030	0.007	0.002	0.022	0.003
South Africa	***0.148***	*0.218*	*0.167*	***0.148***	***0.167***	***0.175***	**0.169**	**0.190**	**0.147**	***0.153***	***0.146***
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	0.045	***0.203***	**0.163**	**0.149**	**0.161**	0.140	0.166	0.100	0.036	-0.081	0.000
Russia	***0.442***	***0.296***	***0.269***	***0.239***	0.173	0.131	0.125	0.086	0.049	-0.005	0.214
India	***0.068***	0.031	0.034	0.023	0.035	0.062	***0.105***	***0.100***	***0.081***	0.049	0.076
China	0.006	0.003	0.002	-0.043	-0.020	-0.037	-0.022	-0.054	0.003	0.010	-0.000
South Africa	***0.148***	***0.146***	***0.161***	*0.129*	*0.129*	*0.128*	***0.151***	***0.125***	0.127	0.034	0.020

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 13: Benchmark NBER recession episodes– N11

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
South Korea	***0.078***	***0.150***	**0.108**	**0.070**	***0.089***	0.058	0.053	***0.070***	***0.098***	***0.082***	***0.087***
Mexico	-0.013	-0.090	***-0.098***	-0.004	0.017	-0.015	0.071	0.075	0.058	0.036	0.024
Indonesia	0.019	***0.216***	0.045	-0.038	0.008	0.004	0.030	0.008	0.012	0.009	-0.004
Turkey	***0.217***	0.108	0.072	0.023	0.065	0.059	0.086	0.090	0.120	***0.170***	***0.200***
Philippines	-0.047	0.042	-0.065	-0.094	***-0.089***	-0.075	-0.056	0.003	-0.007	-0.017	0.012
Pakistan	0.021	0.225	0.065	0.020	-0.007	0.008	-0.023	-0.015	-0.013	-0.018	-0.010
Bangladesh	0.013	***0.087***	0.056	***0.060***	0.048	0.056	0.018	0.003	0.009	0.013	0.004
Egypt	***0.238***	***0.338***	***0.232***	***0.226***	**0.220**	**0.232**	**0.183**	***0.133***	***0.163***	***0.183***	***0.149***
Vietnam	*0.150*	0.044	***0.228***	0.122	0.064	0.115	***0.133***	0.121	0.114	*0.128*	*0.136*
Iran	***0.078***	***0.121***	**0.151**	**0.099**	0.064	***0.063***	0.049	0.050	0.046	***0.062***	***0.064***
Nigeria	0.330	0.430	0.370	0.233	0.174	0.177	0.177	0.156	0.156	0.131	0.183
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	***0.078***	***0.087***	**0.062**	**0.074**	***0.085***	0.067	***0.100***	***0.102***	***0.133***	-0.014	0.014
Mexico	-0.013	0.024	0.042	0.015	0.009	-0.000	-0.009	0.009	-0.025	-0.073	0.049
Indonesia	0.019	-0.004	-0.014	-0.006	0.026	0.002	-0.004	0.002	0.033	0.037	-0.080
Turkey	***0.217***	***0.200***	**0.245**	**0.250**	**0.264**	***0.237***	*0.207*	*0.299*	***0.322***	***0.339***	0.165
Philippines	-0.047	0.012	0.034	0.026	0.038	-0.015	-0.017	-0.017	-0.043	***-0.166***	***-0.267***
Pakistan	0.021	-0.010	0.000	0.020	0.042	0.025	0.011	0.017	0.030	0.046	-0.034
Bangladesh	0.013	0.004	-0.007	-0.014	-0.000	-0.010	-0.026	-0.055	-0.040	-0.107	0.009
Egypt	***0.238***	***0.149***	***0.187***	***0.265***	***0.243***	**0.258**	**0.269**	0.176	0.082	0.138	***0.168***
Vietnam	***0.150***	*0.136*	*0.145*	0.081	0.061	0.062	0.006	0.131	0.206	***0.199***	-0.047
Iran	***0.078***	***0.064***	***0.084***	0.050	0.054	0.061	**0.076**	**0.081**	***0.102***	0.004	0.005
Nigeria	0.330	0.183	0.184	0.133	0.140	0.175	0.212	0.194	0.139	0.149	0.294

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 14: Benchmark NBER recession episodes– OPEC

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Panel A: Low-Medium Quantiles											
Iran	***0.078***	**0.121**	**0.151**	**0.099**	0.064	***0.063***	0.049	0.050	0.046	***0.062***	***0.064***
Nigeria	0.330	0.430	0.370	0.233	0.174	0.177	0.177	0.156	0.156	0.131	0.183
Saudi Arabia	***0.195***	0.384	***0.252***	**0.239**	**0.226**	**0.236**	***0.207***	***0.198***	***0.209***	***0.171***	***0.147***
Iraq	-0.061	0.057	***0.256***	***0.182***	0.120	0.008	-0.014	-0.030	0.001	0.006	-0.046
Qatar	***0.167***	0.009	0.073	***0.096***	***0.154***	***0.123***	***0.109***	***0.130***	***0.107***	***0.087***	0.083
UAE	***0.139***	0.032	0.141	0.147	***0.147***	***0.171***	***0.160***	0.117	***0.119***	0.106	***0.143***
Kuwait	***0.118***	0.132	0.155	0.116	***0.167***	**0.166**	**0.179**	**0.140**	***0.141***	***0.152***	***0.119***
Algeria	0.004	0.095	0.020	0.020	0.013	0.009	0.000	0.000	0.000	0.000	0.000
Ecuador	-0.021	*-0.099*	*-0.070*	***-0.059***	***-0.040***	-0.032	***-0.045***	*-0.044*	*-0.038*	***-0.040***	-0.035
Venezuela	-0.094	-0.017	-0.030	-0.043	-0.052	-0.048	-0.027	-0.020	-0.030	-0.049	-0.044
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	**0.078**	**0.064**	***0.084***	0.050	0.054	0.061	***0.076***	***0.081***	***0.102***	0.004	0.005
Nigeria	0.330	0.183	0.184	0.133	0.140	0.175	0.212	0.194	0.139	0.149	0.294
Saudi Arabia	***0.195***	***0.147***	***0.165***	***0.166***	***0.186***	***0.165***	***0.161***	***0.165***	***0.193***	0.211	0.222
Iraq	-0.061	-0.046	-0.028	0.001	0.022	-0.005	0.054	0.075	0.097	***0.256***	0.168
Qatar	***0.167***	0.083	***0.121***	**0.159**	**0.173**	***0.208***	**0.230**	**0.186**	0.129	***0.200***	0.015
UAE	**0.139**	***0.143***	***0.126***	***0.136***	***0.120***	0.098	0.097	***0.134***	0.123	0.099	0.147
Kuwait	**0.118**	*0.119*	*0.097*	***0.089***	0.059	0.059	***0.066***	0.034	0.001	-0.061	-0.066
Algeria	0.004	0.000	0.000	0.000	-0.010	-0.011	-0.035	-0.031	-0.010	-0.010	-0.035
Ecuador	-0.021	-0.035	-0.026	-0.019	-0.015	-0.004	-0.010	-0.014	-0.000	0.006	0.048
Venezuela	-0.094	-0.044	-0.024	-0.035	-0.037	-0.050	-0.151	-0.139	-0.157	-0.141	0.058

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 15: Benchmark NBER recession episodes– Asia and Oceania

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Panel A: Low-Medium Quantiles											
Australia	***0.075***	***0.185***	***0.166***	**0.139**	**0.137**	**0.107**	**0.105**	***0.067***	***0.069***	***0.070***	***0.063***
Hong Kong	0.021	***0.058***	0.078	0.054	0.015	0.018	0.032	0.021	0.006	0.007	0.007
Malaysia	0.040	0.038	-0.009	-0.008	0.016	0.048	***0.058***	***0.064***	***0.077***	0.053	0.043
New Zealand	***0.057***	***0.140***	0.086	***0.071***	0.069	***0.089***	0.076	***0.089***	0.035	0.031	0.026
Thailand	0.026	***-0.128***	0.061	0.034	0.065	***0.087***	0.068	***0.083***	0.063	***0.074***	0.062
Singapore	***0.150***	**0.208**	**0.208**	***0.189***	***0.176***	0.129	***0.145***	***0.119***	**0.065**	**0.067**	***0.083***
Taiwan	-0.045	-0.192	0.004	-0.014	-0.014	-0.003	-0.010	0.002	-0.015	-0.020	0.003
Bahrain	***0.046***	0.031	-0.007	-0.011	-0.006	0.017	0.032	0.025	0.040	***0.061***	0.057
Jordan	***0.079***	0.073	0.048	0.053	0.030	0.012	0.042	0.012	0.011	0.026	0.031
Lebanon	***0.119***	0.112	***0.127***	0.052	***0.068***	0.053	0.040	0.035	***0.047***	0.026	0.035
Oman	***0.095***	0.080	0.087	0.101	*0.101*	*0.086*	0.058	0.074	***0.089***	***0.081***	0.071
Sri Lanka	0.026	0.066	0.063	***0.078***	0.055	0.025	0.025	0.033	0.023	0.013	0.023
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	***0.075***	***0.063***	***0.043***	***0.047***	0.036	0.024	0.014	0.032	0.001	0.037	0.005
Hong Kong	0.021	0.007	0.015	0.025	0.040	0.034	0.064	0.098	0.098	0.088	0.015
Malaysia	0.040	0.043	0.033	0.057	0.069	0.082	***0.099***	0.042	0.000	0.037	-0.048
New Zealand	***0.057***	0.026	0.020	0.032	0.031	0.022	0.017	0.011	0.003	-0.015	0.041
Thailand	0.026	0.062	0.043	0.036	0.029	0.023	0.008	-0.002	-0.011	-0.035	0.055
Singapore	***0.150***	*0.083*	*0.069*	*0.067*	***0.068***	***0.077***	**0.090**	**0.097**	**0.120**	***0.189***	***0.234***
Taiwan	-0.045	0.003	0.004	-0.024	-0.045	***-0.084***	-0.075	-0.031	0.005	0.036	-0.089
Bahrain	***0.046***	0.057	0.042	0.056	0.036	0.019	0.046	0.053	0.076	0.050	0.070
Jordan	***0.079***	0.031	0.029	0.022	0.018	0.030	0.039	0.015	0.001	0.005	0.019
Lebanon	***0.119***	0.035	0.040	***0.058***	**0.057**	**0.075**	***0.078***	***0.118***	***0.148***	***0.173***	***0.295***
Oman	***0.095***	0.071	***0.083***	0.069	0.071	0.073	0.031	0.075	0.091	0.081	0.197
Sri Lanka	0.026	0.023	0.022	0.033	0.027	0.027	0.014	0.046	0.050	-0.031	-0.075

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 16: Benchmark NBER recession episodes–Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	0.001	-0.002	0.000	0.027	-0.005	0.006	0.005	0.011	0.014	0.016	0.020
Cote 'Ivoire	***0.067***	0.011	***0.072***	0.055	***0.075***	***0.087***	***0.072***	***0.069***	0.048	0.048	0.027
Kenya	0.002	**-0.183**	-0.045	-0.030	-0.006	-0.018	0.001	-0.007	-0.008	-0.023	-0.000
Mauritius	***0.063***	0.045	0.015	0.004	0.006	0.011	0.017	0.032	*0.049*	*0.059*	***0.067***
Morocco	***0.082***	***0.102***	***0.109***	***0.105***	**0.103**	**0.113**	**0.115**	**0.126**	***0.120***	***0.096***	***0.120***
Namibia	-0.004	-0.012	0.000	-0.011	-0.006	-0.003	-0.002	-0.006	-0.014	-0.018	-0.017
Tanzania	0.018	0.045	0.070	0.060	0.037	***0.039***	0.032	0.030	***0.035***	0.030	0.019
Tunisia	0.000	0.030	-0.001	***0.051***	0.041	0.034	0.018	0.002	0.011	0.005	-0.004
Uganda	***0.118***	-0.091	0.033	0.036	0.063	0.088	0.104	0.119	**0.138**	**0.155**	***0.192***
Zambia	0.044	***0.177***	0.022	0.007	0.028	0.015	0.009	0.020	0.029	0.032	0.059
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	0.001	0.020	0.021	0.014	0.024	0.007	0.015	0.017	-0.023	-0.068	-0.077
Cote 'Ivoire	***0.067***	0.027	0.015	0.025	0.033	0.008	0.037	0.028	0.050	0.071	***0.259***
Kenya	0.002	-0.000	0.019	0.010	0.014	0.017	0.025	0.001	0.081	***0.147***	***0.249***
Mauritius	***0.063***	***0.067***	***0.066***	**0.078**	**0.078**	**0.081**	***0.082***	***0.083***	0.065	0.056	0.077
Morocco	*0.082*	*0.120*	***0.118***	***0.119***	***0.121***	0.066	0.058	0.066	0.021	0.008	-0.020
Namibia	-0.004	-0.017	-0.015	-0.006	-0.001	-0.011	-0.023	-0.033	***-0.033***	***-0.044***	-0.019
Tanzania	0.018	0.019	0.016	0.016	0.020	0.007	0.013	0.013	-0.021	-0.045	-0.059
Tunisia	0.000	-0.004	-0.011	-0.007	-0.003	-0.006	0.009	0.009	-0.044	-0.053	-0.110
Uganda	***0.118***	**0.192**	***0.174***	***0.153***	0.093	0.107	0.091	0.091	**0.106**	**0.148**	***0.258***
Zambia	0.044	0.059	0.054	0.055	0.045	0.015	0.034	0.023	0.064	0.113	0.077

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 17: Benchmark NBER recession episodes–American countries

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Chile	0.021	**0.095**	0.059	0.037	***0.065***	0.053	0.055	0.058	0.027	0.002	0.011
Argentina	***0.173***	**0.371**	**0.360**	***0.195***	***0.200***	***0.255***	***0.290***	***0.272***	***0.263***	***0.246***	***0.186***
Colombia	***0.180***	***0.226***	**0.232**	**0.204**	**0.208**	***0.214***	***0.161***	***0.152***	***0.153***	***0.153***	0.129
Costa Rica	0.023	7E-05	-0.029	-0.009	0.009	-0.011	-0.021	-0.023	-0.001	0.005	0.021
Peru	0.032	0.020	-0.019	0.000	0.038	***0.099***	**0.076**	**0.080**	**0.081**	*0.083*	0.070
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	0.021	0.011	0.005	0.011	0.013	0.027	0.010	-0.002	-0.028	0.054	0.012
Argentina	***0.173***	**0.186**	**0.176**	0.118	0.088	0.076	0.095	0.036	0.032	***0.171***	-0.016
Colombia	***0.180***	0.129	***0.156***	***0.166***	**0.161**	**0.161**	**0.182**	**0.156**	**0.121**	0.091	0.042
Costa Rica	0.023	0.021	0.027	0.036	0.019	0.012	-0.022	0.000	0.047	0.086	***0.151***
Peru	0.032	0.070	0.043	0.044	0.025	0.038	-0.039	-0.005	-0.097	-0.122	***-0.469***

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 18: Benchmark NBER recession episodes– Global indices

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
MSCI ACWI	***0.051***	***0.146***	***0.109***	***0.142***	0.067	0.078	***0.079***	***0.073***	***0.082***	***0.062***	***0.054***
MSCI World	***0.035***	***0.107***	0.053	**0.068**	**0.058**	**0.051**	***0.039***	***0.045***	0.043	***0.032***	***0.031***
MSCI EAFE	***0.041***	***0.134***	***0.098***	***0.091***	***0.072***	***0.067***	***0.062***	***0.057***	***0.045***	***0.036***	***0.034***
MSCI EM	***0.109***	***0.225***	***0.236***	***0.198***	**0.133**	**0.099**	***0.093***	***0.095***	0.086	0.084	0.074
MSCI EU	***0.048***	***0.122***	0.090	***0.083***	***0.076***	***0.070***	***0.054***	***0.051***	*0.050*	*0.038*	***0.030***
MSCI USA	0.023	***0.067***	0.053	0.035	0.023	0.008	0.027	0.017	0.013	0.007	0.010
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	***0.051***	***0.054***	0.043	0.037	0.030	0.029	0.037	0.016	0.007	-0.006	-0.014
MSCI World	***0.035***	***0.031***	***0.020***	0.016	0.022	0.023	0.021	0.003	-0.001	-0.030	-0.026
MSCI EAFE	***0.041***	**0.034**	***0.031***	0.023	0.020	0.014	0.008	0.009	0.002	-0.023	-0.044
MSCI EM	***0.109***	0.074	0.061	0.048	0.055	0.047	0.046	0.074	***0.093***	*0.107*	0.055
MSCI EU	***0.048***	***0.030***	0.025	0.015	0.021	0.022	0.001	0.003	-0.001	-0.013	0.020
MSCI USA	0.023	0.010	0.018	0.012	0.026	0.022	0.005	0.009	0.014	0.004	-0.001

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

2.4.3 The analysis with lags

Looking at Tables 2.19 to 2.36 for the benchmark cases with and without the NBER recession indicator, as well as Tables B.1 to B.72 in appendix B, this study ran the analysis with lags 1, 3, 6, 9, and 12 of oil price changes. The findings reveal that the increase in the lag length leads to decreases in the number of significant quantiles. Moreover, these results indicate that there are more significant quantiles when we just consider the contemporaneous impact of crude oil price changes on stock market returns, highlighting the importance of shocks in crude oil price and its effect on the economy. This study also shows that there is a higher chance of changes in crude oil price having a significant effect on the performance of the stock market in lower and higher quantiles. The most interesting consideration is whether we have different results between OLS regressions and QR. For example, looking at different lags and ignoring the NBER recession indicator, in the following oil-importing countries, no relationship exists using OLS, but a significant relationship is shown in at least one quantile:

Lag 1: For Europe, the countries are Belgium, Denmark, Estonia, Finland, , Hungary, Lithuania, Latvia, Malta, Netherlands, Romania, Slovakia, Spain and Sweden. In Asia and Oceania, they are Australia, China, Hong Kong, Indonesia, Jordan, Malaysia, Pakistan, Singapore, Sri Lanka, Taiwan, Turkey and Vietnam. In Africa, they are Botswana, Kenya, and Tunisia. In North America, they are Costa Rica and the US. For South-America, they are Brazil, Chile, and Colombia.

Lag 3: For Europe, the countries are Austria, Belgium, Bulgaria, Croatia, Denmark, Estonia, Finland, Greece, Hungry, Italy, Luxembourg, Netherlands, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, and the UK. In Asia and Oceania, they are Australia, Bahrain, Japan, Jordan, Malaysia, New Zealand, Pakistan, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Turkey, and Vietnam. In Africa, they are Egypt, Ivory Coast, Kenya, Namibia, South Africa, and Tanzania. In North America, it is the US. For South-America, they are Brazil and Chile.

Table 2. 19: Benchmark Lag 1 – G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	-0.022	-0.009	-0.001	-0.008	-0.023	-0.008	-0.009	-0.013	-0.018	-0.023	***-0.027***
Japan	***0.046***	0.042	0.044	***0.052***	***0.042***	***0.041***	0.060	0.048	0.055	0.042	0.039
Canada	-0.010	-0.014	0.006	0.002	-0.007	-0.013	-0.016	***-0.021***	***-0.025***	***-0.030***	-0.023
Germany	***-0.049***	-0.042	-0.009	-0.053	-0.033	-0.042	-0.063	-0.052	-0.047	-0.042	-0.032
UK	***-0.052***	-0.029	***-0.064***	**-0.079**	**-0.075**	**-0.078**	***-0.068***	***-0.082***	*-0.093*	*-0.070*	***-0.071***
France	-0.032	-0.031	-0.022	0.006	0.005	-0.007	-0.005	-0.001	-0.012	-0.032	-0.020
Italy	***-0.065***	0.006	-0.048	0.010	0.027	-0.026	-0.050	-0.071	***-0.104***	-0.088	-0.082
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	-0.022	***-0.027***	***-0.030***	**-0.034**	**-0.036**	**-0.042**	***-0.048***	***-0.052***	***-0.056***	-0.034	-0.033
Japan	***0.046***	0.039	0.032	0.019	0.038	0.026	0.025	0.030	0.009	0.030	0.035
Canada	-0.010	-0.023	***-0.038***	***-0.040***	***-0.045***	-0.029	-0.018	-0.010	0.005	0.008	0.047
Germany	***-0.049***	-0.032	-0.032	-0.018	-0.023	***-0.027***	***-0.034***	***-0.041***	***-0.049***	***-0.045***	-0.038
UK	***-0.052***	**-0.071**	**-0.075**	***-0.053***	-0.043	-0.037	-0.039	***-0.054***	-0.036	***-0.045***	***-0.053***
France	-0.032	-0.020	-0.023	-0.038	-0.030	-0.044	-0.043	-0.056	-0.069	-0.079	-0.074
Italy	***-0.065***	-0.082	-0.088	-0.055	-0.081	*-0.094*	*-0.100*	***-0.113***	***-0.105***	***-0.151***	***-0.112***

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 20: Benchmark Lag 1 – Europe

Panel A: Low-Medium Quantiles

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Spain	-0.024	0.035	0.013	0.065	0.008	0.011	-0.039	-0.065	-0.053	-0.056	-0.054
Netherlands	0.007	***0.105***	0.020	0.009	0.022	0.035	0.047	0.029	0.032	0.013	0.005
Sweden	-0.005	-0.047	0.100	***0.117***	***0.093***	0.058	0.026	0.029	0.026	-0.030	-0.029
Poland	***0.083***	0.227	***0.169***	***0.114***	*0.109*	*0.119*	*0.122*	0.087	***0.092***	***0.109***	***0.106***
Belgium	-0.011	0.003	-0.017	0.021	0.009	-0.023	-0.010	-0.008	-0.013	-0.012	-0.029
Austria	0.017	-0.027	0.101	0.099	0.017	0.009	0.015	0.013	0.019	0.021	-0.002
Denmark	0.036	***0.057***	***0.124***	0.091	0.062	0.034	0.043	0.029	0.033	0.028	0.001
Ireland	-0.012	0.017	0.000	0.024	0.000	0.012	-0.036	-0.042	-0.035	-0.047	-0.037
Finland	0.052	0.041	0.062	***0.117***	**0.131**	**0.096**	**0.105**	***0.096***	0.035	0.074	0.061
Portugal	-0.031	-0.084	-0.006	-0.021	-0.023	-0.020	-0.036	-0.021	-0.032	-0.043	-0.030
Greece	***-0.107***	***-0.098***	***-0.101***	***-0.112***	-0.082	-0.035	-0.068	-0.073	-0.101	-0.107	-0.081
Czech	0.022	0.171	0.108	0.014	0.015	0.054	0.050	0.047	0.020	-0.013	-0.021
Romania	0.010	0.003	***-0.154***	-0.085	-0.013	-0.039	-0.010	-0.024	-0.055	-0.053	-0.032
Hungary	0.062	0.261	0.133	***0.147***	***0.139***	0.092	0.078	0.057	0.062	0.071	0.047
Slovakia	-0.003	0.062	-0.015	-0.027	-0.029	-0.021	-0.030	-0.033	-0.041	***-0.068***	-0.060
Luxembourg	***0.131***	***0.266***	***0.269***	***0.197***	***0.189***	***0.117***	***0.142***	***0.120***	0.088	0.079	0.059
Bulgaria	**0.174**	0.366	0.110	0.021	0.022	-0.028	0.032	0.055	0.078	***0.095***	***0.095***
Croatia	***0.155***	***0.353***	***0.217***	***0.212***	***0.153***	***0.107***	***0.105***	***0.102***	0.082	***0.091***	***0.096***
Slovenia	***0.105***	***0.201***	***0.199***	0.120	0.088	0.076	0.046	0.022	0.022	0.016	0.030
Lithuania	0.047	***0.188***	0.156	0.017	0.016	-0.007	0.015	0.031	0.021	0.003	0.024
Latvia	0.028	***0.156***	0.035	0.020	0.060	0.065	0.034	0.031	0.003	-0.007	-0.017
Estonia	0.086	***0.403***	0.276	***0.239***	0.129	0.060	0.049	0.051	0.063	0.048	0.066
Cyprus	***0.275***	***0.419***	**0.189**	***0.274***	**0.333**	**0.291**	0.255	0.211	0.143	0.134	0.085
Malta	0.035	***0.115***	0.003	0.015	0.000	0.010	0.011	-0.019	-0.018	-0.010	0.001
Iceland	***0.104***	0.075	0.038	0.034	0.024	-0.005	-0.021	-0.006	-0.012	-0.024	-0.045
Norway	-0.000	0.019	0.020	0.017	0.015	0.037	0.030	0.002	-0.028	-0.014	-0.028
Swiss	*-0.039*	***-0.070***	-0.007	0.020	-0.006	-0.011	-0.036	-0.035	-0.042	-0.035	-0.038
Serbia	***0.144***	0.021	-0.069	0.021	**0.149**	0.089	0.088	0.085	0.090	0.087	0.063
Ukraine	0.034	-0.176	0.015	0.024	-0.030	-0.053	-0.029	0.018	0.072	0.004	0.029

Panel B: Medium-High Quantiles

	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	-0.024	-0.054	-0.048	-0.038	-0.053	-0.052	-0.053	-0.011	-0.037	-0.086	***-0.096***
Netherlands	0.007	0.005	0.007	0.021	0.008	0.005	0.001	-0.025	-0.028	***-0.078***	***-0.129***
Sweden	-0.005	-0.029	-0.013	0.000	-0.012	-0.001	-0.004	-0.043	***-0.067***	-0.059	***-0.109***
Poland	***0.083***	***0.106***	0.044	0.057	0.071	0.016	0.054	0.093	0.039	0.011	-0.000
Belgium	-0.011	-0.029	-0.037	-0.018	-0.038	-0.026	-0.046	-0.042	-0.046	***-0.087***	-0.041
Austria	0.017	-0.002	0.013	0.002	-0.011	-0.007	-0.005	-0.026	-0.002	0.004	0.030
Denmark	0.036	0.001	-0.006	-0.002	0.014	0.013	0.020	0.029	0.009	0.019	-0.011
Ireland	-0.012	-0.037	-0.026	-0.035	-0.031	-0.027	-0.046	-0.045	-0.032	-0.014	-0.005
Finland	0.052	0.061	0.048	0.013	0.020	-0.011	-0.008	-0.004	0.045	0.055	0.064
Portugal	-0.031	-0.030	-0.021	-0.039	-0.039	-0.055	-0.066	-0.035	-0.041	-0.060	-0.074
Greece	***-0.107***	-0.081	-0.063	-0.107	***-0.139***	-0.061	-0.049	-0.062	-0.108	-0.127	***-0.207***
Czech	0.022	-0.021	-0.037	-0.044	-0.035	0.008	-0.000	0.028	-0.028	-0.022	0.035
Romania	0.010	-0.032	-0.018	0.022	0.034	0.107	0.109	0.084	0.085	0.055	-0.054
Hungary	0.062	0.047	0.066	0.044	0.038	-0.016	-0.036	0.003	-0.017	-0.039	0.009
Slovakia	-0.003	-0.060	-0.049	-0.040	-0.038	-0.012	-0.033	-0.061	-0.033	-0.071	-0.085
Luxembourg	***0.131***	0.059	0.047	0.043	0.024	0.052	0.046	0.066	0.053	0.043	0.099
Bulgaria	***0.174***	**0.095**	**0.108**	***0.111***	***0.125***	0.073	0.069	-0.024	-0.101	-0.062	0.118
Croatia	**0.155**	**0.096**	0.074	0.059	0.078	0.089	0.098	0.056	-0.015	-0.049	0.024
Slovenia	***0.105***	0.030	0.033	0.033	0.043	0.073	0.088	0.068	0.091	0.057	0.137
Lithuania	0.047	0.024	0.020	0.016	-0.006	-0.018	-0.059	-0.034	0.001	-0.077	-0.062
Latvia	0.028	-0.017	0.002	0.016	-0.001	-0.000	0.025	0.058	0.061	0.017	0.068
Estonia	0.086	0.066	0.062	***0.078***	*0.086*	*0.077*	0.031	0.004	0.011	0.043	-0.073
Cyprus	***0.275***	0.085	0.075	0.091	0.067	0.069	0.069	0.195	0.255	0.374	***0.620***
Malta	0.035	0.001	0.009	0.026	0.032	0.043	**0.079**	**0.099**	***0.127***	0.092	0.023
Iceland	***0.104***	-0.045	-0.034	-0.040	-0.023	0.003	-0.021	-0.009	0.051	0.036	0.045
Norway	-0.000	-0.028	-0.037	-0.034	-0.030	-0.031	-0.039	-0.011	-0.015	-0.019	-0.024
Swiss	**-0.039**	-0.038	-0.026	-0.034	-0.048	-0.038	-0.017	-0.030	-0.046	-0.047	***-0.061***
Serbia	**0.144**	0.063	0.060	0.070	0.112	0.060	0.139	*0.278*	**0.339**	**0.382**	***0.439***
Ukraine	0.034	0.029	0.062	0.038	0.085	0.110	0.101	0.172	0.150	0.018	0.031

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 21: Benchmark Lag 1 – BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	-0.021	0.138	***0.173***	***0.153***	***0.148***	***0.136***	***0.173***	***0.156***	***0.135***	0.122	0.105
Russia	-0.108	***0.337***	0.230	0.258	***0.425***	***0.383***	***0.440***	***0.392***	***0.466***	***0.413***	***0.438***
India	***0.112***	***0.170***	0.087	**0.141**	***0.169***	***0.162***	***0.135***	***0.133***	***0.107***	***0.123***	***0.125***
China	0.101	***0.242***	***0.356***	0.165	0.129	0.128	0.087	0.110	0.105	***0.131***	***0.154***
South Africa	-0.021	-0.103	-0.027	-0.018	-0.011	-0.011	-0.026	-0.043	-0.027	-0.016	-0.013
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	-0.021	0.105	0.054	0.021	-0.026	-0.110	***-0.118***	***-0.189***	-0.123	***-0.422***	***-0.456***
Russia	-0.108	***0.438***	***0.426***	**0.330**	**0.269**	**0.216**	***0.216***	0.122	0.022	0.011	-0.131
India	***0.112***	*0.125*	*0.107*	*0.121*	***0.099***	0.072	0.067	0.048	0.059	0.031	***0.123***
China	0.101	***0.154***	***0.124***	***0.130***	**0.109**	**0.105**	0.044	0.080	0.011	-0.058	-0.097
South Africa	-0.021	-0.013	-0.020	-0.013	-0.016	-0.030	-0.036	-0.044	-0.037	-0.037	0.012

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 22: Benchmark Lag 1 – N11

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
South Korea	***-0.056***	-0.045	-0.036	-0.049	-0.066	-0.039	-0.052	-0.050	***-0.057***	-0.046	***-0.056***
Mexico	0.016	-0.014	0.009	0.041	0.058	0.071	0.060	***0.080***	***0.088***	0.056	0.051
Indonesia	0.040	0.111	***0.134***	0.051	0.047	0.060	0.066	0.027	0.008	0.003	0.017
Turkey	0.012	0.069	**0.115**	0.103	0.119	0.025	0.020	-0.008	0.013	0.063	0.025
Philippines	-0.042	-0.053	-0.042	0.019	-0.002	-0.012	-0.020	-0.012	-0.008	-0.003	0.030
Pakistan	0.021	-0.039	-0.004	0.048	***0.093***	0.065	0.038	0.058	0.038	0.029	0.037
Bangladesh	***0.081***	0.145	0.038	0.037	0.009	-0.012	-0.024	-0.003	0.001	-0.011	0.016
Egypt	0.027	0.057	0.076	0.073	-0.021	-0.032	-0.030	-0.010	0.045	0.013	-0.000
Vietnam	-0.038	***-0.266***	*-0.145*	*-0.118*	-0.067	-0.066	-0.074	-0.023	5E-05	0.016	0.021
Iran	***0.063***	***0.057***	0.027	0.056	0.060	***0.077***	***0.091***	***0.067***	0.051	***0.060***	0.059
Nigeria	**0.199**	**0.319**	***0.369***	***0.324***	0.243	***0.253***	0.150	0.130	***0.180***	**0.187**	**0.199**
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	***-0.056***	*-0.056*	***-0.062***	-0.053	***-0.081***	-0.066	-0.062	-0.091	-0.095	-0.072	-0.058
Mexico	0.016	0.051	0.047	0.029	0.061	0.088	***0.106***	0.101	0.081	-0.009	-0.087
Indonesia	0.040	0.017	0.020	0.016	0.022	0.043	0.018	0.023	0.048	-0.002	-0.077
Turkey	0.012	0.025	-0.009	-0.050	-0.077	-0.057	-0.109	-0.081	-0.055	-0.141	-0.019
Philippines	-0.042	0.030	0.023	0.002	-0.017	-0.011	-0.013	-0.010	-0.006	-0.081	-0.063
Pakistan	0.021	0.037	0.050	0.049	0.032	0.005	-0.013	-0.029	-0.065	-0.086	***-0.205***
Bangladesh	***0.081***	0.016	0.048	0.068	***0.102***	***0.096***	**0.083**	**0.112**	**0.162**	***0.222***	0.166
Egypt	0.027	-0.000	-0.032	-0.019	-0.043	0.003	0.040	-0.018	0.003	0.001	0.123
Vietnam	-0.038	0.021	0.020	0.027	-0.010	-0.053	-0.124	-0.131	-0.115	-0.012	0.120
Iran	***0.063***	0.059	0.059	0.063	0.044	0.044	0.036	0.063	0.047	0.030	0.019
Nigeria	**0.199**	**0.199**	0.161	0.145	0.152	0.097	0.101	0.160	0.202	0.123	0.092

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 23: Benchmark Lag 1 – OPEC

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Iran	***0.063***	***0.057***	0.027	0.056	0.060	***0.077***	***0.091***	***0.067***	0.051	***0.060***	0.059
Nigeria	***0.199***	***0.319***	***0.369***	***0.324***	0.243	***0.253***	0.150	0.130	***0.180***	***0.187***	***0.199***
Saudi Arabia	***0.129***	***0.303***	***0.309***	***0.173***	***0.143***	***0.147***	***0.105***	***0.110***	***0.104***	***0.099***	***0.107***
Iraq	***0.538***	0.071	***0.190***	0.059	-0.024	-0.045	0.023	-0.045	-0.057	-0.092	-0.077
Qatar	***0.110***	0.131	***0.186***	***0.150***	***0.087***	***0.081***	***0.078***	***0.086***	0.049	0.047	0.066
UAE	***0.090***	***0.212***	0.121	0.049	0.005	0.001	-0.004	-0.006	0.009	0.032	0.023
Kuwait	***0.096***	***0.180***	***0.165***	***0.164***	0.079	0.075	0.091	0.065	0.033	0.043	0.046
Algeria	0.025	-0.003	-0.011	0.019	0.026	0.018	0.016	0.007	0.000	0.000	0.000
Ecuador	0.000	-0.022	-0.033	-0.034	-0.025	0.000	-0.015	0.014	-0.010	-0.006	-0.002
Venezuela	0.074	0.178	-0.009	0.036	0.056	0.001	-0.009	0.002	0.010	0.008	0.055
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	***0.063***	0.059	0.059	0.063	0.044	0.044	0.036	0.063	0.047	0.030	0.019
Nigeria	***0.199***	***0.199***	0.161	0.145	0.152	0.097	0.101	0.160	0.202	0.123	0.092
Saudi Arabia	*0.129*	*0.107*	***0.108***	***0.107***	0.077	***0.107***	0.050	0.040	0.048	0.023	0.043
Iraq	***0.538***	-0.077	-0.049	-0.068	-0.075	-0.007	-0.055	-0.128	***-0.166***	-0.059	0.676
Qatar	***0.110***	0.066	0.079	0.087	0.089	***0.107***	0.101	0.104	0.083	0.104	0.144
UAE	***0.090***	0.023	0.002	-0.004	0.006	0.059	0.097	0.050	0.096	0.093	0.236
Kuwait	***0.096***	0.046	0.029	0.058	0.048	0.035	0.058	0.044	0.075	0.111	0.007
Algeria	0.025	0.000	0.000	0.000	0.005	-0.009	-0.015	-0.002	0.008	0.029	***0.059***
Ecuador	0.000	-0.002	0.005	0.006	0.009	-0.004	0.021	0.034	***0.056***	0.035	***0.097***
Venezuela	0.074	0.055	0.064	0.093	0.086	0.064	0.095	0.110	0.171	***0.204***	-0.001

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 24: Benchmark Lag 1 –Asia and Oceania

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Australia	0.015	0.021	***0.055***	***0.080***	***0.077***	0.052	0.052	0.029	0.014	0.016	-0.009
Hong Kong	-0.004	0.008	***-0.036***	***-0.057***	***-0.059***	0.005	-0.015	-0.011	0.006	0.013	0.005
Malaysia	0.034	-0.052	0.075	***0.084***	**0.117**	**0.102**	**0.088**	0.052	***0.069***	0.050	0.038
New Zealand	***-0.043***	***-0.075***	-0.032	-0.014	-0.001	-0.008	-0.045	-0.042	-0.058	***-0.084***	***-0.057***
Thailand	***-0.065***	***-0.187***	***-0.088***	***-0.110***	***-0.072***	-0.040	-0.017	-0.032	-0.043	-0.040	-0.030
Singapore	0.013	0.003	-0.003	-0.025	-0.000	-0.038	-0.019	-0.049	-0.039	-0.026	-0.024
Taiwan	-0.025	-0.005	***-0.043***	0.005	0.005	0.017	0.007	-0.024	0.006	0.032	0.009
Bahrain	***0.095***	***0.132***	***0.148***	***0.135***	0.047	**0.085**	**0.074**	**0.079**	**0.083**	**0.068**	0.060
Jordan	0.038	***0.159***	0.041	-0.000	0.007	-0.011	-0.004	-0.008	0.004	-0.007	0.005
Lebanon	***0.090***	-0.023	0.012	**0.069**	0.030	0.011	0.032	0.027	0.031	0.030	0.017
Oman	***0.164***	***0.380***	***0.245***	**0.165**	**0.130**	**0.114**	***0.124***	***0.121***	***0.141***	***0.106***	0.068
Sri Lanka	0.023	***0.081***	0.045	0.035	-0.007	0.006	0.034	0.028	0.027	0.017	0.027
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	0.015	-0.009	-0.004	-0.006	-0.016	-0.017	-0.025	-0.028	-0.024	-0.032	-0.009
Hong Kong	-0.004	0.005	0.013	0.022	0.010	0.020	0.033	0.015	-0.014	0.006	0.025
Malaysia	0.034	0.038	0.036	0.026	0.030	0.020	0.050	0.023	0.008	0.028	0.012
New Zealand	***-0.043***	***-0.057***	-0.055	-0.044	-0.046	-0.042	-0.037	-0.027	***-0.048***	***-0.050***	-0.056
Thailand	***-0.065***	-0.030	-0.050	-0.043	-0.063	-0.051	-0.073	-0.050	-0.028	-0.045	-0.092
Singapore	0.013	-0.024	-0.014	-0.018	-0.022	-0.008	0.001	0.009	0.028	0.077	**0.142**
Taiwan	-0.025	0.009	-0.003	0.012	0.028	0.028	-0.018	-0.004	0.042	0.037	-0.096
Bahrain	***0.095***	0.060	0.054	**0.063**	0.056	0.036	0.020	0.036	0.048	0.081	0.122
Jordan	0.038	0.005	-0.002	-0.002	0.007	-0.010	-0.025	-0.046	-0.054	-0.018	-0.001
Lebanon	***0.090***	0.017	0.015	0.033	***0.055***	***0.076***	***0.128***	**0.147**	**0.173**	**0.234**	***0.233***
Oman	***0.164***	0.068	0.056	0.079	0.089	**0.116**	**0.130**	**0.135**	***0.186***	***0.151***	0.105
Sri Lanka	0.023	0.027	0.006	0.015	0.004	0.003	0.000	0.016	-0.038	-0.055	0.003

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 25: Benchmark Lag 1 –Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	0.014	0.040	0.003	0.033	0.026	0.030	0.035	0.017	0.025	0.039	***0.045***
Cote 'Ivoire	**0.066**	**0.213**	***0.118***	***0.091***	***0.093***	0.069	0.045	0.027	0.015	0.028	0.009
Kenya	-0.010	***-0.107***	***-0.091***	-0.011	-0.017	-0.001	-0.002	-0.003	-0.004	0.004	-0.010
Mauritius	***0.045***	-0.037	0.023	***0.038***	0.025	0.014	0.011	0.009	0.002	0.011	0.024
Morocco	***0.069***	0.060	-0.003	0.047	**0.068**	**0.051**	**0.060**	**0.066**	***0.075***	**0.081**	**0.082**
Namibia	***-0.029***	***-0.054***	***-0.026***	***-0.034***	-0.017	***-0.022***	-0.017	-0.019	-0.019	-0.019	-0.032
Tanzania	**-0.092**	**-0.084**	0.029	0.016	-0.002	-0.008	-0.009	-0.010	-0.009	-0.022	-0.030
Tunisia	0.005	-0.037	-0.005	-0.003	0.018	0.000	0.016	0.019	0.015	0.033	0.034
Uganda	***0.093***	***0.349***	***0.217***	0.140	***0.175***	***0.139***	0.098	0.069	0.069	0.024	-0.020
Zambia	***0.117***	0.100	**0.088**	**0.106**	***0.091***	0.051	0.052	***0.059***	***0.062***	0.056	***0.072***
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	0.014	***0.045***	0.018	0.027	0.026	0.015	-0.009	-0.025	0.016	0.005	-0.150
Cote 'Ivoire	***0.066***	0.009	0.007	0.006	0.011	0.020	-0.013	0.020	0.056	0.076	0.109
Kenya	-0.010	-0.010	-0.007	-0.023	-0.023	-0.015	-0.008	-0.000	-0.076	-0.035	0.086
Mauritius	***0.045***	0.024	0.022	0.023	0.048	0.047	0.050	0.014	0.031	0.071	***0.179***
Morocco	***0.069***	***0.082***	***0.077***	***0.063***	0.060	0.000	0.014	0.056	0.056	0.049	0.034
Namibia	***-0.029***	-0.032	-0.032	***-0.040***	***-0.049***	-0.040	-0.033	***-0.050***	-0.043	-0.036	0.019
Tanzania	***-0.092***	-0.030	-0.037	**-0.051**	**-0.059**	**-0.066**	**-0.073**	***-0.110***	***-0.163***	***-0.232***	***-0.201***
Tunisia	0.005	0.034	0.037	***0.042***	***0.046***	0.039	0.009	-0.005	-0.012	-0.046	-0.003
Uganda	***0.093***	-0.020	0.002	-0.011	-0.028	-0.038	-0.011	-0.010	0.058	0.080	**0.135**
Zambia	***0.117***	**0.072**	**0.084**	**0.110**	***0.123***	***0.114***	***0.124***	***0.157***	***0.194***	***0.266***	0.136

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 26: Benchmark Lag 1 –American countries

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Chile	0.031	***0.112***	0.059	0.027	0.050	0.035	0.026	0.049	0.042	0.043	0.044
Argentina	-0.047	-0.158	-0.034	-0.086	0.009	0.019	-0.050	-0.016	0.021	0.043	0.056
Colombia	0.053	0.047	0.050	0.043	0.016	0.019	-0.000	-0.005	0.001	0.011	-0.025
Costa Rica	0.041	0.131	***0.133***	***0.094***	***0.054***	0.031	0.028	0.027	0.015	0.013	0.025
Peru	***0.189***	***0.394***	**0.207**	**0.154**	**0.184**	**0.193**	***0.154***	*0.116*	*0.122*	*0.121*	***0.102***
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	0.031	0.044	0.033	0.019	0.044	0.040	0.008	-0.015	0.020	-0.001	-0.043
Argentina	-0.047	0.056	-0.024	0.023	-0.029	-0.053	-0.073	-0.077	-0.082	-0.122	-0.135
Colombia	0.053	-0.025	-0.009	0.001	0.014	0.033	0.047	0.056	0.050	0.018	***0.093***
Costa Rica	0.041	0.025	0.025	0.015	-0.001	-0.002	-0.027	-0.037	-0.047	-0.030	-0.013
Peru	***0.189***	**0.102**	**0.102**	**0.127**	*0.110*	*0.119*	***0.209***	***0.192***	***0.233***	***0.232***	***0.410***

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 27: Benchmark Lag 1 – Global indices

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
MSCI ACWI	-0.009	-0.050	-0.004	-0.007	-0.018	0.006	0.024	0.017	-0.012	-0.011	-0.024
MSCI World	-0.020	-0.002	0.005	-0.002	-0.010	-0.007	-0.012	-0.018	-0.022	***-0.027***	***-0.030***
MSCI EAFE	-0.018	-0.028	0.011	0.009	0.000	-0.007	-0.011	-0.016	-0.022	-0.017	**-0.028**
MSCI EM	-0.017	-0.067	-0.004	0.053	0.032	-0.017	-0.006	-0.024	-0.031	-0.005	-0.030
MSCI EU	***-0.036***	-0.029	-0.034	-0.032	-0.043	-0.040	***-0.027***	***-0.031***	**-0.034**	**-0.037**	***-0.044***
MSCI USA	-0.023	0.010	0.002	-0.000	-0.017	-0.006	-0.012	-0.015	-0.021	***-0.025***	***-0.029***

Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	-0.009	-0.024	-0.028	-0.018	-0.009	-0.030	-0.030	-0.030	-0.046	-0.031	0.035
MSCI World	-0.020	***-0.030***	***-0.033***	***-0.028***	***-0.038***	***-0.044***	***-0.049***	***-0.055***	***-0.056***	***-0.051***	-0.043
MSCI EAFE	-0.018	***-0.028***	**-0.035**	**-0.041**	**-0.045**	**-0.049**	**-0.054**	**-0.059**	**-0.063**	**-0.063**	-0.048
MSCI EM	-0.017	-0.030	-0.065	-0.030	-0.018	-0.048	-0.059	-0.080	-0.054	***-0.111***	-0.026
MSCI EU	***-0.036***	***-0.044***	***-0.042***	***-0.050***	***-0.048***	***-0.054***	**-0.059**	**-0.056**	**-0.064**	***-0.088***	***-0.051***
MSCI USA	-0.023	***-0.029***	***-0.034***	*-0.036*	*-0.039*	*-0.044*	*-0.050*	***-0.054***	***-0.058***	-0.041	-0.031

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Lag 6: For Europe, the countries are Austria, Belgium, Bulgaria, Czech Republic, Estonia, Germany, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Malta, Portugal, Romania, Slovakia, and Ukraine. In Asia and Oceania, they are Australia, Bahrain, Hong Kong, India, Indonesia, Japan, Jordan, Lebanon, Philippines, Pakistan, Singapore, Sri Lanka, Taiwan Thailand, and Vietnam. In Africa, they are Botswana, Egypt, Ivory Coast, Kenya, Mauritius, Morocco, South Africa, Tanzania, Tunisia, Uganda, and Zambia. In North America, it is the US. Finally, for South America, they are Brazil and Chile.

Lag 9: For Europe, the countries are Austria, Belgium, Croatia, Cyprus, Czech Republic, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Poland, Portugal, Netherlands, Romania, Slovenia, Switzerland and the UK. In Asia and Oceania, they are Bahrain, China, Hong Kong, India, Indonesia, Japan, Jordan, Lebanon, Malaysia, Philippines, Pakistan, Singapore, South Korea, Thailand, and Turkey. In Africa, they are Egypt, Kenya, Morocco, Tanzania, Tunisia, Uganda, and Zambia. Finally, for South America, they are Argentina and Chile.

Lag 12: For Europe, the countries are Austria, Belgium, Cyprus, Czech Republic, Denmark, Germany, Hungary, Iceland, Italy, Lithuania, Malta, Netherlands, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Sweden, the UK, and Ukraine. In Asia and Oceania, they are Bangladesh, Japan, Jordan, Lebanon, Malaysia, New Zealand, Pakistan, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Turkey and Vietnam. In Africa, they are Egypt, Ivory Coast, Kenya, Morocco, Namibia, Uganda, and Zambia. In North America, they are Costa Rica and the US. Finally, for South-America, it is Chile.

This significant impact may be explained by the study of Arouri and Rault (2012), in which they show a significant volatility spillover between crude oil price changes and sector stock returns and a significant positive impact of one-period lagged oil market shocks on the conditional volatility of the stock sector. However, considering the NBER recession indicator and different lags, in the following oil-importing countries, no relationship exists using OLS, but a significant relationship is shown in at least one quantile:

Lag 1: For Europe, the countries are Belgium, Denmark, Estonia, Finland, France, Hungary, Ireland, Lithuania, Malta, Netherlands, Poland, Portugal, Romania, Spain, and Sweden. In Asia and Oceania, they are Australia, China, Hong Kong, Indonesia, Malaysia, Pakistan, Singapore, Sri Lanka and Vietnam. In Africa, they are Kenya, Tunisia, and Uganda. In North America, they are Costa Rica and the US. Finally, for South-America, they are Brazil, Chile, and Colombia.

Table 2. 28: Benchmark NBER Lag 1 – G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	-0.022	-0.022	-0.017	-0.011	0.014	-0.003	-0.021	-0.000	-0.004	-0.009	-0.015
Japan	***0.046***	***0.115***	0.073	0.043	***0.055***	***0.045***	***0.042***	***0.036***	***0.032***	***0.030***	0.036
Canada	-0.010	-0.040	0.029	0.006	-0.017	-0.005	-0.014	-0.006	-0.011	-0.014	-0.021
Germany	*-0.049*	*-0.104*	**-0.082**	**-0.062**	**-0.083**	-0.061	-0.058	-0.053	-0.048	-0.047	-0.039
UK	***-0.054***	0.002	***-0.056***	***-0.076***	**-0.082**	***-0.070***	***-0.058***	***-0.074***	**-0.088**	**-0.069**	**-0.071**
France	-0.035	0.044	0.053	0.006	0.016	0.009	0.017	0.019	0.001	-0.019	-0.030
Italy	***-0.074***	-0.000	-0.075	-0.030	-0.057	***-0.092***	-0.059	***-0.093***	-0.080	-0.076	-0.064
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	-0.022	-0.015	***-0.024***	***-0.031***	***-0.036***	*-0.048*	*-0.049*	*-0.058*	***-0.060***	-0.028	-0.045
Japan	***0.046***	0.036	0.041	0.027	0.030	0.035	0.030	0.019	0.008	0.027	0.037
Canada	-0.010	-0.021	***-0.032***	***-0.034***	***-0.047***	-0.032	-0.021	-0.012	0.004	0.015	0.036
Germany	***-0.049***	-0.039	-0.027	-0.021	-0.017	-0.019	-0.022	***-0.034***	***-0.048***	***-0.054***	-0.038
UK	**-0.054**	**-0.071**	***-0.067***	-0.052	-0.033	-0.034	-0.033	-0.048	-0.041	-0.041	-0.036
France	-0.035	-0.030	***-0.050***	-0.045	-0.027	-0.045	***-0.064***	-0.056	-0.052	-0.079	-0.079
Italy	***-0.074***	-0.064	-0.041	-0.057	***-0.084***	***-0.094***	*-0.113*	*-0.107*	***-0.143***	**-0.152**	**-0.110**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 29: Benchmark NBER Lag 1 – Europe

Panel A: Low-Medium Quantiles

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Spain	-0.027	0.039	***0.063***	***0.066***	0.045	-0.008	-0.044	-0.065	-0.048	***-0.099***	-0.068
Netherlands	0.004	0.038	0.044	0.056	0.059	***0.062***	***0.066***	0.038	0.022	0.020	0.014
Sweden	-0.008	-0.013	0.028	0.061	0.024	0.030	0.022	0.023	0.024	-0.025	-0.030
Poland	0.078	0.170	0.130	***0.142***	0.130	0.084	0.088	0.066	0.078	0.082	0.087
Belgium	-0.016	0.067	***0.092***	0.060	-0.007	-0.001	-0.004	-0.017	-0.011	-0.036	-0.037
Austria	0.013	0.062	0.083	0.041	0.016	0.027	0.022	0.022	0.027	0.025	0.024
Denmark	0.032	***0.190***	**0.113**	**0.076**	0.043	0.044	0.019	0.021	0.040	0.023	-0.003
Ireland	-0.016	-0.032	0.017	-0.014	0.003	-0.024	-0.026	-0.055	-0.062	***-0.061***	-0.042
Finland	0.047	0.012	0.018	0.068	***0.084***	0.073	0.072	0.039	0.041	0.038	0.044
Portugal	-0.039	-0.062	0.012	-0.002	0.026	-0.006	**-0.065**	-0.048	-0.048	-0.040	-0.056
Greece	***-0.112***	0.003	-0.016	***-0.102***	-0.077	***-0.103***	-0.078	-0.081	-0.105	***-0.122***	-0.092
Czech	0.014	0.028	0.028	-0.008	-9E-5	0.055	0.040	0.022	0.009	0.009	0.006
Romania	-0.000	***-0.157***	***-0.188***	-0.068	-0.047	-0.043	-0.049	-0.097	-0.069	-0.059	-0.033
Hungary	0.054	***0.352***	0.125	***0.177***	***0.125***	0.073	0.081	0.078	0.051	0.041	0.039
Slovakia	-0.003	0.046	-0.020	-0.030	-0.015	-0.038	-0.032	-0.028	-0.041	-0.048	-0.060
Luxembourg	***0.117***	0.116	***0.128***	***0.196***	**0.128**	**0.145**	***0.131***	0.087	0.061	0.077	0.050
Bulgaria	***0.150***	0.301	0.076	0.060	0.102	0.052	0.063	0.077	***0.098***	***0.109***	***0.106***
Croatia	***0.148***	***0.208***	***0.174***	**0.158**	**0.123**	**0.104**	**0.089**	***0.087***	0.082	***0.085***	***0.101***
Slovenia	***0.092***	0.107	0.103	0.051	0.078	0.087	0.070	0.027	0.021	0.044	0.046
Lithuania	0.031	-0.006	0.029	0.012	-0.007	0.026	0.034	0.022	0.028	0.059	0.053
Latvia	0.018	-0.082	-0.027	0.027	0.038	0.051	0.014	-0.009	0.010	-0.011	-0.008
Estonia	0.075	***0.265***	0.143	0.153	0.090	0.051	0.041	0.061	0.042	0.050	0.065
Cyprus	***0.264***	0.183	0.244	0.249	***0.312***	***0.253***	**0.223**	**0.170**	**0.170**	0.138	0.068
Malta	0.026	-0.020	-0.019	-0.017	-0.016	-0.039	***-0.042***	-0.028	-0.015	-0.006	0.001
Iceland	0.081	0.020	0.037	0.047	0.012	-0.011	0.000	-0.011	-0.043	-0.049	-0.031
Norway	-0.004	0.043	0.058	0.045	0.033	***0.046***	0.027	0.011	-0.012	-0.024	-0.037
Swiss	***-0.042***	-0.030	*-0.076*	*-0.063*	**-0.065**	-0.041	-0.056	-0.043	-0.044	-0.053	-0.048
Serbia	***0.127***	-0.141	-0.126	0.105	0.021	0.041	0.066	0.072	0.087	0.091	0.068
Ukraine	0.018	-0.018	0.034	-0.028	-0.039	-0.031	0.017	0.035	0.038	0.035	0.046

Panel B: Medium-High Quantiles

	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	-0.027	-0.068	-0.042	-0.036	-0.064	-0.052	-0.056	-0.010	-0.041	-0.077	-0.088
Netherlands	0.004	0.014	0.026	0.018	-0.001	-0.005	0.001	-0.021	-0.025	***-0.078***	***-0.161***
Sweden	-0.008	-0.030	-0.010	-0.010	-0.009	0.007	-0.004	-0.043	-0.057	-0.054	***-0.090***
Poland	0.078	0.087	0.053	0.048	0.071	0.015	0.054	0.065	0.040	0.039	-0.000
Belgium	-0.016	-0.037	-0.032	-0.025	-0.032	-0.027	-0.038	-0.048	-0.049	-0.040	-0.074
Austria	0.013	0.024	0.012	0.001	-0.011	-0.013	-0.004	-0.026	0.000	0.006	0.112
Denmark	0.032	-0.003	-0.008	-0.012	0.006	-0.002	0.023	0.030	0.002	0.017	-0.011
Ireland	-0.016	-0.042	-0.049	-0.041	-0.028	-0.019	-0.035	-0.027	-0.039	-0.026	-0.055
Finland	0.047	0.044	0.034	0.054	0.038	-0.007	-0.018	-0.002	0.045	0.071	0.022
Portugal	-0.039	-0.056	-0.058	***-0.071***	***-0.075***	-0.055	-0.058	-0.066	-0.039	-0.095	-0.059
Greece	***-0.112***	-0.092	-0.084	***-0.117***	-0.098	-0.062	-0.049	-0.060	-0.133	-0.127	***-0.207***
Czech	0.014	0.006	0.002	0.004	-0.003	-0.026	-0.000	0.028	-0.028	-0.014	0.034
Romania	-0.000	-0.033	-0.020	0.028	0.028	0.080	0.089	0.068	0.085	0.048	-0.019
Hungary	0.054	0.039	0.056	0.053	0.029	-0.034	-0.036	0.003	-0.019	-0.039	0.009
Slovakia	-0.003	-0.060	-0.049	-0.033	-0.047	-0.017	-0.010	-0.043	-0.019	-0.037	-0.090
Luxembourg	***0.117***	0.050	0.035	0.044	0.029	0.051	0.046	0.066	0.041	0.023	0.099
Bulgaria	***0.150***	***0.106***	**0.087**	**0.104**	0.092	0.077	0.054	-0.024	-0.046	-0.039	-0.111
Croatia	*0.148*	***0.101***	0.060	0.059	0.074	*0.100*	*0.100*	0.054	-0.015	-0.015	0.033
Slovenia	*0.092*	0.046	0.053	0.047	0.060	0.081	0.114	0.145	0.144	0.087	0.185
Lithuania	0.031	0.053	0.034	0.018	-0.003	0.003	-0.072	-0.093	-0.090	***-0.110***	-0.061
Latvia	0.018	-0.008	0.008	0.009	0.008	0.016	0.039	0.060	0.008	0.017	-0.018
Estonia	0.075	0.065	0.054	***0.078***	**0.080**	**0.080**	0.033	0.004	0.029	0.043	0.070
Cyprus	***0.264***	0.068	0.052	0.056	0.074	0.094	0.069	0.183	0.255	0.335	0.114
Malta	0.026	0.001	0.002	0.027	0.024	0.036	***0.063***	***0.088***	0.054	***0.094***	0.023
Iceland	0.081	-0.031	-0.027	-0.027	0.000	0.003	-0.028	-0.005	0.006	-0.034	0.053
Norway	-0.004	-0.037	-0.049	-0.042	-0.038	-0.037	-0.052	-0.011	-0.017	-0.019	0.007
Swiss	***-0.042***	-0.048	-0.047	-0.038	-0.041	-0.036	-0.016	-0.034	-0.044	-0.045	-0.029
Serbia	***0.127***	0.068	0.057	0.087	0.087	0.079	0.118	***0.278***	**0.312**	**0.382**	***0.439***
Ukraine	0.018	0.046	0.020	0.013	0.088	0.051	0.087	0.120	0.107	0.089	0.031

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 30: Benchmark NBER Lag 1 – BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	-0.025	-0.089	0.165	0.075	***0.155***	***0.139***	***0.154***	***0.142***	***0.121***	0.106	0.092
Russia	-0.115	*0.274*	*0.188*	**0.301**	**0.384**	**0.359**	***0.398***	***0.380***	***0.466***	***0.430***	***0.460***
India	**0.111**	0.139	***0.133***	***0.133***	***0.143***	***0.149***	***0.140***	***0.132***	***0.115***	***0.116***	***0.131***
China	0.094	0.039	***0.216***	***0.188***	0.142	0.130	0.087	0.110	0.105	**0.161**	**0.167**
South Africa	-0.024	-0.060	-0.015	-0.007	0.001	-0.009	-0.012	-0.017	-0.023	-0.059	-0.034
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	-0.025	0.092	0.054	0.028	-0.015	-0.110	***-0.118***	***-0.189***	-0.123	-0.492	***-0.614***
Russia	-0.115	***0.460***	*0.426*	*0.330*	*0.253*	***0.202***	***0.208***	0.122	0.021	0.006	-0.131
India	***0.111***	**0.131**	**0.116**	**0.126**	***0.099***	0.073	***0.073***	0.061	0.031	0.010	*0.155*
China	0.094	***0.167***	***0.132***	***0.130***	***0.110***	***0.105***	0.066	0.080	0.002	0.003	-0.063
South Africa	-0.024	-0.034	-0.029	-0.006	-0.018	-0.050	-0.039	-0.049	-0.036	-0.025	0.004

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 31: Benchmark NBER Lag 1 – N11

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
South Korea	***-0.057***	-0.049	-0.041	-0.054	-0.068	-0.048	-0.043	-0.060	-0.056	-0.038	-0.046
Mexico	0.013	-0.073	-0.058	***0.103***	0.082	0.052	0.052	0.054	0.051	0.041	0.034
Indonesia	0.037	***0.081***	-0.008	0.001	0.039	0.047	0.042	0.020	0.013	0.010	0.032
Turkey	0.008	0.077	0.042	0.021	0.025	0.017	0.043	0.035	0.054	0.070	0.055
Philippines	-0.046	-0.018	-0.046	-0.031	-0.031	-0.023	-0.026	-0.022	-0.005	0.009	0.019
Pakistan	0.016	-0.119	-0.074	0.026	***0.111***	0.072	0.056	0.061	0.027	0.006	0.006
Bangladesh	*0.081*	*0.147*	***0.067***	0.037	0.004	-0.012	0.006	0.000	-0.011	-0.011	0.019
Egypt	0.016	-0.023	-0.000	0.040	-0.029	0.018	0.003	0.054	0.033	0.017	-0.007
Vietnam	-0.049	-0.109	-0.129	-0.155	-0.115	-0.148	-0.148	-0.096	-0.074	-0.033	0.004
Iran	***0.060***	0.005	0.027	***0.057***	0.033	**0.080**	**0.082**	***0.067***	0.046	***0.060***	0.059
Nigeria	0.003	0.319	0.369	0.324	0.243	0.253	0.150	0.130	0.180	0.187	0.199
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	***-0.057***	-0.046	-0.055	-0.057	***-0.084***	***-0.098***	-0.075	-0.093	-0.087	-0.076	-0.058
Mexico	0.013	0.034	0.047	0.025	0.063	*0.105*	*0.107*	0.099	0.081	-0.009	***-0.146***
Indonesia	0.037	0.032	0.016	0.024	0.037	0.048	0.024	0.023	0.048	-0.001	-0.092
Turkey	0.008	0.055	0.006	-0.069	-0.071	-0.063	-0.104	-0.124	-0.172	-0.069	0.075
Philippines	-0.046	0.019	0.019	0.002	-0.011	-0.019	-0.015	-0.013	-0.005	-0.053	-0.039
Pakistan	0.016	0.006	0.017	0.033	0.021	-0.002	-0.001	-0.017	0.045	-0.028	-0.145
Bangladesh	***0.081***	0.019	0.048	***0.081***	**0.107**	**0.096**	0.069	0.092	***0.167***	0.171	0.294
Egypt	0.016	-0.007	0.012	0.014	-0.026	-0.029	-0.032	-0.018	0.003	0.011	0.123
Vietnam	-0.049	0.004	0.019	0.032	-0.012	-0.087	-0.134	***-0.185***	***-0.164***	-0.070	0.085
Iran	***0.060***	0.059	0.059	***0.070***	0.046	0.044	0.035	0.034	0.046	0.048	0.046
Nigeria	0.003	0.199	0.161	0.145	0.152	0.097	0.101	0.160	0.202	0.123	0.092

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 32: Benchmark NBER Lag 1 – OPEC

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Iran	***0.060***	0.005	0.027	***0.057***	0.033	**0.080**	**0.082**	***0.067***	0.046	***0.060***	0.059
Nigeria	0.003	0.319	0.369	0.324	0.243	0.253	0.150	0.130	0.180	0.187	0.199
Saudi Arabia	***0.121***	**0.290**	**0.256**	***0.159***	0.105	***0.172***	***0.105***	***0.117***	***0.093***	***0.094***	0.073
Iraq	***0.563***	0.190	0.190	0.045	-0.067	-0.113	-0.079	-0.110	-0.093	-0.118	-0.096
Qatar	***0.108***	-0.048	0.099	0.056	0.078	0.066	0.077	***0.086***	0.066	0.037	0.057
UAE	0.079	0.033	0.022	0.044	0.021	0.010	-0.005	0.001	0.014	0.028	0.026
Kuwait	***0.091***	***0.128***	0.101	0.030	***0.082***	***0.102***	0.092	0.068	0.034	0.043	0.047
Algeria	0.025	-0.011	-0.011	0.019	0.019	0.020	0.015	0.008	0.000	0.000	0.000
Ecuador	-0.003	-0.022	-0.019	-0.029	-0.020	-0.030	-0.030	-0.029	-0.018	-0.017	-0.016
Venezuela	0.066	0.143	0.023	0.015	0.046	0.041	-0.010	-0.015	-0.005	0.023	0.052
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	***0.060***	0.059	0.059	***0.070***	0.046	0.044	0.035	0.034	0.046	0.048	0.046
Nigeria	0.003	0.199	0.161	0.145	0.152	0.097	0.101	0.160	0.202	0.123	0.092
Saudi Arabia	***0.121***	0.073	**0.099**	**0.091**	***0.096***	*0.095*	0.044	0.046	0.037	0.023	0.029
Iraq	***0.563***	-0.096	-0.093	-0.134	-0.080	0.056	0.079	***0.250***	**0.344**	**0.424**	***0.849***
Qatar	*0.108*	0.057	0.087	0.078	0.083	0.104	0.099	0.101	0.061	0.114	***0.162***
UAE	0.079	0.026	0.017	0.048	0.008	0.058	0.100	0.057	0.115	0.106	***0.236***
Kuwait	***0.091***	0.047	0.023	0.022	0.044	0.029	0.052	0.053	0.053	***0.122***	-0.009
Algeria	0.025	0.000	0.000	0.000	0.004	-0.018	-0.020	-0.004	-0.007	0.008	0.008
Ecuador	-0.003	-0.016	-0.001	-0.005	0.005	-0.001	0.002	0.002	0.011	-0.007	0.079
Venezuela	0.066	0.052	0.062	0.068	0.075	0.042	0.071	0.099	***0.164***	0.091	0.040

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 33: Benchmark NBER Lag 1 –Asia and Oceania

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Australia	0.011	0.065	0.075	***0.077***	0.034	0.026	0.030	0.018	0.006	-0.000	-0.013
Hong Kong	-0.003	***0.083***	-0.022	0.014	-0.015	-0.019	-0.014	0.001	0.003	0.000	-0.007
Malaysia	0.031	-0.023	0.025	***0.098***	***0.101***	***0.087***	0.065	0.057	***0.075***	0.047	0.026
New Zealand	***-0.050***	-0.049	-0.002	0.006	-0.031	-0.058	-0.052	***-0.071***	***-0.097***	***-0.069***	-0.044
Thailand	**-0.067**	**-0.222**	***-0.146***	***-0.112***	***-0.080***	***-0.057***	-0.018	-0.032	-0.058	-0.041	-0.038
Singapore	0.006	0.053	-0.004	-0.051	***-0.086***	**-0.076**	**-0.076**	-0.058	-0.042	-0.028	-0.014
Taiwan	-0.025	-0.098	-0.007	-0.004	-0.003	-0.001	0.013	-0.005	0.005	0.017	-0.002
Bahrain	***0.088***	***0.102***	0.036	0.032	0.022	0.056	0.061	***0.075***	***0.082***	0.059	0.063
Jordan	0.036	0.012	0.014	0.006	-0.000	0.002	-0.029	-0.008	-0.006	-0.015	-0.029
Lebanon	***0.088***	-0.074	-0.024	-0.038	-0.013	0.015	0.033	0.031	0.038	0.027	0.019
Oman	***0.158***	*0.187*	*0.189*	***0.135***	**0.122**	**0.108**	**0.133**	**0.125**	***0.117***	***0.100***	***0.094***
Sri Lanka	0.022	***0.086***	***0.080***	0.038	0.001	0.003	-0.002	0.017	0.009	0.012	0.023
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	0.011	-0.013	-0.004	-0.006	-0.016	-0.017	-0.019	-0.030	-0.037	-0.031	-0.009
Hong Kong	-0.003	-0.007	0.012	0.024	0.009	0.016	0.018	0.015	0.032	0.010	0.019
Malaysia	0.031	0.026	0.030	0.025	0.035	0.020	0.039	0.016	0.005	0.023	0.006
New Zealand	***-0.050***	-0.044	***-0.059***	-0.052	-0.047	-0.031	-0.043	***-0.043***	***-0.048***	-0.032	-0.025
Thailand	***-0.067***	-0.038	-0.037	-0.043	-0.071	-0.038	-0.056	-0.022	-0.034	-0.010	-0.072
Singapore	0.006	-0.014	-0.014	-0.024	-0.019	-0.005	0.001	0.017	0.028	0.073	***0.128***
Taiwan	-0.025	-0.002	-0.000	0.018	0.008	0.030	-0.014	-0.002	0.045	0.038	-0.102
Bahrain	***0.088***	0.063	0.062	***0.077***	***0.081***	0.073	0.051	0.082	0.039	0.109	0.007
Jordan	0.036	-0.029	-0.020	-0.010	0.002	0.012	-0.022	-0.004	-0.054	9E-05	0.025
Lebanon	***0.088***	0.019	0.026	0.034	***0.058***	***0.076***	**0.128**	**0.147**	**0.172**	***0.233***	***0.217***
Oman	*0.158*	*0.094*	0.063	0.079	0.100	0.115	***0.130***	***0.138***	***0.190***	***0.170***	0.105
Sri Lanka	0.022	0.023	0.004	0.005	-0.003	0.014	0.019	0.019	-0.038	-0.076	-0.072

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 34: Benchmark NBER Lag 1 –Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	0.010	-0.013	0.024	0.031	0.020	0.020	0.016	0.019	0.030	0.042	0.040
Cote 'Ivoire	***0.061***	0.033	0.057	***0.078***	***0.078***	***0.081***	0.045	0.019	0.003	-0.004	0.000
Kenya	-0.013	***-0.149***	***-0.142***	-0.039	-0.023	-0.009	-0.031	-0.015	-0.009	-0.019	0.005
Mauritius	**0.042**	**0.089**	**0.045**	0.034	0.004	0.007	-0.001	-0.004	0.005	0.012	0.019
Morocco	***0.067***	0.102	0.076	0.068	0.075	0.051	0.037	0.050	***0.068***	***0.075***	***0.078***
Namibia	***-0.030***	0.008	***-0.026***	***-0.026***	**-0.026**	**-0.026**	-0.021	-0.019	-0.019	-0.017	-0.019
Tanzania	*-0.092*	-0.075	0.014	0.018	0.002	-0.009	-0.013	-0.011	-0.012	-0.018	-0.019
Tunisia	0.006	***-0.072***	-0.025	-0.024	0.017	-0.000	0.014	0.019	0.026	0.036	0.039
Uganda	0.086	0.022	***0.233***	0.164	0.100	0.107	0.061	0.070	0.092	0.071	0.010
Zambia	*0.110*	***0.153***	0.016	0.033	0.049	0.034	0.026	0.042	***0.061***	0.056	***0.082***
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	0.010	0.040	0.018	0.004	0.026	0.020	0.000	-0.029	0.026	0.014	-0.080
Cote 'Ivoire	***0.061***	0.000	0.004	-0.000	0.016	0.020	-0.013	0.031	0.054	0.035	0.066
Kenya	-0.013	0.005	-0.011	-0.013	0.003	0.003	-0.003	-0.008	-0.076	-0.060	0.015
Mauritius	***0.042***	0.019	0.020	0.028	0.047	0.048	0.052	0.014	0.036	0.067	***0.231***
Morocco	***0.067***	***0.078***	***0.075***	***0.063***	0.062	0.002	0.015	0.095	0.056	0.049	0.034
Namibia	***-0.030***	-0.019	-0.021	***-0.028***	-0.042	-0.034	-0.033	***-0.050***	-0.035	-0.063	-0.018
Tanzania	***-0.092***	-0.019	-0.020	***-0.050***	***-0.052***	***-0.062***	**-0.083**	-0.112	***-0.163***	***-0.232***	***-0.214***
Tunisia	0.006	0.039	***0.046***	***0.047***	***0.041***	0.039	0.015	-0.001	-0.012	-0.039	-0.043
Uganda	0.086	0.010	0.003	0.013	-0.028	-0.032	0.000	-0.010	0.051	0.096	0.135
Zambia	*0.110*	*0.082*	***0.106***	***0.113***	***0.129***	**0.122**	**0.141**	**0.161**	**0.197**	***0.255***	0.136

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 35: Benchmark NBER Lag 1 –American countries

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Chile	0.033	***0.102***	0.053	0.024	0.061	0.045	0.033	0.037	0.044	0.033	0.040
Argentina	-0.051	-0.125	-0.039	-0.062	-0.036	0.020	-0.016	-0.009	0.023	0.020	-0.019
Colombia	0.055	0.076	0.050	0.043	-0.011	-0.005	-0.005	-0.027	0.016	0.016	0.033
Costa Rica	0.035	0.036	***0.109***	***0.067***	***0.059***	***0.047***	0.029	0.028	0.015	0.015	0.011
Peru	***0.180***	*0.358*	*0.186*	***0.178***	***0.177***	***0.139***	***0.144***	**0.117**	**0.130**	**0.101**	***0.091***
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	0.033	0.040	0.021	0.021	0.024	0.040	0.015	-0.015	0.020	0.042	-0.014
Argentina	-0.051	-0.019	-0.004	-0.001	0.005	-0.027	-0.116	-0.069	-0.105	-0.122	-0.144
Colombia	0.055	0.033	0.030	0.030	0.048	0.064	0.064	0.054	0.089	***0.175***	0.023
Costa Rica	0.035	0.011	0.016	0.015	-0.001	-0.002	-0.027	-0.045	-0.051	-0.008	-0.029
Peru	***0.180***	***0.091***	0.074	0.074	0.075	***0.125***	**0.170**	**0.174**	***0.237***	***0.286***	0.253

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table 2. 36: Benchmark NBER Lag 1 – Global indices

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
MSCI ACWI	-0.012	0.018	-0.037	-0.027	-0.018	-0.004	0.028	0.001	-0.013	-0.015	-0.010
MSCI World	-0.019	0.011	-0.018	-0.025	-0.014	0.010	0.002	-0.003	-0.007	-0.009	-0.018
MSCI EAFE	-0.018	0.019	-0.011	-0.027	-0.012	0.010	0.010	0.008	-0.008	-0.012	-0.015
MSCI EM	-0.020	0.020	0.033	-0.016	-0.047	-0.027	-0.011	0.006	0.007	0.008	-0.016
MSCI EU	***-0.036***	-0.003	-0.020	***-0.053***	***-0.068***	-0.045	-0.014	-0.015	-0.022	**-0.033**	**-0.035**
MSCI USA	-0.023	-0.032	-0.024	-0.022	-0.005	-0.000	-0.018	-0.002	-0.006	-0.011	-0.019
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	-0.012	-0.010	-0.015	-0.017	-0.031	-0.030	-0.030	-0.030	-0.030	-0.025	0.006
MSCI World	-0.019	-0.018	**-0.024**	**-0.027**	**-0.033**	**-0.042**	**-0.047**	-0.047	***-0.053***	-0.039	-0.033
MSCI EAFE	-0.018	-0.015	-0.022	***-0.028***	*-0.034*	*-0.039*	*-0.047*	***-0.058***	***-0.062***	-0.058	-0.023
MSCI EM	-0.020	-0.016	-0.047	-0.028	-0.018	-0.043	-0.049	-0.055	-0.070	-0.015	-0.008
MSCI EU	*-0.036*	*-0.035*	*-0.040*	**-0.042**	**-0.046**	**-0.054**	***-0.057***	***-0.066***	***-0.061***	***-0.090***	***-0.075***
MSCI USA	-0.023	-0.019	***-0.028***	***-0.029***	***-0.038***	***-0.050***	**-0.054**	**-0.059**	**-0.063**	-0.025	-0.022

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Lag 3: For Europe, the countries are Austria, Belgium, Bulgaria, Denmark, Finland, Germany, Greece, Hungary, Luxembourg, Malta, Netherlands, Serbia, Slovakia, Spain, Sweden, Switzerland, and the UK. In Asia and Oceania, they are Australia, Bahrain, China, India, Japan, Jordan, Pakistan, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Turkey, and Vietnam. In Africa, they are South Africa, Egypt, Ivory Coast, Kenya, and Namibia. In North America, it is the US. Finally, for South-America, they are Brazil and Chile.

Lag 6: For Europe, the countries are Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Lithuania, Malta, Romania, Slovakia, and Sweden. In Asia and Oceania, they are Australia, Bahrain, Hong Kong, Indonesia, Japan, Jordan, Malaysia, Pakistan, Philippines, Sri Lanka and Taiwan. In Africa, they are Ivory Coast, Kenya, Mauritius, Morocco, Namibia, South Africa, Uganda, and Zambia. Finally, for South-America, they are Brazil, Chile, and Argentina.

Lag 9: For Europe, the countries are Austria, Belgium, Croatia, Czech Republic, Germany, Greece, Finland, France, Hungary, Iceland, Italy, Netherlands, Poland, Portugal, Romania, Spain, Switzerland, and the UK. In Asia and Oceania, they are Bangladesh, China, Hong Kong, India, Indonesia, Japan, Lebanon, Malaysia, New Zealand, Pakistan, Singapore, South Korea, Turkey, and Vietnam. In Africa, they are Egypt, Kenya, Morocco, Tanzania, Tunisia, Uganda, and Zambia. Finally, for South America, it is Argentina.

Lag 12: For Europe, the countries are Austria, Belgium, Bulgaria, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Lithuania, Malta, Portugal, Slovakia, Slovenia, Serbia, Sweden, Ukraine and the UK. In Asia and Oceania, they are Bangladesh, Japan, Jordan, Lebanon, Malaysia, New Zealand, Singapore, South Korea, Sri Lanka, Turkey, and Vietnam. In Africa, they are Egypt, Ivory Coast, Kenya, Mauritius, Morocco, Namibia, Tanzania, Uganda, and Zambia. In North America, it is Costa Rica. Finally, for South-America, it is Chile.

For oil-exporting countries, considering the benchmark case but without having the NBER recession indicator in each lag, in the following countries, there is no relationship between crude oil price changes and stock market returns using OLS, but a significant relationship is shown in at least one quantile:

Lag 1: Algeria, Canada, Ecuador, Mexico, Norway, Russia, and Venezuela.
Lag 3: Algeria, Canada, Ecuador, Iran, Russia, the UAE, and Venezuela.
Lag 6: Algeria., Canada, Iran, Mexico, Nigeria, Norway, Saudi Arabia, and the UAE
Lag 9: Algeria, Iran, Iraq, Kuwait, Mexico, Norway, Russia, Saudi Arabia, the UAE, and Venezuela.
Lag 12: Algeria, Iraq, Nigeria, Norway, Qatar, Russia, Saudi Arabia, and the UAE.

In addition, for the following oil-exporting countries – and exploring the impact of the recession indictor (NBER) in each lag – the findings indicate that there is no relationship between crude oil price changes and stock market returns using OLS, but a significant relationship is shown in at least one quantile:

Lag 1: Canada, Mexico, Norway, Russia, the UAE, and Venezuela.
Lag 3: Algeria, Canada, Ecuador, Iran, Mexico, Norway, Qatar, Russia, the UAE, and Venezuela.
Lag 6: Algeria, Canada, Ecuador, Mexico, Norway, Saudi Arabia, and the UAE.
Lag 9: Algeria, Canada, Iran, Kuwait, Mexico, Norway, Russia, the UAE, and Venezuela.
Lag 12: Algeria, Ecuador, Iraq, Mexico, Norway, Russia, and the UAE.

The significant impact in the above oil-exporting and oil-importing countries can be addressed by the study of Wang et al. (2013), which shows that oil price shocks have a greater impact on oil-exporting countries than on oil-importing countries, depending on whether that shock is driven by supply or demand. Oil supply and aggregate demand uncertainty can lead to a decline in the stock markets of oil-exporting and oil-importing countries, but the effect of demand uncertainty is stronger and more persistent in oil-exporting countries than in oil-importing countries. The results with different lags, including 1, 3, 6, 9, and 12 of oil price changes, are shown in Tables 2.37 to 2.40.

Table 2. 37: Benchmark and each lag in oil-importing countries

Europe			Asia & Oceania			Africa			N-America			S-America		
lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	lag0	Lag1	lag3
Iceland, Germany, France, Italy, Netherlands, Belgium, Austria, Denmark, Greece,Czech Republic, Luxembourg, Slovenia, Cyprus Ukraine, Serbia, Romania, Lithuania, Latvia, Estonia & Bulgaria	Germany, UK, Italy, Poland, Greece, Luxembourg, Bulgaria, Croatia, Slovenia, Cyprus, Iceland, Swiss & Serbia	France, Poland, Czech, Lithuania, Latvia, Cyprus, Malta & Ukraine	New Zealand, Australia, Vietnam, Turkey, South Korea, India, Lebanon, Jordan, Bahrain & Singapore	Japan, India, S-Korea, Bangladesh, New Zealand, Thailand, Bahrain & Lebanon	Hong Kong	Egypt, South Africa Uganda, Morocco, Mauritius, & Ivory Coast	Ivory Coast, Mauritius, Morocco, Namibia, Tanzania, Uganda & Zambia	Botswana, Mauritius, Uganda Zambia	NA	NA	Costa Rica	Colombia & Argentina	Peru	Argentina
Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12
Croatia, Slovenia, Cyprus & Serbia	Sweden, Denmark, Bulgaria, Lithuania, Estonia, Malta and Serbia	Spain, Greece & Bulgaria	S-Korea & New Zealand	Taiwan	Indonesia & Philippines	NA	Namibia	Mauritius	Costa Rica	U.S.		Peru	Colombia	NA

Note: This table covers oil-importing countries in the G7, Europe, BRICS, N11, and OPEC and shows in which lag(s) and which country, the effect of oil on stock market is significant in both OLS and in at least one quantile. In this table, the effect of lags 1, 3, 6, 9, and 12 of oil price changes are considered to see whether variation in dependent variable can be explained more by them.

Table 2.37 Benchmark and each lag in oil-importing countries (continued)

lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	lag0	Lag1	lag3
Spain, Sweden, Poland, Ireland, Finland, Portugal, Swiss Hungary, Slovakia, Croatia & Malta	Spain, Netherlands, Sweden, Belgium, Denmark, Finland, Romania, Hungary, Slovakia, Lithuania, Latvia, Estonia & Malta	UK, Italy, Spain, Netherlands, Sweden, Belgium, Austria, Denmark, Finland, Greece, Hungry, Slovakia, Luxembourg, Bulgaria, Croatia, Slovenia, Estonia, Swiss & Serbia	Japan, China, Indonesia, Philippines, Pakistan, Bangladesh, Malaysia, Thailand, Taiwan, and Seri Lanka	China, Indonesia, Turkey, Pakistan, Vietnam, Australia, Hong Kong, Malaysia, Singapore, Taiwan, Jordan & Seri Lanka	Japan, S-Korea, Turkey, Pakistan, Vietnam, Australia, Malaysia, New Zealand, Thailand, Singapore, Taiwan, Bahrain, Jordan & Sri Lanka	Kenya, Namibia, Tanzania, Tunisia, and Zambia	Kenya, Botswana & Tunisia	S-Africa, Egypt, Ivory Coast, Kenya, Namibia & Tanzania	U.S., & Costa Rica	U.S. & Costa Rica	U.S.	Brazil, Peru & Chile	Brazil, Chile &Colombia	Brazil & Chile
Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12
Germany, Italy, Belgium, Austria, Ireland, Portugal,Czech Republic, Romania, Hungary, Slovakia, Luxembourg, Bulgaria, Lithuania, Estonia, Malta, Iceland & Ukraine	Germany, UK, France, Italy, Netherlands, Poland, Belgium, Austria, Ireland, Finland, Portugal, Greece,Czech Republic, Romania, Hungary, Croatia, Slovenia, Latvia, Cyprus, Iceland and Swiss	Germany, UK, Italy, Netherlands, Sweden, Poland, Belgium, Austria, Denmark, Portugal,Czech Republic, Romania, Hungary, Slovakia, Slovenia, Lithuania, Cyprus, Malta, Iceland, Serbia & Ukraine	Japan, India, Indonesia, Philippines, Pakistan, Vietnam, Australia, Hong Kong, Thailand, Singapore, Taiwan, Bahrain, Jordan, Lebanon & Sri Lanka	Japan, India, China, S-Korea, Indonesia, Turkey, Philippines, Pakistan, Hong Kong, Malaysia, Thailand, & Singapore, Bahrain, Jordan and Lebanon	Japan, S-Korea, Turkey, Pakistan, Bangladesh, Vietnam, Malaysia, New Zealand, Thailand, Singapore, Taiwan, Jordan, Lebanon and Sri Lanka	S-Africa, Egypt, Botswana, Ivory Coast, Kenya, Mauritius, Morocco, Tanzania, Tunisia, Uganda & Zambia	Egypt, Kenya, Morocco, Tanzania, Tunisia, Uganda & Zambia	Egypt, Ivory Coast, Kenya, Morocco, Namibia, Uganda & Zambia	U.S.		U.S. & Costa Rica	Brazil & Chile	Chile & Argentina	Chile

Note: This table covers oil-importing countries in the G7, Europe, BRICS, N11, and OPEC and shows in which lag(s) and which country, the effect of oil on stock market is significant in both OLS and in at least one quantile. In this table, the effect of lags 1, 3, 6, 9, and 12 of oil price changes are considered to see whether variation in dependent variable can be explained more by them.

Table 2.37 Benchmark and each lag in oil-importing countries (continued)

Lag0	Lag1	Lag3	Lag6	Lag9	Lag12
UK, Botswana and Hong Kong	France, Austria, Ireland, Portugal,Czech Republic, S-Africa, Philippines, Egypt, Argentina and Ukraine.	Germany, Ireland, Portugal, Romania, India, China, Indonesia, Philippines, Bangladesh, Iceland, Lebanon, Colombia, Peru, Morocco, and Tunisia	UK, France, Spain, Netherlands, Sweden, Poland, Denmark, Finland, Greece, Latvia, China, Turkey, Bangladesh, Malaysia, Swiss, Argentina, Colombia & Namibia	Spain, Slovakia, Luxembourg, Brazil, S-Africa, Bangladesh, Vietnam, Australia, New Zealand, Sri Lanka, Costa Rica, Peru, Botswana, Ivory Coast, Mauritius & Ukraine	France, Ireland, Finland, Luxembourg, Croatia, Latvia, Estonia, Brazil, India, China, S-Africa, Australia, Hong Kong, Swiss, Argentina, Bahrain, Colombia, Peru, Botswana, Tanzania & Tunisia.

Note: This table covers oil-importing countries in the G7, Europe, BRICS, N11, and OPEC and shows in which lag(s) and which country, the effect of oil on stock market is significant in both OLS and in at least one quantile. In this table, the effect of lags 1, 3, 6, 9, and 12 of oil price changes are considered to see whether variation in dependent variable can be explained more by them.

Table 2. 38: Benchmark NBER and each lag in oil-importing countries

Europe-Lag(s)			Asia & Oceania-Lag(s)			Africa-Lag(s)			N-America-Lag(s)			S-America -Lag(s)		
lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	lag0	Lag1	lag3
Germany, France, Italy, Netherlands, Belgium, Austria, Denmark, Greece,Czech Republic, Romania, Luxembourg, Bulgaria, Slovenia, Lithuania, Estonia, Cyprus, Iceland, Serbia and Ukraine	Germany, UK, Italy, Greece, Luxembourg, Bulgaria, Croatia, Slovenia, Cyprus, Swiss and Serbia	France, Poland,Czech Republic, Lithuania, Latvia, Cyprus and Ukraine	India, S-Korea, Turkey, Vietnam, Australia, New Zealand, Singapore, Bahrain, Jordan and Lebanon	Japan, India, S-Korea, Bangladesh, New Zealand, Thailand, Bahrain and Lebanon	Hong Kong	S-Africa, Egypt, Ivory Coast, Mauritius, Morocco and Uganda	Ivory Coast, Mauritius, Morocco, Namibia, Tanzania and Zambia	Botswana, Mauritius Uganda and Zambia	Canada	NA	Costa Rica	Argentina and Colombia	Peru	Argentina
Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12
Luxembourg, Bulgaria, Croatia, Slovenia, Cyprus, Serbia and Ukraine	Sweden, Denmark, Bulgaria, Lithuania, Latvia, Estonia, Malta and Serbia	Spain	S-Korea, Vietnam, New Zealand, Singapore and Lebanon	Taiwan	Indonesia, Philippines and Taiwan	NA	Namibia	NA	Costa Rica	U.S.	NA	Peru,	Colombia	NA

Note: This table covers oil-importing countries in the G7, Europe, BRICS, N11, and OPEC and shows in which lag(s) and which country, the effect of oil on stock market is significant in both OLS and in at least one quantile. In this table, the impact of NBER recession indicators as a dummy variable and the effect of lags 1, 3, 6, 9, and 12 of oil price changes are considered to see whether variation in dependent variable can be explained more by them.

Table 2.38 Benchmark NBER and each lag in oil-importing countries (continued)

lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	lag0	Lag1	lag3
UK, Spain, Poland, Ireland, Finland, Portugal, Hungary, Slovakia, Croatia and Swiss	France, Spain, Netherlands, Sweden, Poland, Belgium, Denmark, Ireland, Finland, Portugal, Romania, Hungary, Lithuania, Estonia and Malta	Germany, UK, Spain, Netherlands, Sweden, Belgium, Austria, Denmark, Finland, Greece, Hungary, Slovakia, Luxembourg, Bulgaria, Malta, Swiss and Serbia	Japan, Indonesia, Philippines, Bangladesh, Hong Kong, Malaysia, Thailand, Taiwan and Sri Lanka	China, Indonesia, Pakistan, Vietnam, Australia, Hong Kong, Malaysia, Singapore and Sri Lanka	Japan, India, China, S-Korea, Turkey, Pakistan, Vietnam, Australia, Thailand, Singapore, Taiwan, Bahrain, Jordan and Sri Lanka	Kenya, Namibia, Tanzania, Tunisia and Zambia	Kenya, Tunisia and Uganda	S-Africa, Egypt, Ivory Coast, Kenya and Namibia	U.S. and Costa Rica	U.S. and Costa Rica	U.S.	Brazil, Chile and Peru	Brazil, Chile and Colombia	Brazil and Chile
Lag6	**Lag9**	**Lag12**	**Lag6**	**Lag9**	**Lag12**	**Lag6**	**Lag9**	**Lag12**	**Lag6**	**Lag9**	**Lag12**	**Lag6**	**Lag9**	**Lag12**
Germany, France, Sweden, Belgium, Denmark, Ireland, Finland,Czech Republic, Romania, Hungary, Slovakia, Lithuania, Estonia, Malta and Iceland	Germany, UK, France, Italy, Spain, Netherlands, Poland, Belgium, Austria, Finland, Portugal, Greece,Czech Republic, Romania, Hungary, Croatia, Iceland and Swiss	Germany, UK, France, Italy, Sweden, Belgium, Austria, Denmark, Finland, Portugal, Greece, Hungary, Slovakia, Bulgaria, Slovenia, Lithuania, Estonia, Cyprus, Malta, Iceland, Serbia & Ukraine.	Japan, Indonesia, Philippines, Pakistan, Australia, Hong Kong, Malaysia, Taiwan, Bahrain, Jordan, Sri Lanka	Japan, India, China, S-Korea, Indonesia, Turkey, Pakistan, Bangladesh, Vietnam, Hong Kong, Malaysia, New Zealand, Singapore & Lebanon	Japan, S-Korea, Turkey, Bangladesh, Vietnam, Malaysia, New Zealand, Singapore, Jordan, Lebanon& Sri Lanka	S-Africa, Ivory Coast, Kenya, Mauritius, Morocco, Namibia, Uganda and Zambia	Egypt, Kenya, Morocco, Tanzania, Tunisia, Uganda and Zambia	Egypt, Ivory Coast, Kenya, Mauritius, Morocco, Namibia, Tanzania, Uganda and Zambia	NA	NA	Costa Rica	Brazil, Chile and Argentina	Argentina	Brazil and Chile

Note: This table covers oil-importing countries in the G7, Europe, BRICS, N11, and OPEC and shows in which lag(s) and which country, the effect of oil on stock market is significant in both OLS and in at least one quantile. In this table, the impact of NBER recession indicators as a dummy variable and the effect of lags 1, 3, 6, 9, and 12 of oil price changes are considered to see whether variation in dependent variable can be explained more by them.

Table 2.38 Benchmark NBER and each lag in oil-importing countries (continued)

Lag0	Lag1	Lag3	Lag6	Lag9	Lag12
Sweden, Malta, China, Pakistan and Botswana	Austria,Czech Republic, Slovakia, Latvia, S- Africa, Turkey, Philippines, Egypt, Taiwan, Iceland, Argentina, Jordan, Botswana and Ukraine	Italy, Ireland, Portugal, Romania, Croatia, Slovenia, Estonia, Indonesia, Philippines, Bangladesh, Malaysia, New Zealand, Iceland, Lebanon, Colombia, Peru, Morocco, Tanzania and Tunisia	U.S., UK, Italy, Spain, Netherlands, Poland, Austria, Portugal, Greece, Latvia, India, China, Turkey, Bangladesh, Egypt, Thailand, Swiss, Colombia, Botswana, Tanzania and Tunisia	Ireland, Slovakia, Luxembourg, Slovenia, Cyprus, Brazil, S-Africa, Philippines, Australia, Thailand, Chile, Bahrain, Jordan, Sri Lanka, Costa Rica, Peru, Botswana, Ivory Coast, Mauritius and Ukraine	U.S., Netherland, Poland, Ireland,Czech Republic, Romania, Luxembourg, Croatia, Latvia, India, China, S-Africa, Pakistan, Australia, Hong Kong, Thailand, Swiss, Argentina, Bahrain, Colombia, Peru, Botswana and Tunisia

Note: This table covers oil-importing countries in the G7, Europe, BRICS, N11, and OPEC and shows in which lag(s) and which country, the effect of oil on stock market is significant in both OLS and in at least one quantile. In this table, the impact of NBER recession indicators as a dummy variable and the effect of lags 1, 3, 6, 9, and 12 of oil price changes are considered to see whether variation in dependent variable can be explained more by them.

Table 2. 39: Benchmark and each lag in oil-exporting countries

Countries that the effect of oil on stock market is significant in both OLS and at least one quantile														
Europe			**Asia &Oceania**			**Africa**			**N-America**			**S-America**		
Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	lag0	Lag1	lag3
Norway	NA	NA	Russia, Iran, Saudi Arabia, UAE, Qatar, Kuwait and Oman	Iran, Nigeria, Saudi Arabia, Iraq, Qatar, UAE, Kuwait and Oman	Iraq, Qatar, Kuwait and Oman	Nigeria	NA	NA	Canada	NA	NA	NA	NA	NA
Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12
NA	NA	NA	Russia, Iraq, Qatar, Kuwait and Ecuador	Qatar	Kuwait, and Oman	NA	NA	NA	NA	Canada		Venezuela	Ecuador	NA

Exception countries that this effect is not significant using OLS but there is at least one quantile that this relationship is significant					
Lag0	Lag1	Lag3	Lag6	Lag9	Lag12
Mexico, Iraq, Algeria, Ecuador and Venezuela	Canada, Norway, Russia, Mexico, Algeria, Ecuador & Venezuela	Canada, Russia, , Iran, , UAE, Algeria, Ecuador & Venezuela	Canada, Norway, Mexico, Iran, Nigeria, Saudi Arabia, UAE & Algeria	Norway, Russia, Mexico, Iran, Saudi Arabia, Iraq, UAE, Kuwait, Algeria & Venezuela	Norway, Russia, Nigeria, Saudi Arabia, Iraq, Qatar, UAE & Algeria

Exception countries that this effect is not significant using both OLS and quantile regression					
Lag0	Lag1	Lag3	Lag6	Lag9	Lag12
NA	NA	Norway, Mexico, Nigeria & Saudi Arabia	Oman	Nigeria & Oman	Canada, Mexico, Iran, Ecuador & Venezuela

Note: This table covers oil-exporting countries in the G7, Europe, BRICS, N11, and OPEC and shows the effect of oil on stock market in each lag. In this table, the effect of lags 1, 3, 6, 9, and 12 of oil price changes are considered to see whether variation in dependent variable can be explained more by them.

Table 2. 40: Benchmark NBER and each lag in oil-exporting countries

Countries that the effect of oil on stock market is significant in both OLS and at least one quantile														
Europe			**Asia &Oceania**			**Africa**			**N-America**			**S-America**		
lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	Lag0	Lag1	Lag3	lag0	Lag1	lag3
Norway	NA	NA	Russia, Iran, Saudi Arabia, Qatar, UAE, Kuwait and Oman	Iran, Saudi Arabia, Iraq, Qatar, Kuwait and Oman	Iraq, Kuwait, Oman	NA	NA	NA	Canada	NA	NA	NA	NA	NA
Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12	Lag6	Lag9	Lag12
NA	NA	NA	Russia, Iraq, Qatar and Kuwait	Qatar	Kuwait, Oman	NA	NA	NA	NA	NA	NA	Venezuela	Ecuador	NA

Exception countries that this effect is not significant using OLS but there is at least one quantile that this relationship is significant					
Lag0	Lag1	Lag3	Lag6	Lag9	Lag12
Mexico Iraq, and Ecuador	Canada, Norway Russia, Mexico UAE & Venezuela	Canada, Norway, Russia, Mexico, Iran, Qatar, UAE, Algeria, Ecuador & Venezuela	Canada, Norway, Mexico, Saudi Arabia, UAE, Algeria & Ecuador	Canada, Norway, Russia, Mexico, Iran, UAE, Kuwait, Algeria & Venezuela	Norway Russia, Mexico, Iraq, UAE, Algeria & Ecuador

Exception countries that this effect is not significant using both OLS and quantile regression					
Lag0	Lag1	Lag3	Lag6	Lag9	Lag12
Algeria & Venezuela	Algeria & Ecuador	Saudi Arabia	Iran & Oman	Saudi Arabia, Iraq & Oman	Canada, Iran, Saudi Arabia, Qatar & Venezuela

Note: This table covers oil-exporting countries in the G7, Europe, BRICS, N11, and OPEC and shows the effect of oil on stock market in each lag. In this table, the impact of NBER recession indicators as a dummy variable and the effect of lags 1, 3, 6, 9, and 12 of oil price changes are considered to see whether variation in dependent variable can be explained more by them.

2.5 Conclusions

This chapter investigated the impact of crude oil price changes on stock market returns in the selected countries, based on the data available for each country up until November 2016. Using the OLS and QR approaches, this study considers eighty-seven developed, fast-developing, and developing countries that are either oil-importing or oil-exporting. In addition, this study covered world indices such as MSCI ACWI, MSCI World, MSCI EAFE, MSCI Emerging Markets, MSCI Europe, and MSCI USA. Employing OLS and quantile approaches to analyse the contemporaneous and lagged impacts of crude oil price changes, and also accounting for the role of recession episodes, this chapter explores the contemporaneous and lagged time-varying association between crude oil price changes and stock returns (including NBER recession episodes) in eighty-seven oil-exporting and oil-importing countries in different stages of development. Although the findings show that these two techniques generate broadly the same results, there are some subtle differences to consider. Moreover, the findings reveal that the quantile technique provides a greater degree of insight when considering the relationship between crude oil price changes and the stock market returns in this study, especially in those quantiles where the results are different to the OLS ones in terms of either sign or significance. For instance, in the benchmark case and in the following countries, there is no relationship between crude oil price changes and the stock market returns using OLS but there is a significant relationship in at least one quantile:

For Europe, the countries are Croatia, Finland, Hungary, Ireland, Malta, Poland, Portugal, Spain, Slovakia, Sweden, and Switzerland. In Asia and Oceania, they are Bangladesh, China, Indonesia, Japan, Malaysia, Pakistan, Philippines, Sri Lanka, Taiwan, and Thailand. In Africa, they are Kenya, Namibia, Tanzania, Tunisia, and Zambia. In North America, they are Costa Rica and the US. Finally, for South-America, they are Chile and Peru. In the benchmark case with the NBER recession indicator, in the following countries, we can see that there is no relationship between crude oil price changes and stock market returns using OLS but a significant relationship in at least one quantile:

For Europe, the countries are Croatia, Finland, Hungary, Ireland, Poland, Portugal, Slovakia, Spain, Switzerland, and the UK. In Asia and Oceania, they are Bangladesh, Hong Kong, Indonesia, Japan, Malaysia, Philippines, Sri Lanka, Taiwan, and Thailand. In Africa, they are

Kenya, Namibia, Tanzania, Tunisia, and Zambia. In North America, they are Costa Rica and the US. Finally, for South-America, they are Chile and Peru. This study could provide a greater degree of information for global investors wishing to diversify their portfolio among different countries and who seek to understand the reaction of stock returns to crude oil price changes. It will also be useful for investors seeking greater returns for their investment. The findings identify how the relationship between oil price returns and stock price returns varies substantially across different quantiles for their distributions. This should inform investors how best to allocate their wealth in different market conditions rather than seeing the oil-shares relationship as fixed. Furthermore, it is evident that specific specific quantiles reflect specific market conditions. For example, tail quantiles correspond to extreme market conditions (exceptionally low or exceptionally high market returns). In Table 2.2, the OLS shows that in Ireland there is no relationship between crude oil price changes and the stock market returns but a significant negative relationship exists in quantile 0.95, revealing that a rise in crude oil prices has a significant impact on the performance of the stock market in that specific quantile. These findings may also prove useful for short-term investors, in terms of potential returns from investing during extradorinary times such as during oil crises. There are also implications useful for long and short-term stock market policy makers, brokers, governments, local and international investors, and indeed anyone with an interest in these markets. The following briefly reviews the challenges of this research. There are possibilities to use other methods to conduct this research such as wavelet analysis, which would potentially be more useful when considering the relationship between crude oil price changes and stock returns. Secondly, data for some countries during certain time periods is not available. Therefore, the findings cannot be generalised across countries that fall outside of this study. Over the course of this study, the researcher has identified an area that might be of interest for future studies:

One area of interest could be to examine the effects of political, industrial, and credit crises on the relationship between crude oil price changes and these countries' stock market returns. Additionally, it might prove beneficial to apply a different methodology, such as the panel regression model, in order to investigate the inpact of the methodology upon the results. Finally, another area for future study could be to investigate the impact the size of a country's economy has upon the results.

Chapter – Three

Implied volatility prediction in BRICS stock markets: Evidence from a bayesian graphical VAR model

Abstract

This chapter considers the predictive power of implied volatility in the commodity market and major developed stock markets for the implied volatility in individual BRICS stock markets. Employing the newly developed Bayesian graphical vector autoregressive (BGVAR) model of Ahelegbey et al. (2016), the results show, based upon daily data over the period 16th March 2011 to 7th October 2016, that the predictability of individual implied volatilities in BRICS stock markets is a function of both global and regional stock market implied volatilities, and that the role of commodity market volatility is marginal, except for the case of South Africa.

3.1 Introduction

BRICS stock markets are active, vibrant markets, useful for portfolio diversification. They attract capital inflows from foreign investors and have experienced higher economic growth compared to many developed economies (Bhuyan et al., 2016) mired in a slow growth environment. By the end of 2015 data from the World Federation of Exchanges showed that the total market capitalization of BRICS countries was 12,809 trillion USD, a value that exceeds the total combined market capitalization of Europe, the Middle-East and Africa by 1,200 trillion USD. In addition, BRICS economies are home-based major sources of demand and supply for strategic commodities, such as gold and crude oil, with China and India being key consumers of crude oil, and Russia one of the largest producers of crude oil and natural gas.[1] Concerning the gold market, China is the world's largest producer, as well as the second largest gold consumer, followed by India.[2]

[1] According to the latest figures from IndexMundi, in 2015 and 2016, China (India) imported and consumed respectively 6.71 (4.057) and 12.47 (4.521) million barrels of crude oil per day. Interestingly, China has surpassed the US and become the largest oil importer in 2015 with record 6.7 million barrels imported from overseas. Further, the Energy Information Administration (EIA) indicates that India's demand for oil is expected to expand to 10 million barrels per day by 2040. As for Russia, it is the second largest producer and exporter of crude oil after Saudi Arabia.

[2] Altogether, China, Russia, South Africa and Brazil produce around 31% of world gold production.

In 2015, the World Gold Council showed that both China and India consumed 1,845.80 metric tonnes of gold, representing more than 53% of world consumption.[3] Similar to emerging markets, BRICS markets are sensitive to changes in macroeconomic and global market conditions. While the role of domestic factors in driving economic and financial conditions in BRICS countries cannot be ignored, there is a lot of evidence that external factors are predominat in driving many of the economic and financial conditions in BRICS countries. For example, BRICS countries suffered from the impact of the global financial crisis (GFC), and as a result, experienced volatile capital flows and stock returns. Undoubtedly, robust economic conditions in the US and the rest of the developed economies are beneficial to the economies of BRICS countries which share significant trade and economic ties with developed economies.[4] Conversely, weak economic conditions in developed economies will lead to a decline in exports from BRICS countries to developed countries and to a decline in investments and capital inflows from developed to BRICS countries. Given the rising integration of BRICS countries in the global economy and evidence of significant financial flows from developed economies to BRICS economies, shocks from the US and other developed economies can be transmitted to BRICS economies which in turn will have an effect on their stock markets (Bansal et al., 2005; Ozoguz, 2009). Moreover, there is evidence suggesting that US equity returns are a major predictor of equity returns in industrialized and non-industrialized countries (see, among others, Rapach et al., 2013). Given that US uncertainty is negatively related with US equity returns (Jubinski and Lipton, 2012), it is therefore possible that the former has significant (negative) impacts on stock returns in major emerging markets such as BRICS. Sarwar (2012) examines the link between US uncertainty and stock markets returns in BRICS countries from 1993 to 2007 finding that the implied volatility index for the US is also a gauge for investor fear in the stock markets of Brazil, India, and China. Further recent evidence from Sarwar and Khan (2016) implies that US uncertainty is a good proxy for the stock markets of emerging markets, including BRICS. Trade and economic ties, advanced technology and world economic and financial integration are also partially responsible for the volatility between developed and BRICS economies.

[3] The World Gold Council also showed that, as of June 2016, China, Russia, and India officially hold 1,929.30, 1,498.7 and 557.8 metric tonnes of gold, respectively.
[4] In 2015, the US total trade (imports and exports) with the BRICS countries reached 760.86 billion USD (599.31 with China, 66.24 with India, 59.11 with Brazil, 23.44 with Russia, and 12.76 with South Africa).

The fact that some of the BRICS countries are home-based major sources of demand and supply for commodities such as crude oil and gold, also suggests that slower growth in developed economies is more likely to affect those economies and their stock market volatility. For example, lower commodity prices have adversely affected economic activities in commodity-exporting BRICS countries. This also implies the potential for connections between the implied volatilities of crude oil and gold and the implied volatilities in BRICS countries. Consistant with Sarwar's argument (2016), we asseert that the implied volatilities of BRICS countries will respond to changes in the implied volatilities of major developed countries because the market risks reflected in the latter are also part of the risks of the former. In fact, discount rates depend upon the state of domestic economic factors, systematic risk, and monetary policies; given the evidence that BRICS countries are also sensitive to global macroeconomic conditions and US decisions by the Federal Reserve, it follows that stock market (implied) volatility in BRICS countries will rise as this common risk factor increases in the US and other developed economies. While the existing literature provides evidence on price formation in BRICS stock markets as well as on their return and volatility connections to those of developed economies and strategic commodities such as oil and gold (see Section 2), the finance literature still lacks empirical evidence on whether the implied volatilities of oil, gold, and developed stock markets can be used to predict the implied volatility in individual BRICS countries. Implied volatility indices reflect investors' expectation of future stock market volatility, and are thus forward looking as compared to historical measures of volatility such as realized or GARCH-based volatilities (Maghyereh et al., 2016).

Addressing the significant gap in the literature as described above is important for investment allocation and portfolio diversification inferences, given that evidence of predictability suggests that market participants have quite similar expectations of future volatility. Furthermore, uncovering the predictive power of developed stock markets and commodity markets' implied volatility indices for BRICS markets implied volatilities is important for the planning and execution of investment strategies. This is especially true with hedging Vega, a method of managing risk in options trading by establishing a hedge against the implied volatility of the underlying asset. Off-setting the negative effect of increased volatility in any portfolio containing options is an important element of risk management given the emergence of some financial derivatives on several implied volatility indices (for example, futures and options).

In addition to the use of global implied volatilities in assessing the predictability of individual BRICS implied volatilities, whereas many previous studies rely on historical measures of volatility, this thesis employs a newly developed methodology based on the Bayesian graphical VAR, developed by Ahelegbey et al. (2016). Given the lack of indications from economic theory on an association across implied volatility indices, this study follows Ahelegbey et al. (2016) employing a structural VAR model based on a graph representation of the conditional independence among the implied volatility indices. This so called GSVAR approach is superior to the standard SVAR model, a model often criticized for imposing implausible restrictions (Ahelegbey et al., 2016). In addition, SVAR models although useful in analyzing the dynamics of a model by relying on the impulse response function which measures the degree of responses of endogenous variables so as to isolated unexpected structural shocks, GSVAR, in contrast, helps uncover, within a multivariate time series analysis, the presence and effects of contemporaneous and lagged causality across the examined variables by relying on a graph representation of the conditional independence among the examined variables (Ahelegbey et al., 2016).

The chapter proceeds as follows. Section 3.2 reviews the related literature. Section 3.3 presents the data. Section 3.4 explains the empirical models. Section 3.5 discusses the results, with section 3.6 provides a conclusion.

3.1.1 Research objectives and questions

The aim of this research is to examine the predictive power of implied volatilities of the commodities markets and major developed stock markets in the implied volatilities of individual BRICS stock markets. To this end the following question is developed:

Does the implied volatility of the commodity and developed economies' equity markets have a significant predictive power over the implied volatilities of BRICS stock markets?

3.1.2 Research contributions and findings

This study differs from the existing literature which rarely employs implied volatility data (Mensi et al., 2014; Sarwar and Khan, 2016). Moreover, it further contributes through the employment of the recently developed method of Ahelegbey et al. (2016), which in turn uncovers the presence and impacts of contemporaneous and lagged causality across the implied volatility indices of BRICS countries, developed countries, and commodity markets, by modelling them simultaneously. Given the lack of indications from the economic theory regarding a link across implied volatility indices, this novel methodology avoids posing misleading or implausible restrictions on a standard SVAR model, thereby providing an appropriate framework within which to conduct the empirical study.

The findings reveal the predictability of global implied volatility indices in individual BRICS countries based on the uncertainty in commodity and developed stock markets, although this predictability is not the same across countries. Some findings also highlight evidence of the emergence of some domestic factors in explaining the implied volatility. For example, evidence on the dominance of the US VIX was not present in Brazil and China, suggesting that local investors are concerned more about other local and regional stock market uncertainties than the US market uncertainty. This is opposite to what has been found in much of the existing literature which argues that external risk factors are more important than internal factors for BRICS stock market returns and historical volatility.

3.2 Related studies

Along with globalization and the rising importance of BRICS stock markets for international diversification, numerous studies have recently emerged to clarify stock price return and volatility discovery on the BRICS stock markets, and to understand their interaction with other global and commodities markets.

A strand of research considers the return and volatility connections between developed and BRICS stock markets, and the benefits of diversification and risk management perspectives. Bhar and Nikolova (2009), using a bivariate EGARCH model with time varying correlations conclude that BRICS stock markets have a role to play in international portfolio diversification. Aloui et al. (2011) show that the stock markets of Brazil and Russia are more dependent on US stock market conditions than China and India. Similar results are also reported by Bianconi et al. (2013). Dimitriou et al. (2013), using the multivariate fractionally integrated asymmetric power ARCH dynamic conditional correlation (FIAPARCH-DCC) model, show that the dependence between US and BRICS stock markets is higher in bullish markets than in bearish markets, highlighting the diversification benefits. Gilenko and Fedorova (2014) employ a multivariate GARCH model focusing on the volatility transmission between the stock markets of the USA, Germany, Japan and the MSCI Emerging market index and BRICS stock markets. After accounting for the effect of the GFC, the authors provide some evidence for the decoupling hypothesis. Mensi et al. (2014) use a quantile regression approach and find that the BRICS stock markets exhibit dependence with the US stock market and its uncertainty. A study by Samargandi and Kutan (2016) show, through the use of VAR-based model, that credit to the private sector has a positive spillover effect on growth in some of the BRICS countries. Using a Bayesian form of Samargandi and Kutan's (2016) methodology, Tsionas et al. (2016) study the transmission of financial and monetary shocks from BRICS to the US and in seventeen European countries, and find that interest rates and total credit have a significant impact on the transmission of shocks. Mensi et al. (2016), adopting the same methodology of Dimitriou et al. (2013), show dynamic correlations between the US and the BRICS stock markets. Furthermore, the effects of both return and volatility transmission from the US market to the BRICS markets have been the subject of Bhuyan et al. (2016) who show that the US market is both the mean and volatility transmitter to the BRICS markets. Interestingly, the Chinese stock market exerts a significant mean spillover effect to the US market. Jin and An (2016) use the volatility impulse response technique and examine the contagion effects between the US and BRICS stock markets, finidng that these stock markets are interconnected by their volatilities. They further report evidence of contagion effects from the US stock markets to the BRICS stock markets during the GFC, although the degree of these effects differ from one market to another according to the level of integration with the global economy.

As for the predictability of BRICS stock market returns most of the aforementioned studies reveal evidence of significant effects from developed economies on BRICS stock markets. The reported evidence of the volatility transmission is based on historical volatility modelled through a GARCH based framework. Unlike previous studies, this study uses implied volatility indices which reflects investor expectation of future stock market volatility indices. Given the important role played by BRICS countries in driving the global commodities markets, a second strand of research focuses on the link between BRICS stock markets and commodity markets, in particular crude oil and gold commodities. Ono (2011) uses a VAR model to examine the impact of oil prices on the stock markets in BRICS countries, finding that the volatility of stock returns in China and Russia in particular are affected by oil price shocks. Hammoudeh et al. (2014) use a copula function to examine the interdependence of commodity and stock markets in China and highlight risk diversification and downside risk reduction benefits from adding commodities in a stock portfolio. Using a multivariate GARCH model, Kumar (2014) shows unidirectional significant return spillover from gold to Indian equities, highlighting the hedging effectiveness of adding gold to a portfolio of Indian stocks. Thuraisamy et al. (2013) use a multivariate GARCH model and find that the volatilities of gold and oil prices are related to Asian stock market volatility (including China and India). Beckmann et al. (2015) use a smooth transition regression to assess the hedge and safe haven roles of gold and find that gold exhibits a strong safe haven function in India but not in China or Russia. Chkili (2016) using an asymmetric DCC model for weekly data on gold and BRICS stock markets provides evidence that gold can act as a safe haven in times of market stress. Using a similar methodology, Jain and Biswal (2016) uncover strong relationships between the prices of gold, oil and Indian stocks and suggest the importance of using the price of gold to restrain stock market volatility. As outlined above, whilst prior studies show some interactions between the prices of gold, oil and the BRICS stock markets, they mostly rely on return linkages and, to a lesser extent, on volatility linkages. The latter have usually been modelled using historical volatility measures, whereas this study adopts implied volatility indices.

A final strand of research has recently used implied volatility, examining the linkages between assets and other financial variables. Tsai (2014) examines the volatility spillover effect in the stock markets of the US, the UK, Germany, Japan, and France. The author uses the implied volatility index for the US to explain the volatility spillover effect and finds that this specific non-fundamental factor is the main factor behind the increased correlation between markets. Basher and Sadorsky (2016) employ the implied volatility index for the US within a GARCH-based framework and associate between emerging stock prices, oil, gold, and the implied volatility. Interestingly, Maghyereh et al. (2016) using the implied volatility indices report that crude oil mainly transmits its effect on developed and emerging stock markets. Sarwar (2016) examines the implied volatility linkages between gold and US equities and shows that the implied volatility index for the US Granger causes the volatilities of gold, but not vice versa. Sarwar and Khan (2016) use a GARCH-based model and the Granger causality test to examine the effects of US stock market uncertainty, as measured by the implied volatility, on the stock returns in Latin America and broader emerging equity markets, before, during, and after the 2008 financial crisis. The authors find that intensified market uncertainty reduces emerging market returns but raises the variance of returns. Sousa et al. (2016) find weak evidence of return predictability for BRICS countries based on the commodity price growth variable, and implied volatility index for the US, but report stronger evidence for the role of global equity returns. In an interesting paper, Chen (2014) uses a copula-based bivariate Markov-switching model examining the connections between the implied volatility indices of Canada, Japan, Germany and the United States. The author highlights the dominant role played by the US stock market and argues that the linkages are more pronounced both when the implied volatility indices rise *and* during crisis periods. This study instead examines whether implied volatility indices in strategic commodity markets (oil and gold) and major developed stock markets (Canada, France, Germany, Japan, Netherlands, Sweden, Switzerland, the United Kingdom, and the USA) have predictive ability with respect to the implied volatilities in individual BRICS stock markets. Such an innovative research question remains surpisingly unexplored. This study also contributes to the related literature by using a newly developed methodology based on the graph representation of the conditional independence among the implied volatility indices (Ahelegbey et al., 2016). In particular, this methodology is suitable for our case because no comprehensive theory appropriately relates the implied volatility indices under examination.

3.3 Data

This study uses daily data for the implied volatility indices of sisxteen stock and commodity markets. These indices include five dependent variables representing the stock implied volatilities indices of BRICS countries: (BRL), Brazil; (RUA), Russia; (INA), India; (CHA), China; (SOA), South Africa. As for the *predictor* variables, they are eleven implied volatility indices representing nine developed countries: (CAA), Canada; (FRC), France; (GEY), Germany; (NER), Netherlands; (NII), Japan; (SWN), Sweden; (SWD), Switzerland; (UK), the United Kingdom; (CBE), the USA; and two commodity markets: (GOLD), Gold; (OIL), Crude oil. The full sample period spans from 16th March 2011 to 7th October 2016, where the start and end-points are primarily driven by the availability of the data. The data is compiled from DataStream. The US implied volatility indices are derived from option prices and reflect the 30-day measure of the expected volatility of the respective asset market. In this sense, implied volatility indices reflect investors' expectation on future market conditions and thus represent a forward-looking measure of market uncertainty.

Table 3. 1: Descriptive statistics of implied volatility indices

	Mean	Max.	Min.	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
Brazil	33.170	72.830	16.670	9.673	0.883	3.429	200.085*
Russia	33.359	97.050	15.420	10.441	1.202	5.178	636.814*
India	18.918	37.700	11.560	4.803	1.175	4.008	395.534*
China	27.588	63.420	16.930	7.109	1.623	6.092	1216.619*
South Africa	19.798	34.070	10.610	3.853	0.638	3.470	112.048*
Canada	16.791	36.710	7.800	4.871	1.226	4.284	463.541*
France	21.766	55.594	11.819	6.438	1.384	5.227	764.194*
Germany	22.086	50.740	12.170	6.664	1.558	5.776	1054.588*
Netherlands	19.521	47.250	5.770	6.303	1.353	4.744	627.674*
Japan	24.508	69.790	14.000	5.880	1.525	8.238	2224.216*
Sweden	18.215	46.510	9.300	6.320	1.544	5.476	948.768*
Switzerland	16.976	44.470	10.010	5.146	2.009	8.141	2577.027*
UK	17.196	43.610	9.672	5.625	1.731	6.331	1396.798*
US	17.228	48.000	10.320	5.700	2.095	7.922	2529.586*
Gold	18.840	39.950	11.970	4.500	1.427	5.671	925.225*
Crude oil	34.283	78.970	14.500	12.278	0.535	2.860	70.627*

Notes: This table covers the full sample period from 16 March 2011 to 07 October 2016 (1,453 daily observations); * on the Jarque-Bera test statistics indicates the rejection at the 1% significance level of the null hypothesis that the data are normally distributed.

The summary statistics for all sixteen implied volatilities are shown in Table 3.1. Amongst the examined variables, crude oil volatility has the highest mean and standard deviation, and among the stock market implied volatility indices, Russia displays the highest mean and standard deviation. The BRICS countries do show some of the highest means. All the series are positively-skewed, indicating that the implied volatility distribution has an asymmetric tail extending to the right (towards more positive values), especially for the US and Switzerland. Except for crude oil, the volatility series are more peaked than the normal distribution, especially in Japan, Switzerland, and the US.

3.4 Methodology

This chapter aims to model the contemporaneous and lagged causality between the five individual equity implied volatility for BRICS countries, as dependent variables, and eleven implied volatilities in the global markets, as predictor variables, over the full and rolling sub-samples. To this end, a structural vector autoregressive[5] (SVAR) model can be applied:

$$Y_t = B_0 Y_t + \sum_{i=1}^{p} B_i\, Y_{t-1} + \sum_{i=1}^{p} C_i\, Z_{t-1} + \varepsilon_t \tag{3.1}$$

where t= 1, … , T and p is the maximum lag order. Y_t and Z_t are n_y and n_z vector of response (the five implied volatilities for the BRICS countries) and predictor variables (eleven other implied volatilities covering developed equity, oil and gold markets), respectively. ε_t is n_y vector of structural residuals which are independently, identically and normally distributed with mean zero and covariance matrix Σ_ε; B_0 is a $(n_y \times n_y)$ zero diagonal matrix of structural contemporaneous coefficients, with zero diagonals; B_i and C_i with $1 \leq i \leq p$ are $(n_y \times n_y)$ and $(n_y \times n_z)$ matrices of the parameters of interest, respectively. For notational simplicity, the reduced form of model (3.1) is given by:

$$Y_t = A_1 X_{t-1} + \cdots + A_p X_{t-p} + u_t \tag{3.2}$$

where $X_t = (Y_t, Z_t)' = (X_{1t}, X_{2t}, \ldots, X_{nt})'$ is an $n = n_y + n_z$ dimensional time series; $B_i^* = (B_i, C_i)$, $1 \leq i \leq p$, are $(n_y \times n)$ matrices of unknown coefficients; $A_0 = (I_{n_y} - B_0)$ is a $(n_y \times n_y)$ matrix; $A_i = A_0^{-1}\, B_i^*$, $1 \leq i \leq p$, are $(n_y \times n)$ reduced-form lag coefficient matrices; and $u_t = A_0^{-1}\, \varepsilon_t$ is an $(n_y \times 1)$ independently and identically distributed reduced-form vector residual term with zero mean and covariance matrix Σ_u. It is worth noting here that to estimate the parameters of the SVAR model it is necessary to obtain a reduced form equation (3.2) and to impose a certain number of restrictions. However, the standard SVAR model is often criticized for imposing implausible restrictions or restrictions that are as plausible as the underlying economic theory they are based on (Ahelegbey et al., 2016). This criticism is enormously relevant to our case given the lack of indications from economic theory on an association across implied volatility indices. Accordingly, we follow Ahelegbey et al. (2016) and employ a SVAR model based on a graph representation of conditional independence among the examined variables.

[5] This model is related to the discussion available in Balcilar et al. (2016) regarding Bayesian graphical model.

In this Bayesian Graphical Vector Autoregressive (BGVAR) model, the Dynamic Bayesian Network technique[6] is applied to the standard SVAR model presented in equation (3.1). The BGVAR model offers at least two advantages over the standard SVAR model. Firstly, there is no need to obtain the reduced form and restrictions imposed on the contemporaneous variables are unnecessary. Secondly, the BGVAR model decomposes the SVAR causality structure into two simple representations: The Contemporaneous Network (CN) and the Lagged Network (LN) causality structures. These structures, given in equation (3.3), can be evaluated over an out-of-sample. Let $X_t = (X_t^1, X_t^2, \ldots, X_t^n)$ be the vector of realized values of n variables with X_t representing the realization of the *i*-th variable. Equation (3.1) can be represented as a graphical model with a one-to-one correspondence between the coefficient matrices of the SVAR model in equation (3.1) and a directed acyclic graph (DAG):

$$X_{t-s}^{j} \longrightarrow X_t^i \Leftrightarrow B_{s,ij}^* \neq 0, \qquad 0 \leq s \leq p \tag{3.3}$$

where $B_0^* = B_0$ for s=0 and $B_s^* = (B_s C_s)$ for $0 \leq s \leq p$. Considering the SVAR in equation (3.1), the DAG model can be represented as:

$$Y_t = \underbrace{(G_0 \circ \emptyset_0)}_{\boxed{CN}} Y_t + \sum_{i=1}^{p} \underbrace{(G_0 \circ \emptyset_0)}_{\boxed{LN}} X_{t-1} + s_t \tag{3.4}$$

where "∘" is the Hadamard product. In equation (3.4), coefficient matrices of the SVAR in equation (3.1) are represented as:

$$B_s^* = (G_s \circ \emptyset_0), \qquad 0 \leq s \leq p, \tag{3.5}$$

where $(G_s \circ \emptyset_0)$ are the graphical model structural coefficient matrices whose non-zero elements describe the value associated with the contemporaneous and temporal dependences, respectively. For s = 0, $B^* = B$ is $n_y \times n_y$ structural coefficients of contemporaneous dependence, G is a $n_y \times n_y$ binary connectivity matrix of contemporaneous dependence, and $\emptyset_0$ is a $n_y \times n_y$ coefficient matrix with elements

[6] The Dynamic Bayesian Network is a technique that relates variables to each other over adjacent time steps. For more details, interested readers are referred to Dagum et al. (1992).

$\phi_{ij} \in R$. For $1 \leq s \leq p$, ϕ_s are a ($n_y \times n$) matrices of regression coefficients, and G_s are ($n \times n$) matrices of temporal dependence whose entries are:

$$G_{ij} = 1 \Longleftrightarrow X_{t-s}^{j} \longrightarrow X_t^i \tag{3.6}$$

This indicates the existence of a one-to-one correspondence between regression matrices and the directed acyclic graphs.[7]

Finally, ϕ_s, $1 \leq s \leq p$, are ($n_y \times n$) matrices of coefficients with elements $\phi_{ij} \in R$. In line with Grzegorczyk et al. (2010), Ahelegbey *et al*. (2016) propose a Bayesian scheme with an efficient Markov Chain Monte Carlo (MCMC) process in order to estimate the LN component. As for the CN, Ahelegbey et al. (2016) follow the lines from Giudici and Castelo (2003) and suggest a necessary and sufficient condition to check the acyclicity[8] constraint in a small-size networks.

Let $b_i = (b_{i1}, b_{i2}, \ldots, b_{in})$ be a row vector of B_s, where its entries b_{ij} are the regression coefficients of the effects of X_{t-s}^{j} on X_t^i .It follows that the relationship between B_s and Φ_s has the following form:

$$b_{ij} \begin{cases} \phi_{ij} & if \quad g_{ij} = 1 \\ 0 & if \quad g_{ij} = 0 \end{cases} \tag{3.7}$$

In line with Ahelegbey et al. (2016), this study assumes that both the marginal prior of g_{ij} and the marginal posterior to be Bernoulli-distributed:

$$a_{ij}|\mathrm{X} = \begin{cases} 1 & if \quad p\left(a_{ij} = 1 \middle| \mathrm{X}\right) > \tau \\ 0 & otherwise \end{cases} \tag{3.8}$$

where τ is a threshold value set by the user $\tau \in (0, 1)$; and $P(a_{ij} = 1|X)$ is the confidence score that is the posterior probability of the existence of an edge from X^j to X^i.

[7] See Murphy (2002).

[8] For more details, see Murphy (2002).

The Bayesian graphical model provides the posterior probabilities for both instantaneous and lagged relationships between the predictors and the five individual implied volatility for BRICS, namely multivariate instantaneous (MIN) and multivariate autoregressive (MAR) structures. The optimal lag of MAR as indicated in Equation (3.6) is selected by BIC. The MAR of *Gs* that comprises all the stacked temporal structures are subsequently estimated. The proposed sampling scheme guarantees irreducibility as the probability of selecting a node is strictly positive for all nodes, and therefore guarantees the ergodicity of the MCMC chain. Ahelegbey et al. (2016) apply both MIN and MAR to estimate a SVAR model with 20 macroeconomics variables. Moreover, Balcilar et al. (2016) use the same methodology to predict South African excess stock returns based on the economic policy uncertainty (EPU) index of South Africa and twenty other countries, over and above many other standard financial and macroeconomic predictors. The authors concluded that only the MAR (temporal or lagged relationships) model can reasonably predict the equity premium of South Africa, with the EPUs playing an important role.

3.5 Results

The posterior probabilities of full-sample estimates for the sixteen predictors of both MIN and MAR structures are reported respectively in Tables 3.2 and 3.3. The lag order (*p*) of the VAR is set to 1 based on the full sample data using the Bayesian Information Criterion, and 50,000 draws are used. First a model of MIN is estimated with the following five dependent variables: BRL, RUA, INA, CHA, and SOA. Subsequently the following 11 additional variables as predictor variables are considered: GEY, FRC, UK, NER, SWN, SWD, NII, CBE, CAA, OIL, and GOLD.

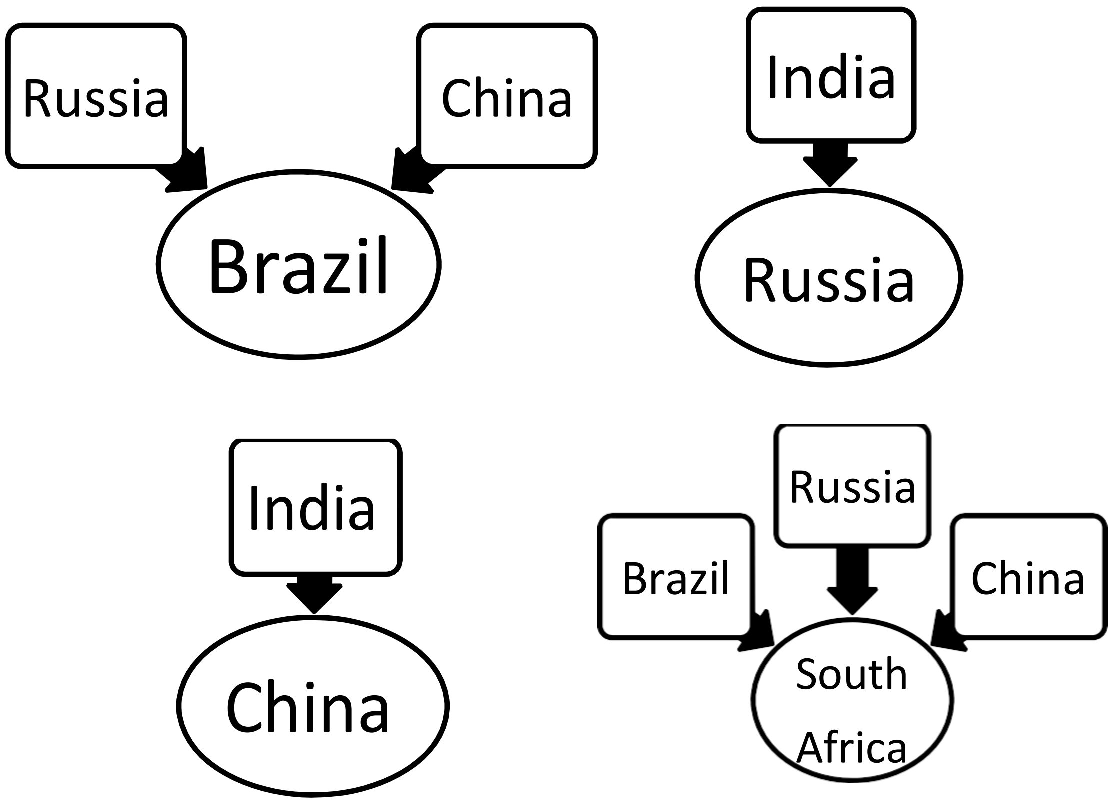
Table 3. 2: Results of the MIN structure

	Brazil	Russia	India	China	South Africa
Brazil	0	*0.3212*	0.0268	*0.4224*	**0.5312**
Russia	**0.6788**	0	0.2194	0.0883	**0.6744**
India	0.0719	**0.7615**	0	**0.8799**	*0.3438*
China	**0.5776**	0.078	0.1201	0	**0.6093**
South Africa	***0.4688***	*0.3256*	0.0856	*0.3907*	0

Note: Bold entries represent the selected edges for the MIN structures based on posterior probabilities greater than 0.50; Italic entries indicate posterior probabilities greater than 0.30 but less than 0.50.

Regarding the MIN structure (Table 3.2), the highest posterior probabilities for Brazil are the Russia volatility index (0.6788), followed by China volatility index (0.5776). The highest posterior probabilities for Russia are the India volatility index (India, with a value over 0.75), followed by Brazil and South Africa volatility index (Brazil and South Africa, with a value greater than 0.3, but less than 0.40). The highest posterior probability for India is the Russia volatility index (0.2194). The highest posterior probabilities for China are the India volatility index (India, with a value over 0.85), followed by Brazil's volatility index (0.4224). The highest posterior probabilities for South Africa are the Russia volatility index (Russia, with a value over 0.65), followed by China's volatility index (of 0.6093). Figure 3.1 also depicts the MIN structure within the BRICS countries. As shown, the implied volatilities of Russia and China each have only one contemporaneous relation with a BRICS country (India), whereas the implied volatility index for South Africa has the most contemporaneous relation as it is related to the implied volatilities of Brazil, Russia, and China. Interestingly, the implied volatility index for South Africa has no power to predict the implied volatility of any BRICS countries.

Figure 3.1: MIN structures



Now we turn to the MAR structure and the other eleven predictors (see Table 3.3). With the MAR structure, the current level of implied volatility of Brazil depends on the previous level of implied volatilities of Brazil, India, France, and Switzerland, while the current level of implied volatility index for Russia strongly depends on the previous level of implied volatilities of Brazil, Russia, Germany, Sweden, and the US. The current level of the implied volatility index for India depends on the previous level of implied volatility associated with India, France, and the US, while the current level of the implied volatility index for China strongly depends on the previous level of the implied volatilities from China, and Sweden. The current level of implied volatility index for South Africa depends on the previous level of the implied volatilities of Brazil, the US, Oil, and Gold.

Table 3. 3: Results of the MAR structure

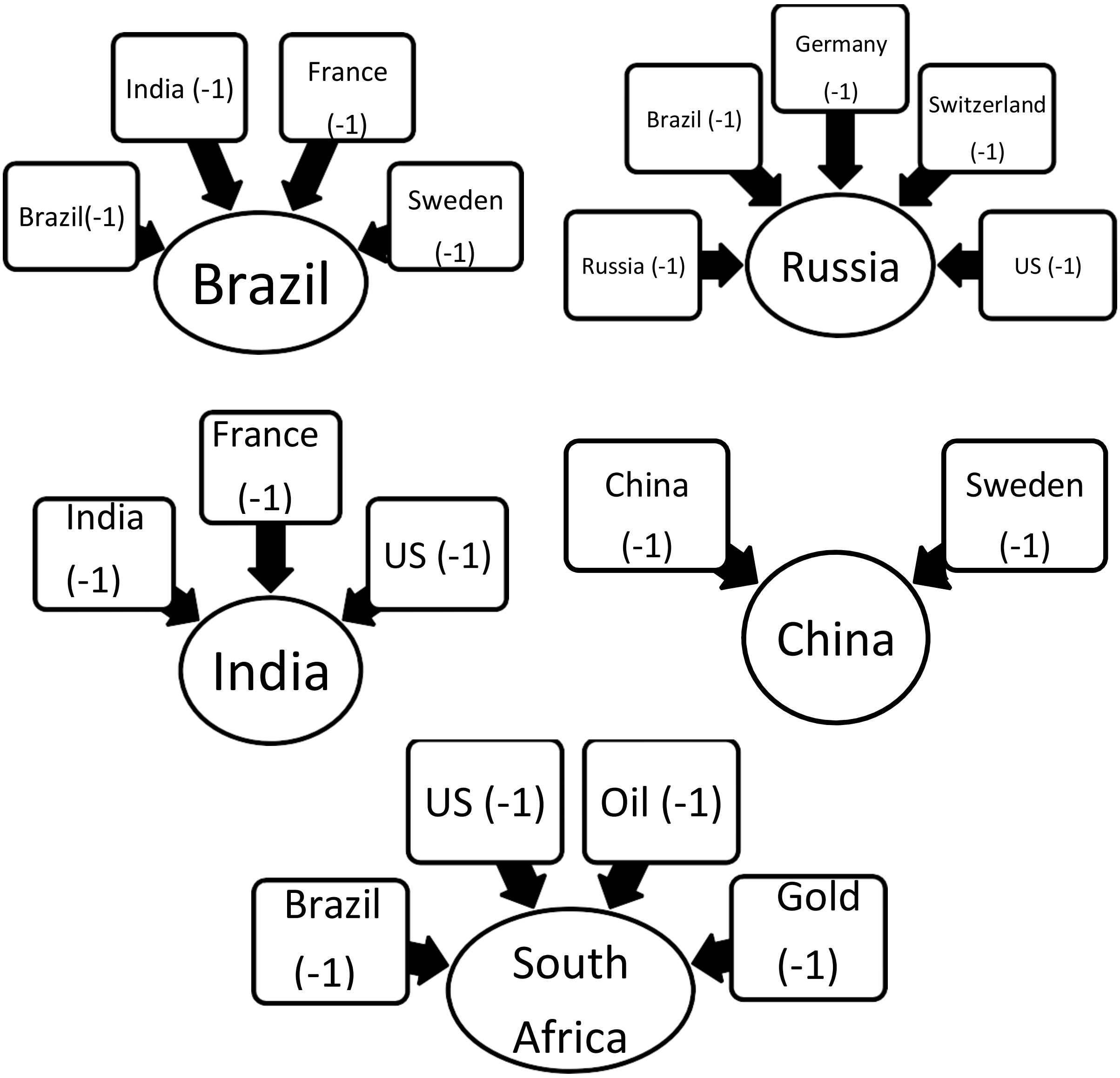
	Brazil,$_{t}$	Russia,$_{t}$	India,$_{t}$	China,$_{t}$	South Africa,$_{t}$
Brazil,$_{t-1}$	**1**	**0.9818**	0.0944	0.288	**0.6469**
Russia,$_{t-1}$	0.1759	**1**	0.0925	0.0917	0.1191
India,$_{t-1}$	**0.5225**	0.1091	**1**	0.0959	0.0945
China,$_{t-1}$	0.1701	0.1233	0.2118	**1**	0.108
South Africa,$_{t-1}$	0.1577	0.0902	0.0791	0.1656	**1**
Germany,$_{t-1}$	0.1587	**0.7347**	*0.3802*	0.165	0.1624
France,$_{t-1}$	**0.6281**	0.1052	**0.8538**	0.1548	0.1473
UK,$_{t-1}$	0.121	0.1139	0.1122	0.1327	0.137
Netherlands,$_{t-1}$	0.2968	0.1538	0.0993	0.227	0.1236
Sweden,$_{t-1}$	0.299	**0.84**	0.1078	**0.604**	0.2872
Switzerland,$_{t-1}$	**0.5971**	0.138	0.1095	*0.4488*	0.1493
Japan,$_{t-1}$	*0.4353*	*0.4896*	0.1204	*0.366*	0.1469
US,$_{t-1}$	0.1075	**0.6813**	**1**	0.1205	**0.8751**
Canada,$_{t-1}$	0.1189	0.0969	0.1946	0.2086	0.1181
Oil,$_{t-1}$	0.2301	0.1119	0.1125	0.0706	**0.5345**
Gold,$_{t-1}$	0.0628	0.0729	*0.3875*	0.1511	**0.5314**

Note: Bold entries represent the selected edges for the MIN structures based on posterior probabilities greater than 0.50; Italic entries indicate posterior probabilities greater than 0.30 but less than 0.50.

Figure 3.2 illustrates the causality patterns under the MAR structure. Clearly, China's implied volatility is the least sensitive among the BRICS countries as it only depends on its lagged value and the lagged value of Sweden's implied volatility. In contrast, Russia's implied volatility is the most sensitive given its dependence on four lagged implied volatilities of Brazil, Germany, Switzerland, and the US, in addition to its own lagged value. A possible explanation lies in the strong economic and trade ties between Russia and Europe.

Surprisingly, market disturbances in the US are not transmitted to Brazil, a finding that contradicts the findings of Sarwar and Khan (2016) and the well-established trading relations of the US with Brazil. Based on the above findings, only South Africa's implied volatility is affected by the implied volatility of the commodity markets (gold and oil). Furthermore, it is only sensitive to the implied volatility index for the US from outside BRICS countries.

Figure 3.2: MAR structures

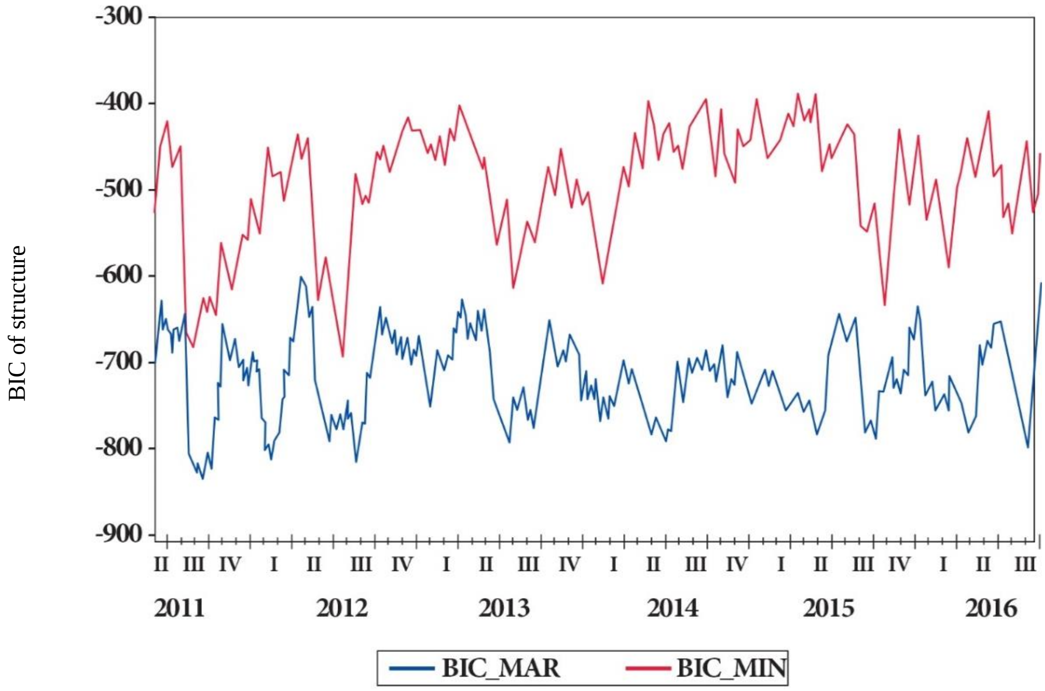


Note: (-1) refers to the lagged effect

Based on this finding we argue that the implied volatility index for China is still relatively segmented (or simply partially integrated) from the implied volatilities in the commodity and major developed stock markets. Such findings suggest that local information on risk variables is much more relevant to the Chinese stock market than regional or global information on uncertainty. Such findings also imply that the integration is a dynamic concept (Harvey, 1995). It could be that our sample period follows the GFC, where its relative tranquility has caused some BRICS countries to be insulated from the uncertainty of commodity or developed stock markets.

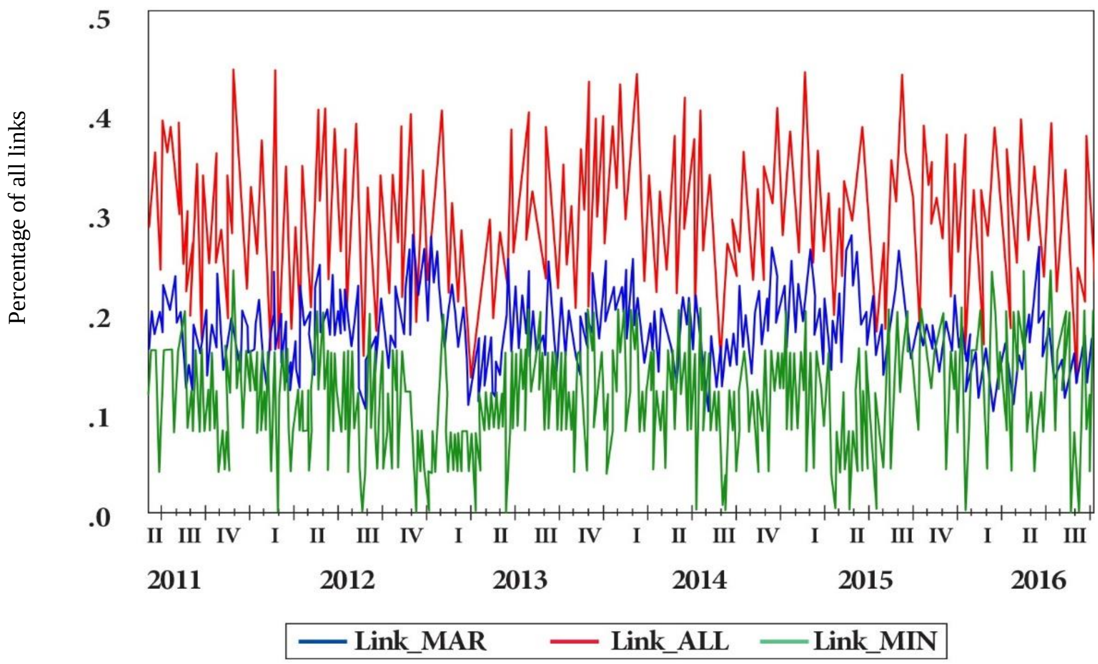
This study further estimates the BGVAR with a rolling-window approach to examine the temporal evolution of the BGVAR .The rolling window estimation uses an initial sample period extending from 16 March 2011 through to 6 June 2011 and a 60-day rolling window estimation over the period 7 June 2011 to 7 October 2016, a total of 1,394 rolling estimations. To be consistent with the full sample, the lag order of the VAR is set to 1, and 40,000 draws are used, with an initial burn-in of 10,000 from 50,000 draws to derive the posterior inclusion probabilities of the predictors. Figure 3.3 compares the evolution of the BIC scores of MAR and MIN dependence structures over the period 7 June 2011 through to 7 October 2016. The result shows that the BIC score favors MAR over MIN, giving an indication that MAR provides a better representation of the temporal dependence in the observed time series than the MIN contemporaneous dependence in the observed time series.

Figure 3.3: The BIC of the contemporaneous and temporal dependence structures



This study focus only on the temporal dependence (MAR) given that the BIC score favors MAR over MIN. Figure 3.4 presents the percentage of links from other variables to BRICS obtained for MIN and MAR structures. Using the total link it is observed that 2013 represents the period of highest interconnectedness, while from 2015 the linkage decreases.

Figure 3.4: Percentage of links from MIN and MAR structures



Figures 3.5–3.9 display the rolling-window posterior probabilities of lagged impact from the 11 implied volatilities indices on the implied volatility in BRICS countries. Figure 3.5 shows the lagged posterior probabilities of other implied volatilities on implied volatility index for Brazil and Figure 3.6 displays the rolling- window posterior probabilities of lagged impact from the 11 implied volatilities indices on implied volatility index for Russia. In general, it is found that the lagged impact of other implied volatility indices essentially exceeds the 0.50 threshold probability, and the posterior probabilities of lagged impact from the implied volatility indices of BRICS countries is much higher than that from the implied volatilities of developed markets.

Figure 3.5: Posterior probabilities for Brazil and other implied volatilities

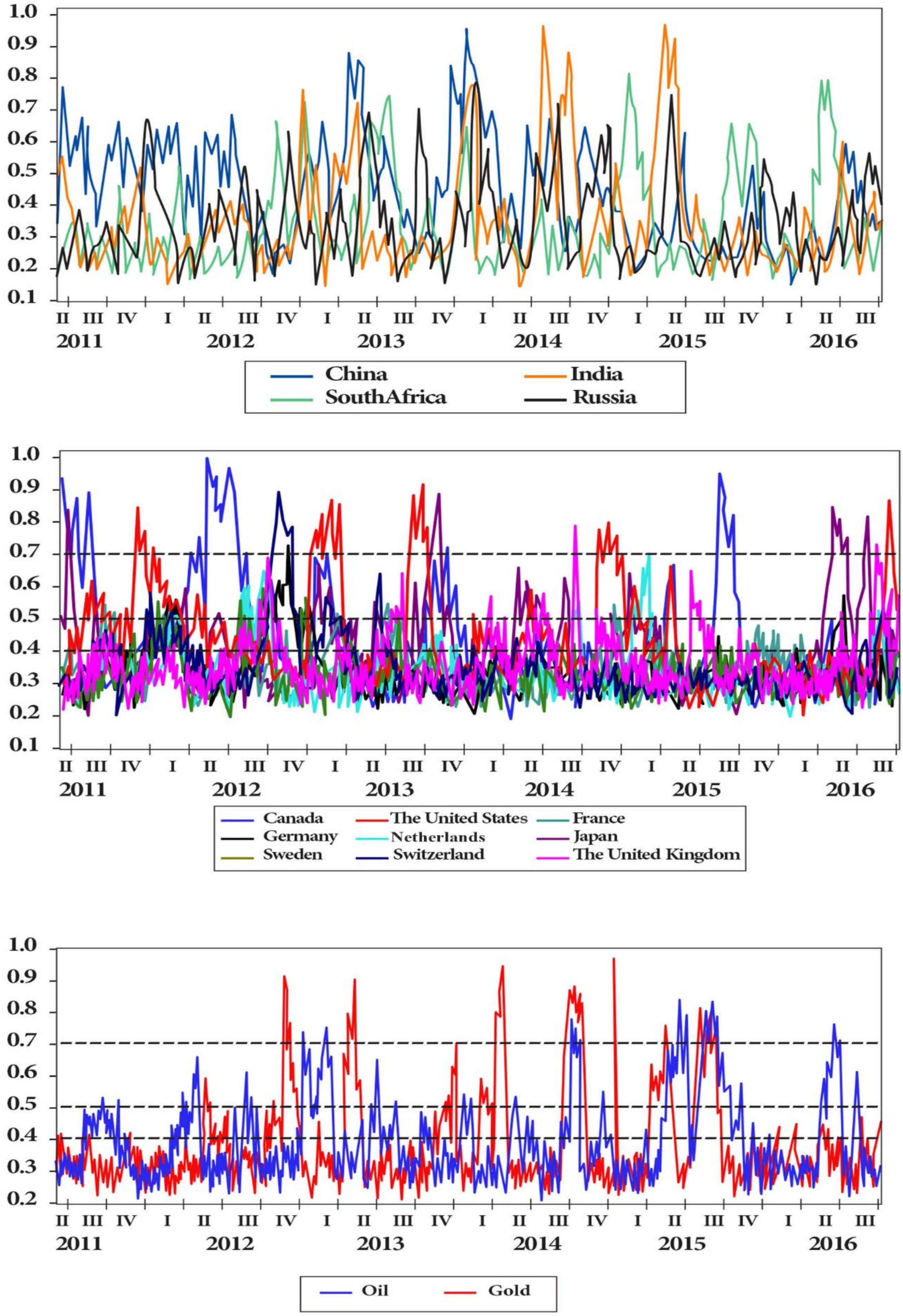
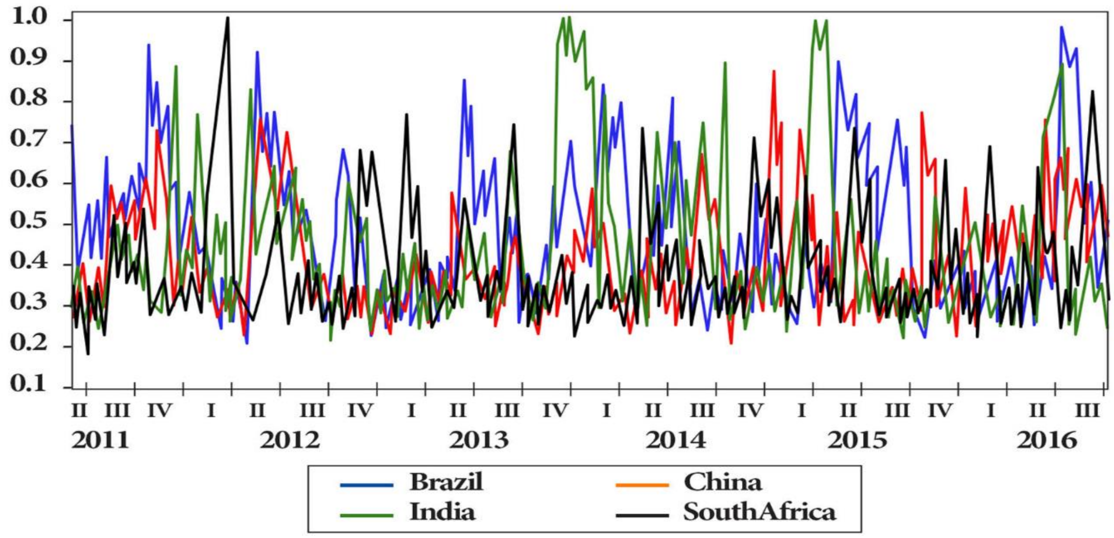
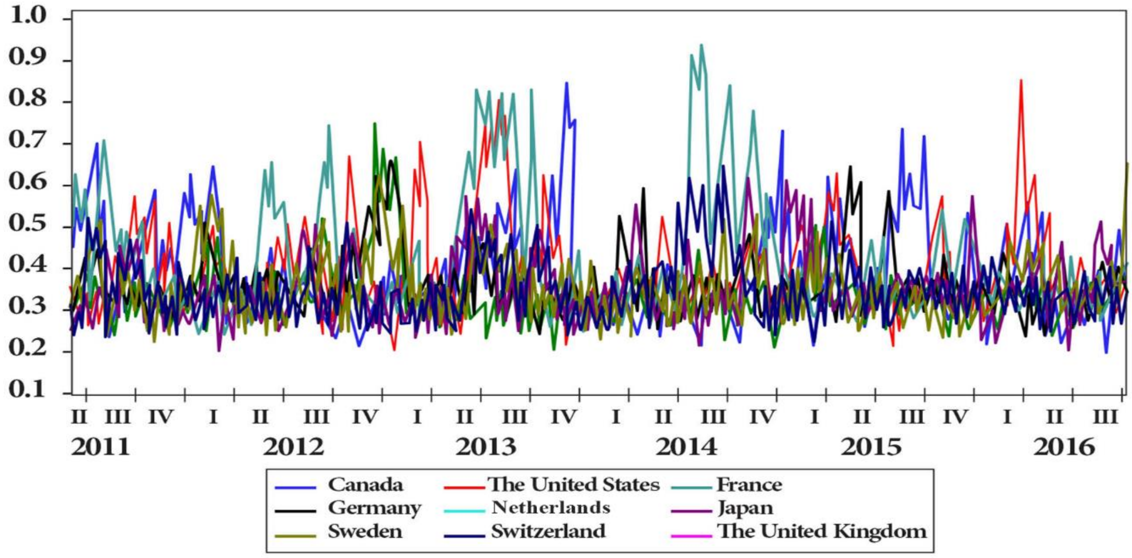


Figure 3.6: Posterior probabilities for Russia and other implied volatilities





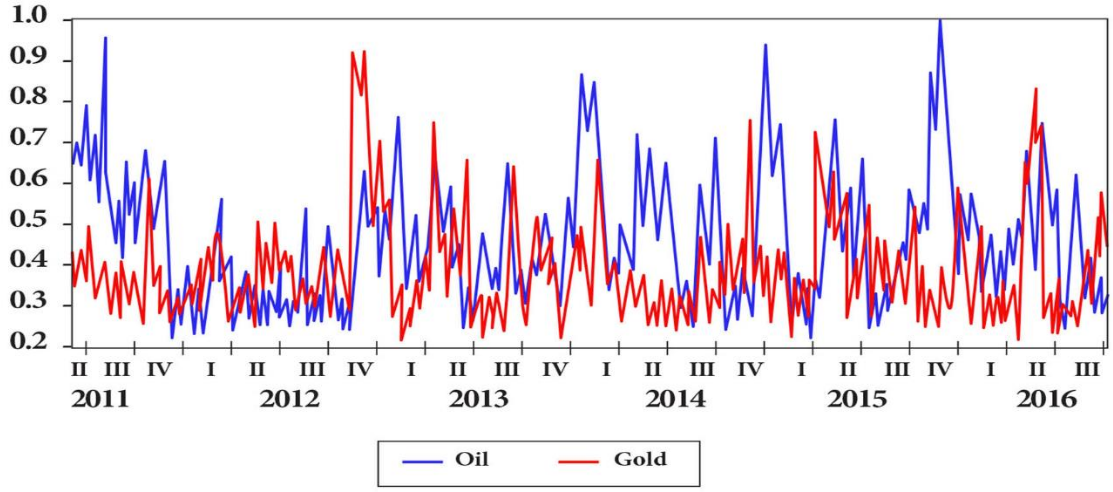


Figure 3.7: Posterior probabilities for India and other implied volatilities

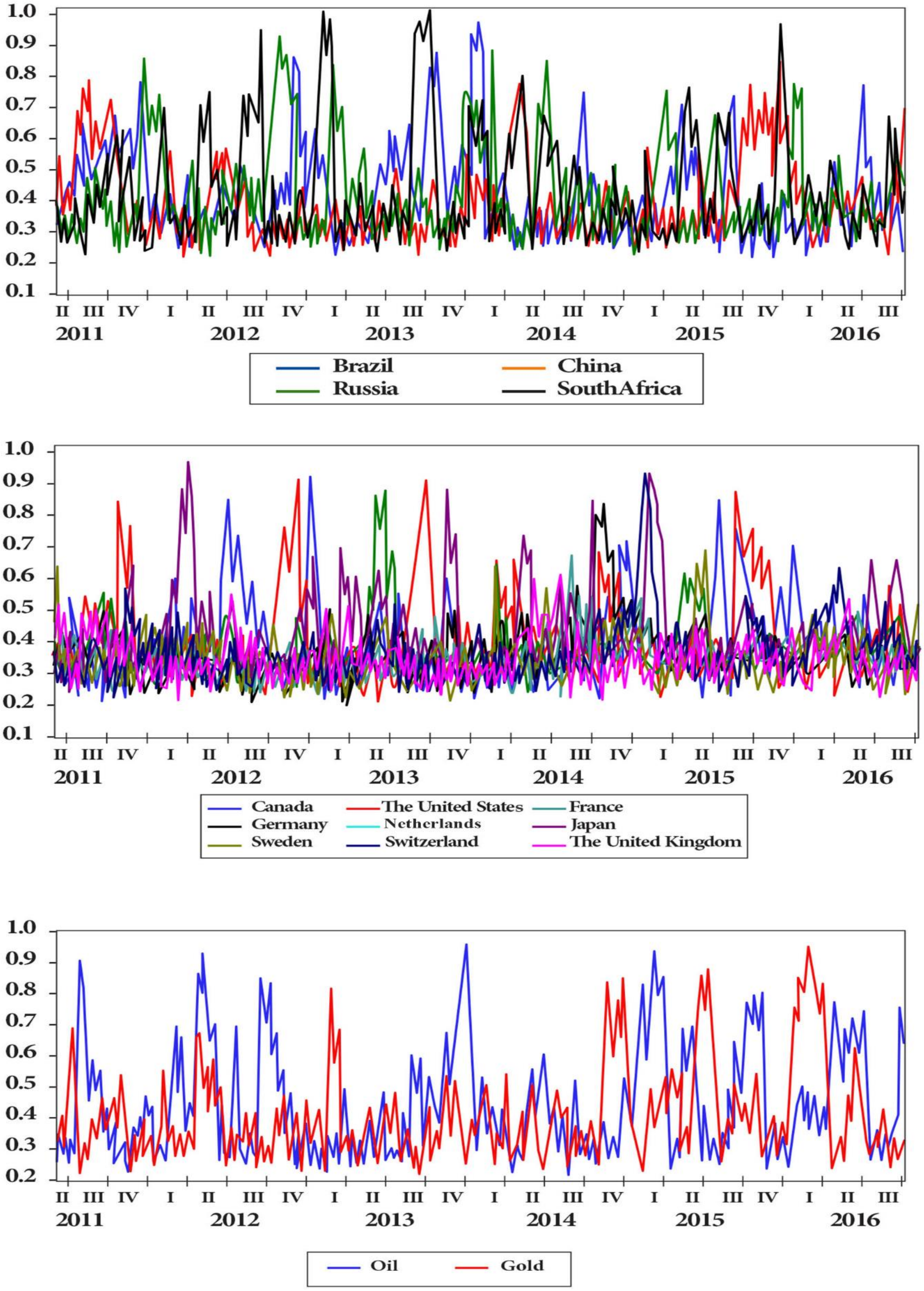


Figure 3.8: Posterior probabilities for China and other implied volatilities

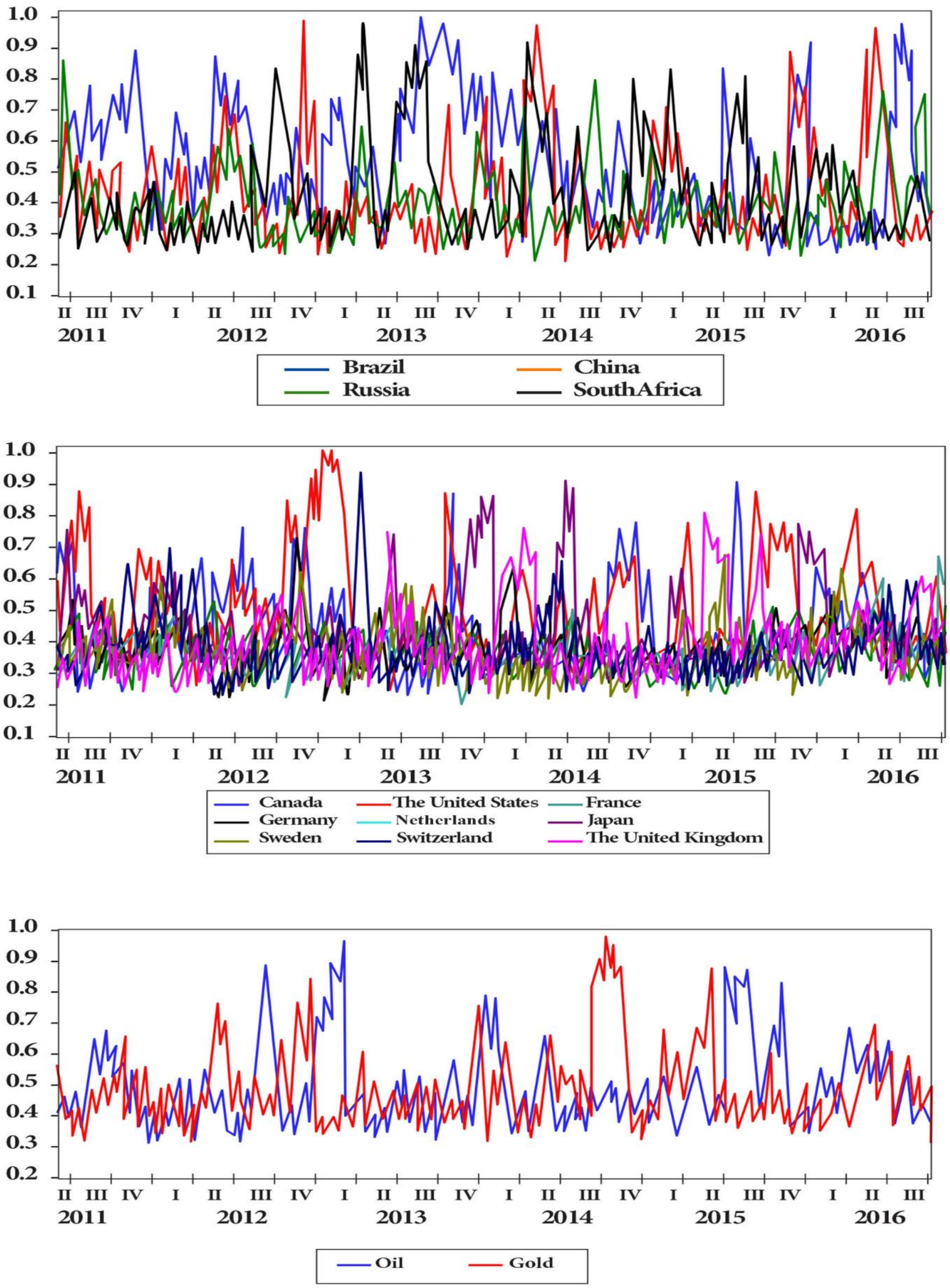


Figure 3.9: Posterior probabilities for South Africa and other implied volatilities

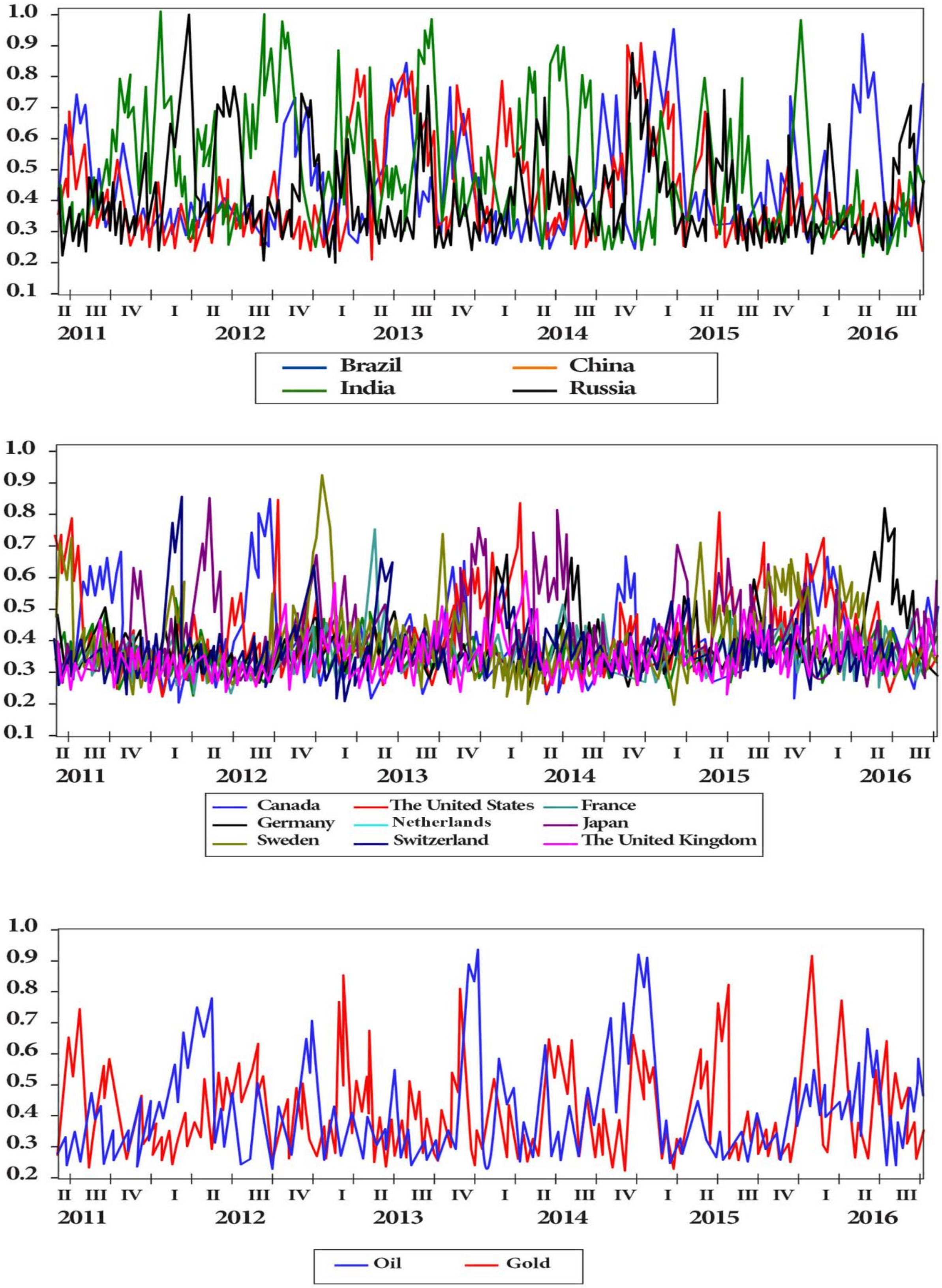


Figure 3.10 displays the rolling-window posterior probabilities of lagged impact from the implied volatility index for oil indices on the implied volatility of BRICS, while Figure 3.11 displays the rolling-window posterior probabilities of lagged impact from the implied volatility index for oil indices on the implied volatility of BRICS. It seems that the influence of the implied volatility index for oil on the implied volatility of BRICS is higher than that of the implied volatility index for gold in recent years.

Figure 3.10: Posterior probabilities for Oil and implied volatility of the BRICS countries

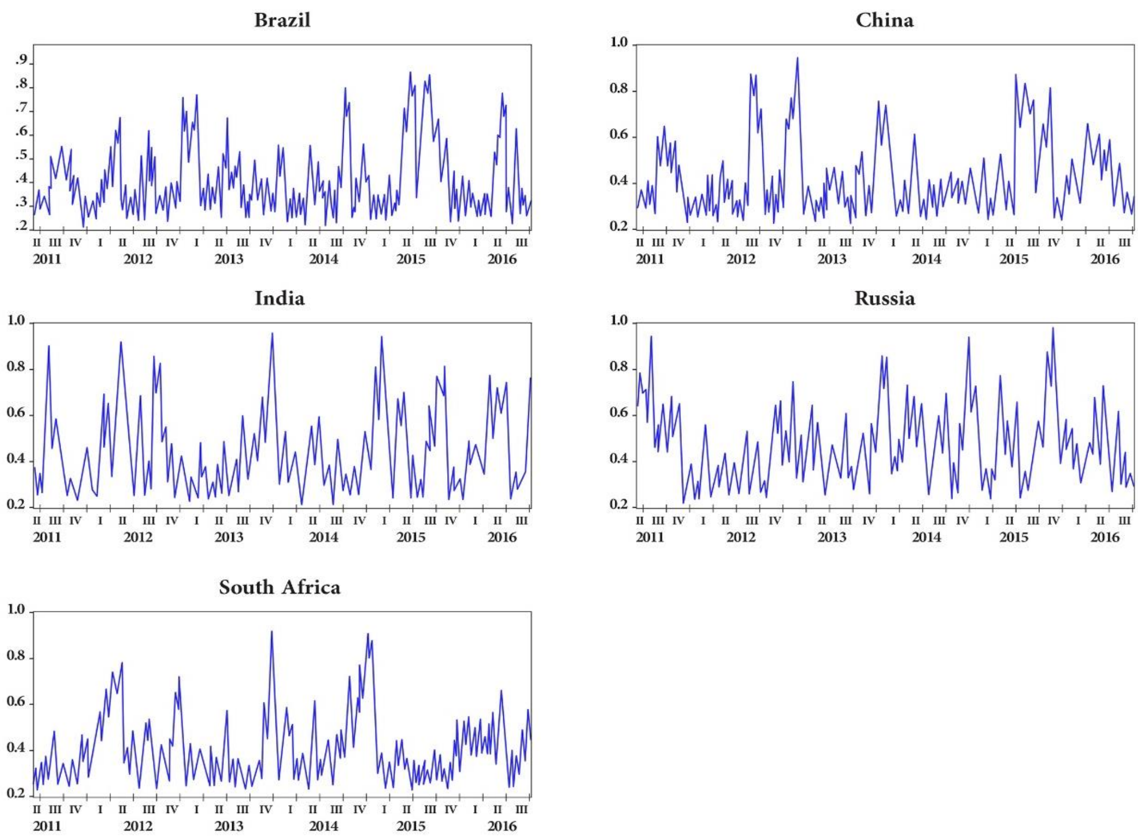
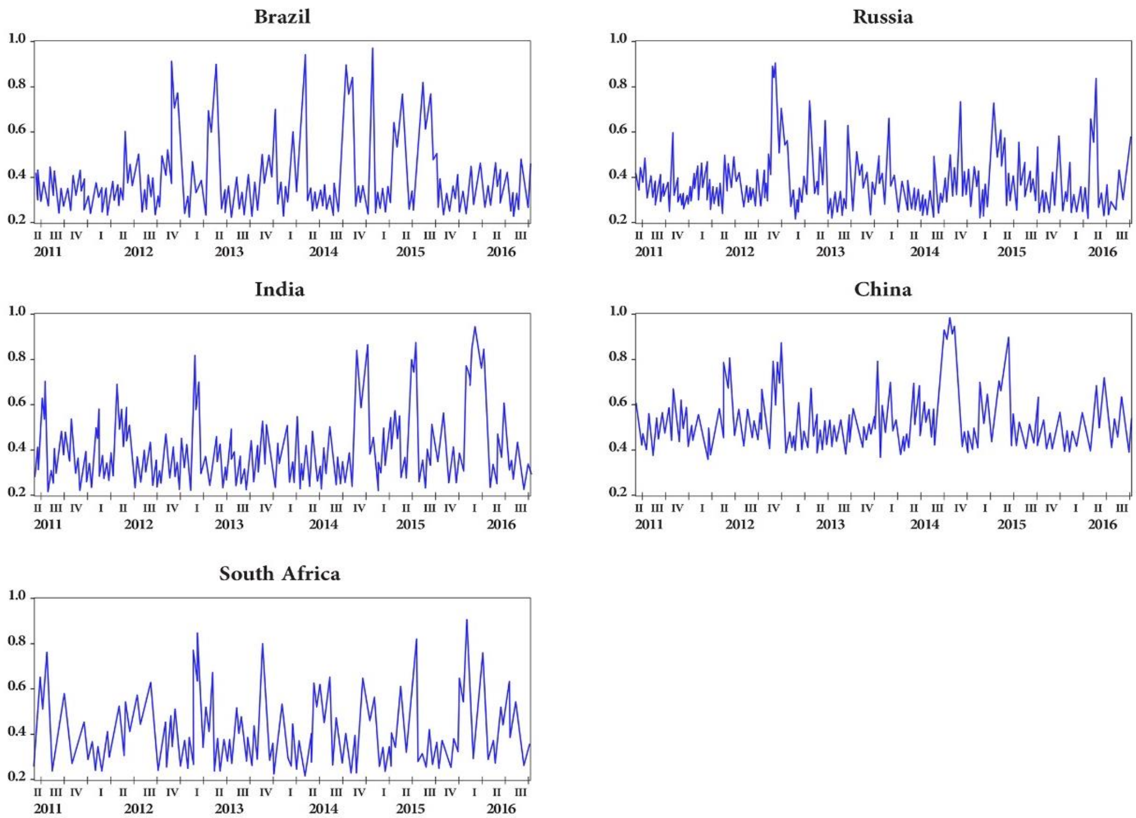


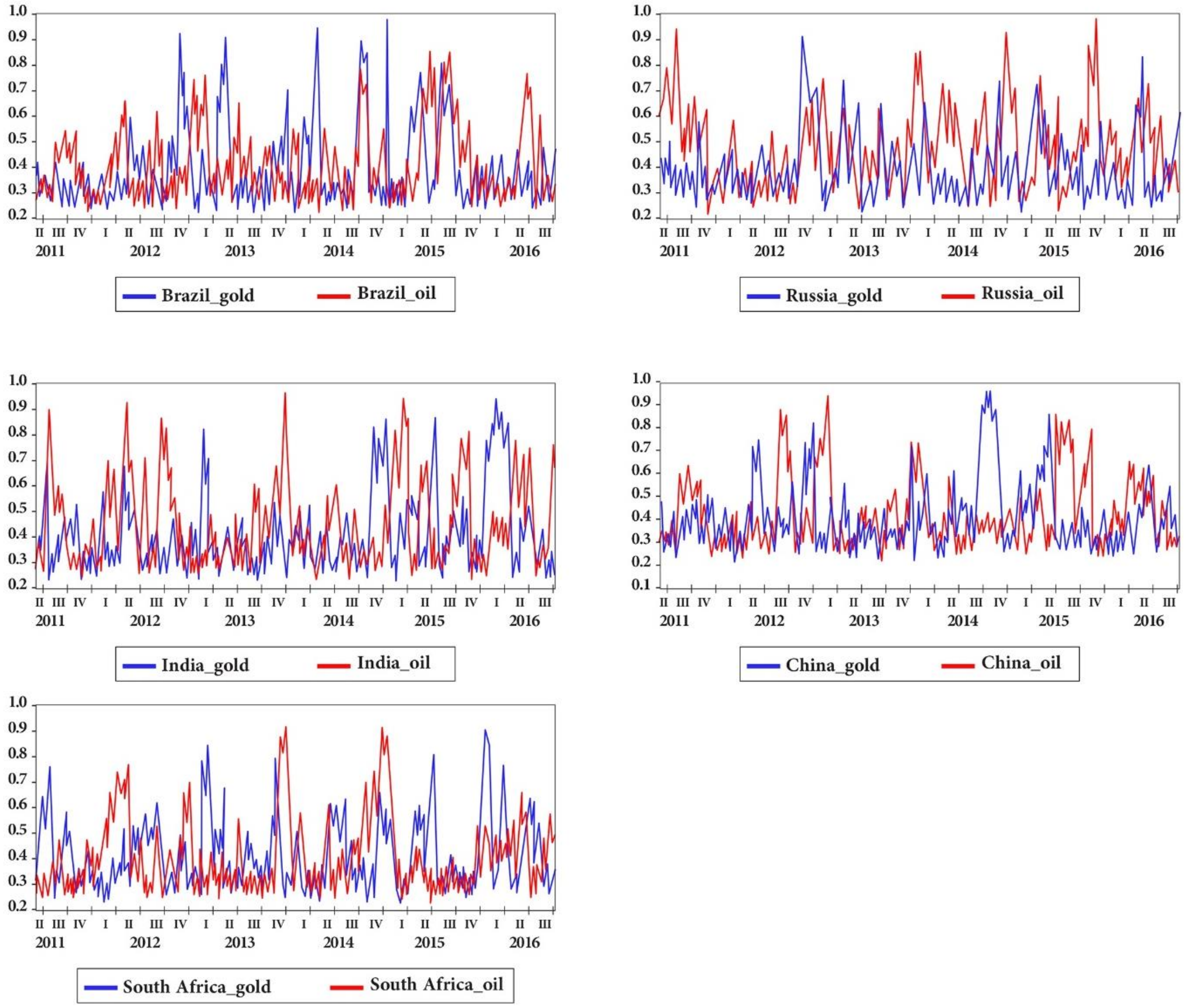
Figure 3.11: Posterior probabilities for Gold and implied volatility of the BRICS countries



It can be seen that the posterior probabilities of the implied volatility index for gold is higher for South Africa for the majority of the time, while the posterior probabilities of the implied volatility index for oil is higher for Brazil, Russia, China, and India for the majority of the time across our sample period.[9]

[9] Among 1394 days in our sample, 56% of time was dominated by the implied volatility index for Oil for Brazil, 66% for Russia, 57% for India, and 52% for China. Moreover, 51% of time was dominated by implied volatility index for gold for South Africa.

Figure 3.12: Posterior probabilities for Gold and Oil and implied volatility of the BRICS countries[1]



[1] Figure 3.12 shows the posterior probabilities of the relationship between the implied volatility index for gold and oil and each country's implied volatility index.

3.6 Conclusions

BRICS economies are home-based major sources of demand and supply for strategic commodities, such as gold and crude oil. In fact, China and India are key consumers of crude oil, whereas Russia is one of the largest producers of crude oil and natural gas. Moreover, BRICS stock markets have the potential to be used for portfolio diversification. These markets attract capital inflows from foreign investors as the BRICS economies grow in international finance and enjoy higher economic growth in comparison to developed economies (Bhuyan et al., 2016). The first part of this chapter considers the return and volatility connections between stock markets in developed (Canada, France, Germany, Japan, Netherlands, Sweden, Switzerland, the UK, and the US) and BRICS (Brazil, Russia, India, China and South Africa) countries and the benefits of diversification and risk management perspectives. Given the important role played by BRICS countries in driving the world commodity markets, this study extends the research by focusing on the link between BRICS stock markets and commodity markets, in particular crude oil and gold commodities.

Recent research has used implied volatility indices, mainly the implied volatility, to examine the connections between assets and other financial variables. Existing studies that have examined these linkages include Maghyereh et al. (2016), finding that the effect of crude oil is mainly felt in developed and emerging stock markets. Meanwhile, Sarwar (2016) examined, among other aspectss, implied volatility connections between gold and US equities and demonstrated that the implied volatility index for the US Granger causes the volatility of gold, but not vice versa.

The purpose of this study was to examine whether the implied volatility indices in developed markets and commodity markets contain information able to predict the implied volatility indices of individual BRICS countries, an under-researched topic in the vast field of finance literature. This study differs from the existing literature in its choice of implied volatility data, most prior studies used the GARCH framework, hence it makes a further contribution through the employment of a structural VAR model based on a graph representation of the conditional independence (Ahelegbey et al., 2016) among the implied volatility indices. Given the lack of indications from economic theory on the connections across implied volatility indices, this novel methodology avoids imposing misleading or implausible restrictions within the standard SVAR model, and therefore represents an appropriate framework to conduct the empirical study.

The main results provide evidence on the predictability of global implied volatility indices in individual BRICS countries based on the uncertainty in commodity markets and developed stock markets, although this predictability differs across countries. The results indicate that the implied volatility index for the US is the dominant predictor in the implied volatilities of BRICS stock markets. Such a finding is unsurprising given the huge size of the US stock market and ample evidence on the high predictability of the emerging stock market returns based on the US stock market returns. However, evidence on the dominance of the implied volatility index for the US was not shown to be present in Brazil and China, suggesting that local investors are more concerned about local and regional stock market uncertainties than with US market uncertainty. One possible explanation for this lies in a weakness amongst investors in China and Brazil to gather and process information regarding the conditions of the global commodity and stock markets. The finding contributes to Sarwar and Khan's (2016) study which demonstrated that the implied volatility index for the US is a gauge for defining fear amongst emerging economies. This study also demonstrates that the predictive roles of the implied volatilities of crude oil and gold is only relevant to market uncertainty in South Africa. These results highlight that there is evidence of the emergence of some domestic factors in explaining the implied volatility. For example, there is no evidence on the dominance of the US VIX in Brazil and China, suggesting that local investors worry more about other local and regional stock market uncertainties than the US market uncertainty. This is opposite of what has been found in most of the existing literature which argues that external risk factors are more important than internal factors for BRICS returns and historical volatility. Practically, these findings entail at least one main policy implication by pointing toward the need for policy-makers in some BRICS countries to monitor the significant volatility transmitters from the perspective of *expected* (implied) volatility. With the emergence of financial derivatives based on the implied volatility indices, and given that (implied) volatility has a central role in pricing derivatives and managing portfolios, investors and portfolio managers can exploit evidence of risk predictability from a forward-looking perspective to improve the predictive power or predictability of market uncertainty in several BRICS markets.

Chapter – Four

Illiquidity and stock market returns: Evidence from the G7 and the BRICS countries

Abstract

This chapter examines the relationship between illiquidity and stock market returns in the G7 and BRICS countries. For this purpose, seven portfolios have been created, namely: 100 largest (Largest100), small value (S/V), small neutral (S/N), small growth (S/G), big value (B/V), big neutral (B/N), and big growth (B/G) stocks. Moreover, the Amihud (2002) illiquidity measure is used as the proxy for illiquidity. The relationship is examined using three asset-pricing models, namely, the Capital Asset Pricing Model (the CAPM), the Fama-French three-factor model, and the Carhart four-factor model. The data for stock market returns and illiquidity consists of monthly data over a fifteen-year period extending from October 2002 to September 2017. The findings show that in some portfolios in eight countries (the US, Italy, Germany, Canada, Japan, Brazil, Russia, and China) where the CAPM is used and also in some portfolios in eight countries (the US, Italy, Germany, Japan, Brazil, Russia, South Africa, and China) where the Carhart four-factor model is used, and in some portfolios in six countries (the US, Italy, Germany, Japan, China, and Russia) when the Fama-French three-factor model is used, having illiquidity as an additional factor can improve the explanatory power of the models.

4.1 Introduction

Domowitz et al. (2005) examines the importance of illiquidity commonality for investments, in terms of selecting portfolios and allocating assets, by studying the different economic forces underlying return and illiquidity co-movements. Their findings reveal that co-movements in supply and demand lead to illiquidity commonality enforced by cross-sectional correlation in order types (market and limit orders). Return commonality is due to correlation in order flows (order direction and size). Therefore, they conclude that it is important to consider both illiquidity and illiquidity commonality in asset pricing applications. Galariotis and Giouvris (2015) consider the effect of national and global stock market illiquidity and its relationship with macroeconomic variables. Their results show that different markets demonstrate inconsistent behaviours and that national illiquidity compared to global illiquidity had less power in Granger causing macroeconomic variables in the sample. For global illiquidity, however, they find a two-way causality with macroeconomic indicators for the six countries in their sample. For the US, there was no causality in either direction. Their results further indicate that there is no better information in small company illiquidity in Granger-causing macroeconomic variables, even for the US, indicating an unstable linkage over time in the US. The relationship between risk and return is always a crucial issue for market participants. Having said that, Wang et al. (2017) explore the cross-sectional risk-return trade-off in the stock market, and their findings point to the fact that in firms where investors have prior loss, negative risk-return relationship is much more prevalent, however, this relationship is positive for those firms in which investors have prior gains. Therefore, considering the importance of this relationship for market participants, having more related information may enhance efficiency and, as a result, also enhance the gains for investors, even during a financial crisis, when compared to uninformed investors. With this in mind, Xu et al. (2018) explore the transmission of illiquidity and volatility spillover impacts across eight developed equity markets, both during and after the global financial crisis. Their results indicate that equity markets were interdependent in terms of both volatility and illiquidity, and that the level of interdependence increased during the financial crisis. Moreover, in most of these markets, there was a rise in volatility and a rise in illiquidity spillover impacts during the crisis. In addition, volatility and illiquidity transmission were highly relevant, demonstrating that illiquidity is a more important channel than volatility in spreading changes in equity markets. This study has also demonstrated the crucial role of illiquidity in the US markets. Based on what has been revealed, late 2007 was not an exception to this. In the unique financial crisis, which beset the US mortgage market and the international credit market, illiquidity risk led first to the mispricing of illiquid products and then to large re-pricing due to flight to quality. As mentioned above, illiquidity can potentially reduce the efficiency of trading at each moment in time, in other words, lower illiquidity improves market efficiency. Thus, a trader needs to have adequate financial resources, either in the form of cash in hand or credit, to pay for the assets and goods they wish to buy. Moreover, when an investor's financial ability decreases, risk is high, and the default for counter parties increases (Kariv et al., 2018). According to Acerbi and Scandolo (2008), illiquidity risk is a critical concern for many market participants as a complex reality that unveils itself through three independent facets at any one particular time. Facet one, the risk that a constructed portfolio may run short in local currency, factet two, the risk involved with trading in an illiquid market, and facet three, namely the risk of illiquidity. Friewald et al. (2012) notes that illiquidity risk is one of the main factors determining asset prices. In fact, it is crucial to quantify its relative impact on market prices and its changes during a crisis. This study focuses on illiquidity and its impact on the stock markets in the G7 and the BRICS countries.

The chapter proceeds as follows. Section 4.2 reviews the relevant literature. Section 4.3 presents the data and the empirical methodology. Section 4.4 discusses the empirical results, and Section 4.5 provides a conclusion.

4.1.1 Research objectives and questions

One of the objectives of this research is to determine whether a relationship exists between illiquidity and stock market returns in the G7 and BRICS countries. If indeed illiquidity is found to be an important factor, a further objective is to investigate the difference in the impact of illiquidity across different asset pricing models and portfolios.

By employing three asset pricing models – (the CAPM, the Fama-French three-factor model, and the Carhart four-factor model), in their original format and then with an additional factor, namely illiquidity, this study considers the impact of illiquidity on seven portfolios. These seven portfolios are; Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), and 100 largest companies (Largest100) in the G7 and the BRICS countries. The research questions for this chapter are as follows:

1. Is there a relationship between illiquidity and stock market returns in the G7 and the BRICS countries?
2. If illiquidity is a priced factor in the cross-section of stock returns, does its impact vary according to different asset pricing models and portfolios of different characteristics?

4.1.2 Research contributions and findings

This study contributes to the existing literature by considering not only the developed countries, of the G7, but also the BRICS countries using different portfolios, namely, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), and 100 largest companies (Largest100), compared to previous studies. The findings indicate that adding illiquidity as an additional factor improves the explanatory power of the asset pricing model and provides a greater insight. For instance, employing the CAPM in the G7 countries, the findings show that for two portfolios in the US, in B/V and B/N, the impact of illiquidity is positive and significant. This tells us that the impact is significant when we are dealing with bigger firms in these countries. Moreover, employing the Fama-French three-factor model for all these portfolios in the US, Italy, and Japan, the impact of illiquidity is significant, the impact being negative for Italy and Japan, and positive for the US. Using the Carhart four-factor model, the findings show that in the US and Italy, in all of the selected portfolios (S/V, S/N, S/G, B/V, B/N, B/G, and Largest100), the impact of illiquidity on the stock market is significant. The impact in Italy is negative, while in the US, it is positive. Moreover, in appendix C, this study classified the relevant articles into tables, to consider the relationship between illiquidity and securities. This classification included the article's objectives, different techniques to measure the relationship, applied data, databases, and findings.

4.2 Relevant literature

The risk-return trade-off is a cornerstone in the field of finance, the empirical evidence to support this chief principle is weak, especially in developing countries. This chapter examines studies that cover this issue by focusing on illiquidity and shedding light on its impact on market returns.

4.2.1 The relationship between illiquidity and securities

To examine the impact of illiquidity, Amihud and Mendelson (1986a) attempt to quantify the link between the illiquidity and price of a financial asset. They show that the expected, or required, return on a stock (or any financial asset) is an increasing function of its illiquidity costs, given that all investors, no matter their time horizon, need a reward for bearing these costs. Moreover, this positive connection between illiquidity costs and expected market returns will be 'concave', rather than 'linear', implying that the additional return needed for a given rise in illiquidity costs should become smaller for less liquid assets. Furthermore, Belke et al. (2013) examine the relationship between global illiquidity and commodity and food prices, finding a negative long-run relationship between global illiquidity and food and commodity price development.

Sadka (2010) investigates the linkage between illiquidity risk and the cross-section of hedge-fund returns. He finds that funds that significantly load on the illiquidity risk earn around 6% more annually than low-loading funds. Negative performance is shown when illiquidity crises happen, implying that the performance of many funds over this time frame could be the result of beta (systematic illiquidity risk) rather than alpha (risk-adjusted returns, management skill). Sadka's results also imply that returns are not dependent upon the illiquidity that a fund can provide for its investors, which is calculated by lockup and redemption notice periods.

Chan et al. (2013) consider the relationship between stock price synchronicity (the amount of systematic volatility relative to total volatility) and illiquidity of individual stocks. Their study finds that all illiquidity measures (effective proportional bid-ask spread, price impact measure, and Amihud's illiquidity measure) have a negative link to stock market return co-movement and systematic volatility. Their study indicates that a larger industry-wide component in returns reduces illiquidity, and that reduction in illiquidity, following additions to the S&P 500 index, is associated with a rise of stock in return co-movements. In keeping with the above studies, Allaudeen et al. (2010) on examining the relationship between stock market returns and illiquidity indicate that negative market returns lead to a rise in stock illiquidity, especially during periods of capital tightness in the funding market. Interindustry spillover effects in illiquidity have a high chance of rising from capital constraints in the market making sector. Moreover, there exist significant economic returns in supplying liquidity following periods of large declines in market valuations. Amihud and Mendelson (2008) additionally examine the relationship between illiquidity and stock market returns and find that required returns and values of financial assets depend on their illiquidity as well as on the business and financial risks of the companies that issue them. Moreover, they show that for both stocks and bonds, the higher the illiquidity, the higher the required expected return (all other things equal) and the lower the value (or P/E ratio). The aforementioned study also finds that corporate managers can increase the market value of their companies by adopting illiquidity-decreasing corporate financial policies, including lower leverage ratios, substitution of dividends for stock repurchases, more effective disclosure and increases in the investor base. Watanabe and Watanabe (2008) examine whether the sensitivities of stock market returns to aggregate illiquidity shocks and the pricing of illiquidity risk changes over time. Their results reveal that illiquidity betas vary in large illiquidity beta and low beta states. In a similar line of study, Coppejans et al. (2001) examine data from an automated futures market to consider the dynamic relationship between market illiquidity, returns, and volatility finding that while a decline in illiquidity lead to a decline in volatility, volatility changes lead to rise in illiquidity in the short-term, impairing price efficiency. Likewise, Amihud and Mendelson (1986b) examine the relationship between illiquidity and stock market returns. Their results indicate that bid-ask spread has a significant positive impact on stock market return and that the monthly excess return of a stock which has a 1.5% spread is 0.45% higher than that of a stock which has a 0.5% spread, while the monthly excess return of a stock that has a 5% spread is only 0.09% higher than that of a stock that has a 4% spread. In addition, returns on high-spread stocks are greater but have less spread-sensitivity than the returns on low-spread stocks.

Brennan et al. (2012) analyse the buy and sell order measures of price effect ('lambdas') across a large cross-section of stocks. Their study reveals that sell-order illiquidity is priced more strongly than buy-order illiquidity in the cross-section of equity market returns, and that the illiquidity premium in equities emerges predominantly from the sell-order side. Additionally, the average difference between sell and buy lambdas was shown to be generally positive. Furthermore, both buy and sell lambdas were found to have a significant positive relationship with measures of funding illiquidity, such as the Treasury over Eurodollar (TED) spread, as well option implied volatility.

Several studies have been undertaken in order to examine how illiquidity can be reduced. Muscarella and Piwowar (2001) investigate a sample of stocks from the Paris Bourse that were shifted between call trading and continuous trading. Their results indicate that frequently-traded stocks that are shifted from call trading to continuous trading have illiquidity reductions that are positively related to price appreciation. Additionally, infrequently-traded stocks that are shifted from continuous trading to call trading decline in price and illiquidity. Continuous markets provide lower illiquidity for frequently-traded stocks, but call markets do not provide lower illiquidity for infrequently traded stocks. Amihud et al. (1997) examine the value impacts of improvements in trading mechanism and find that improvements in the trading methods leads to negative illiquidity externalities (spillovers) across associated stocks, and improvements in the value discovery process. A positive connection also exists between from profits from lower illiquidity and price appreciation. Furthermore, Næs et al. (2011) show that a strong relationship exists between stock market illiquidity and the business cycle, further revealing that market illiquidity impacts on investor participation and that changes in the business cycle impacts on investors' portfolio compositions. Their results also demonstrate that systematic illiquidity changes are associated with a 'flight to quality' during economic crises. Kariv et al. (2018) investigate a model of intermediated exchange with illiquidity-constrained traders. Their findings imply that average transaction prices go up with successive transactions and that intermediaries positioned closer to the buyer have greater expected profits. Additionally, there is a moderate negative relation between expected profits and a subject's trading budgets, conditional on those budgets being relatively high. Therefore, budgets can be considered a disciplinary function in markets, prohibiting excessively costly 'trembles' or 'errors'. Pastor and Stambaugh (2003) explore whether marketwide illiquidity as a state variable is a key factor for asset pricing. They show that expected stock market returns are associated cross-sectionally with the sensitivities of returns to changes in aggregate illiquidity. In addition, the average return on stocks with high sensitivities to illiquidity was found to be 7.5% higher annually for stocks with low sensitivities, adapted for exposures to market return, size, value, and momentum factors, and that a illiquidity risk driving force is accountable for half of the gains in a momentum strategy over the same 34-year period. Jankowitsch et al. (2011) consider deviations between transaction prices and the expected market valuation of securities. Their results were as follows: Firstly, high price dispersion effects cannot be described by bid-ask spreads; secondly, a new proposed measure was linked to illiquidity by regressing it on commonly-used illiquidity proxies, revealing trading activity variables and a strong association between this new illiquidity measure and bond characteristics. Finally, the price deviations from expected market valuations are larger and more volatile than previously thought. In another related study, Amihud and Mendelson (1991) explore the impacts of asset illiquidity on the yields of finite-maturity securities that have the same cash flows: US Treasury bills and notes with maturities under six months. They find that the yield to maturity is higher for notes that have higher illiquidity, and that a high impact from illiquidity exists in asset pricing.

Lin et al. (2011) also consider the impact of illiquidity risk on the cross-section of corporate bonds. Their findings indicate that illiquidity risk has an impact on the corporate bond market. In addition, they show a significant positive economic connection between expected corporate bond returns and illiquidity risk, even after controlling for the effects of default and term betas, stock market risk factors, bond characteristics, the level of illiquidity, and ratings. Moreover, this link is robust no matter what the model specifications and illiquidity measures used. Additionally, Friewald et al. (2012) test whether illiquidity is a key price factor on the US corporate bond market, especially during times of financial crisis. They show that illiquidity impacts can explain approximately 14% of the market-wide corporate yield spread changes, and its impact is stronger during a crisis and for speculative grade bonds.

Huang et al. (2015) analyse the effect of individual stock illiquidity on corporate bond yield spreads in the US market and show that a rise in stock illiquidity increases a company's credit risk by increasing its default boundary, causing a rise in the credit spread. Additionally, equity market illiquidity changes have a nonlinear impact on the above factors through the rollover loop, and small changes are not likely to have much impact, whereas large ones do. Acharya et al. (2013) also analyse the effect of illiquidity changes of stocks and treasury bonds on US corporate bond returns, demonstrating that in one regime, illiquidity changes have an insignificant impact on bond prices, however, in another regime, a rise in illiquidity leads to significant but conflicting impacts: the prices of investment-grade bonds increase when the prices of speculative-grade (junk) bonds decline substantially (relative to the market). In addition, the second regime can be forecasted by economic environments which are termed 'stress'. These robust impacts of controlling for other systematic risks (term and default) indicate the existence of a time-varying illiquidity risk of corporate bond returns conditional on episodes of flight to liquidity. Furthermore, Chong et al. (2017) consider pricing factors such as illiquidity and the associated risk premiums of commodity futures, revealing that the risk premiums of two momentum factors and hedging pressure from speculators is between 2% and 3% per month. These risk premiums are larger than the risk premiums of roll yield (0.8%) and illiquidity (0.5%).

Batten et al. (2018) analyse oil market price dynamics in the context of the mixture of distributions hypothesis (MDH) (the relationship between illiquidity, surprise volume, and conditional oil price returns). Firstly, they show that oil return heterosedasticity is partly described by surprise volume. Secondly, both oil market illiquidity as well as surprise volume changes are priced in the oil market. Thirdly, surprise volume changes are associated with lower conditional oil market returns and higher contemporaneous conditional return volatility.

Finally, lagged market illiquidity dominates conditional volatility in anticipating conditional oil price returns.

Kim and Lee (2014) investigate the pricing implication of illiquidity risks in the illiquidity-adjusted capital asset pricing model of Acharya and Pedersen (2005). Their study indicates that the empirical outcomes are sensitive to the illiquidity measures employed in the test, and show strong evidence of illiquidity risk pricing when estimating illiquidity risks based on the first principal component across eight measures of illiquidity, both in the cross-sectional and factor-model regressions. Additionally, the systematic component measured by each illiquidity proxy is associated across measures, and the changes to the systematic and common component of illiquidity are an undiversifiable source of risk.

Smimou (2014) considers the effect of equity market illiquidity on Canadian economic growth and explores how consumer attitudes/sentiments influence the dynamic macro-illiquidity connection. Smimou's study shows that during high exchange rate volatility between the Canadian and US dollars, stock-market illiquidity movements have more impact on growth. Moreover, stock market illiquidity contains more information for calculating the future state of the economy, though this is dependant on periods of more positive consumer attitudes. Furthermore, a positive change in the general consumer sentiment indicates a direct and significant effect on certain macro-economic variables, such as personal consumption, consumer credit, and economic growth.

Zhang and Ding (2018) examine the co-movement of return and volatility measures across different commodity futures markets and how these measures are influenced by illiquidity risk. Their study finds that, firstly, commodity returns display co-movement, and illiquidity risk has a key impact on asset return patterns, secondly, that these commodity markets share a common volatility factor that shapes their joint volatility co-movement, and finally, that the illiquidity spillovers can significantly drive cross-sectional correlation dynamics. Nneji (2015) analyses a simple framework that tested the impacts of market illiquidity (the difficulty with which stocks are traded) and funding illiquidity (the difficulty with which market participants can get funding) on stock market bubbles. His study finds that positive market and funding illiquidity changes enhance the probability of stock market bubbles collapsing. It was also shown that market illiquidity has a more common impact on stock bubbles than funding illiquidity, and that illiquidity changes prepare warning signals to prevent bubble collapses.

Cao and Petrasek (2014) explore an event-study context regarding what issues influence the relative performance of stocks during illiquidity crises. Their study shows that market risk, calculated by the market beta, is not a proper benchmark for expected abnormal stock market returns on days with illiquidity crises, but abnormal stock market returns during illiquidity crises are significantly and negatively associated with illiquidity risk, as calculated by the co-movement of stock market returns with market illiquidity. Roggi and Giannozzi (2015) also examine the effect of company illiquidity risk on the stock market prices of financial and non-financial firms by considering investor response to 106 crisis events over the period 2008 to 2010. Their study highlights that investor response to crises were influenced by the illiquidity risk caused by the levels of fair value hierarchy in both financial and non-financial companies. Additionally, when there is liquidity limitation, investors have stronger negative responses to firms with more Level 3[2] (mark-to-model fair value information), illiquid assets, and liabilities on their balance sheets. Finally, when there is lower illiquidity, investors respond more positively to firms with more illiquid assets. Hendershott and Seasholes (2014) explore the trading behaviour of two groups of liquidity providers (designated market makers (NYSE specialists) and competing market makers) and their role and impact on short-run stock returns. A cross-sectional approach reveals that smaller, more volatile, less actively traded, and less liquid stocks more often are located in the extreme quantiles. Moreover, their time series approach reveales that the long-short portfolio returns have a positive association with a market-wide measure of illiquidity. Karstanje et al. (2013) also examine the short-horizon predictive power of illiquidity on monthly stock market returns. Their results indicate that liquidity timing causes tangible economic profits and that a risk-averse investor will pay a high performance fee to switch to a liquidity measure that conditions on the zeros measure of Lesmond et al. (1999). Karstanje et al. (2013) aslo find that the zeros measure performs better than other illiquidity measures due to its robustness in extreme market environments. In addition, Florackis et al. (2014b) investigate the transmission of changes that have an impact on the funding liquidity conditions of market participants and financial intermediaries to stock market returns. Their study indicates that there is a strong relationship between macro-

[2] The firm liquidity risk is measured by the three levels of fair value information (level 1-mark to market, 2-market observable input and 3-mark to model) (Roggi and Giannozzi, 2015).

illiquidity changes and the returns of UK stock portfolios developed based on micro-illiquidity measures between 1999 and 2012. Moreover, there exists a significant rise in shares trading activity and a rather small rise in their trading costs on Bank of England Monetary Policy Committee (MPC) meeting days, and that during the recent financial crisis, the shocks-returns linkage reversed its sign. Furthermore, Brennan and Subrahmanyam (1996) investigate the impact of illiquidity costs on NYSE stock market returns and show a strong positive linkage between average stock market returns and illiquidity costs when measured in terms of both bid-ask spreads and price-impact costs. Moreover, Gibson and Mougeot (2004) show that aggregate market illiquidity risk is priced in the US stock market and that the sign of the illiquidity risk premium is significantly negative and time-varying. Furthermore, systematic illiquidity risk has a significant influence on market risk and is insensitive to the introduction of extreme illiquidity events/crises, such as the October 1987 crash.

It is also worth understanding what other factors affect illiquidity. For example, Moshirian et al. (2017) investigate the determinants and pricing of illiquidity commonality and indicate that both market-level and firm-level factors have an impact on illiquidity commonality. Moreover, weaker and more volatile economic and financial conditions – in areas with poor investor protection and in unclear information conditions – have lowe illiquidity commonality. In addition, cultural and behavioural aspects, consisting of individualism and uncertainty avoidance, have an impact on illiquidity commonality. Their study also implies that illiquidity commonality is priced in the global stock markets, with more impact in developed markets. In another study, Rosch and Kaserer (2013) examine the dynamics and drivers of market illiquidity during the financial crisis of 2007–2008 using a unique volume-weighted spread measure. Their study finds that during market declines, stock market illiquidity increases. Moreover, more market illiquidity risk in times of crisis is especially pronounced for larger volume classes, and, therefore, any adequate market illiquidity risk management concept needs to account for this. Furthermore, they show that illiquidity commonality differs over time, increases during market downturns, peaks at major crisis events, and becomes weaker if we have a clear look at the limit order book. Additionally, funding illiquidity drives a rise in illiquidity commonality, which then causes market-wide illiquidity. Finally, their study reveal that a positive linkage exists between credit risk and illiquidity risk. A study by Anand et al. (2013) investigates the effect of institutional trading on stock resiliency during the financial crisis of 2007–2009. Their results show that buy-side institutions react differently to illiquidity factors based on their trading style. Moreover, liquidity supplying institutions take the long-term order imbalances in the market and are critical to recovery patterns after an illiquidity changes. Their study also highlights that suppliers of this liquidity avoid risky securities when facing a crisis, and their participation does not recover for an extended period of time, and that institutional trading patterns have a large influence on the illiquidity of specific stocks. In line with the above studies, Lin et al. (2014) examine the impact of the delay with which stock price responds to information, showing that companies with a higher price delay have more difficulty attracting traders (higher incidents of non-trading), and their investors have higher illiquidity risk, resulting unusual returns. Furthermore, their study demonstrates that the price delay premium is the result of systematic illiquidity risk rather than insufficient risk sharing, and that the magnitude of illiquidity risk that investors face is the key factor to explaining stock market returns, not the pace of information dissemination. They also show that business ownership and analyst coverage are the key issues that determine illiquidity risk. Likewise, Boudt and Petitjean (2014) investigate the effect of declines in illiquidity by identifying their intraday timing. Their findings demonstrate that declines appear when we face a significant rise in trading costs, and demand for immediacy. Furthermore, they show that illiquidity changes in the effective spread and the number of trades are the key determinants to creating a decline, and that order imbalance is the most informative illiquidity variable related to price discovery, especially after the arrival of news.

Riordan and Storkenmaier (2012) investigate the effect that latency decline has on illiquidity and price discovery, showing that latency decline in a market causes a decline in illiquidity, mostly in small- and medium-sized stocks; the efficiency of prices clearly improves post upgrade, as does the relative contribution of quotes to price discovery. In addition, they show that the lack of competition between liquidity suppliers as the realised spread increases fourfold, leads to an increase in liquidity supplier revenues. In line with the above studies, Lee (2011) analyses the illiquidity-adjusted capital asset pricing approach of Acharya and Pedersen (2005) on an international level, finding that pricing of illiquidity risk is not dependent on market risk in global markets and that the US market has a key role in international illiquidity risk. The study further finds that illiquidity risks are priced according to geographic, economic, and political environments, and that an international portfolio can employ a systematic dimension of illiquidity for diversification purposes. Sadka (2006) also explores the components of illiquidity risk that are important for understanding asset-pricing anomalies and highlights that unexpected systematic (market-wide) changes of the variable component, not the fixed component, of illiquidity are shown to be priced within the context of momentum and post-earnings-announcement drift (PEAD) portfolio returns. An important part of momentum and PEAD returns can be seen as a reward for the unexpected changes in the aggregate ratio of informed traders to noise traders. Moreover, Mazouz et al. (2014) explore the effect of FTSE 100 index revisions on companies' systematic illiquidity risk and the cost of equity capital. The study reveals that index membership decreases all facets of illiquidity, whereas stocks that leave the index show no significant illiquidity innovation. Additionally, it demonstrates that the illiquidity risk premium and the cost of equity capital come down significantly after additions but do not show any significant innovation after deletions. Moreover, this study indicates that index revision is the only factor that leads to a decline in illiquidity premium and the cost of equity capital, and that the asymmetric impact of additions and deletions on stock illiquidity and cost of capital is in line with this issue that the gains of index membership are permanent. Frijns et al. (2018) examine the interactions between price discovery, illiquidity, and algorithmic trading activity, finding that over time, the US market has played a key role in terms of price discovery for Canadian cross-listed stocks. Moreover, they show that market contribution to price discovery, and vice versa, will go up with more reductions in illiquidity (a rise in trading volume and a decline in effective spread in one market relative to another), and that algorithmic trading activity is negatively associated with price discovery, implying negative externalities of high-frequency trading.

4.2.2 Alternative measures for illiquidity

Illiquidity can be measured by the cost of immediate execution. An asset has low execution fees if the asset sells immediately after purchase (Amihud and Mendelson, 1986a). Fong et al. (2017) investigate the different illiquidity proxies and find that Closing Percent Quoted Spread is the best monthly percent-cost proxy when available. Moreover, other illiquidity measures such as Amihud, Closing Percent Quoted Spread Impact, LOT Mixed Impact (a percent-cost proxy based on the idea that transaction costs cause a distortion in observed stock returns), High–Low Impact, and FHT Impacts (a new percent-cost proxy which simplifies the existing LOT Mixed measure) are tied as the best monthly cost-per-dollar-volume proxies. In addition, they show that the daily version of Closing Percent Quoted Spread is the best daily percent-cost proxy, while the daily version of Amihud is the best daily cost-per-dollar-volume proxy.

Liu et al. (2016) also offer a illiquidity adjustment to the consumption-based capital asset pricing model (CCAPM). Their findings show that the illiquidity-adjusted model indicates that the expected return is also related to transaction costs and illiquidity risk. Moreover, the average stock is positively associated with illiquidity risk. Their study also indicates that the common CCAPM underestimates risk and expected return on average. It also implies that changes are significantly associated with returns and that this illiquidity-adjusted CCAPM describes a major part of the cross-sectional return changes. In line with the above studies, Chacko et al. (2016) explore a new technique to measure illiquidity risk using exchange-traded funds (ETFs), which attempts to decrease errors such as extraneous risk factors and hedging errors. They form a theoretically-supported measure with long ETFs and short the underlying components of those ETFs. This newly produced illiquidity measure shows a strong association with other measures of illiquidity, explain bond index returns, and indicate a systematic illiquidity component across fixed-income markets. Marshall et al. (2013) study different liquidity proxies to determine which one best measures the actual cost of trading in 19 frontier markets. They show that Gibbs (Hasbrouck's (2009) Gibbs estimate of stock transactions costs), Amihud, and Amivest proxies had the largest correlation with illiquidity benchmarks, while the FHT measure provides the best way to measure the magnitude of actual transaction costs. Additionally, Banti et al. (2012) investigate illiquidity in the FX market of 20 US dollar exchange rates. Their findings show that the employed measure has proper properties and that a strong common component in illiquidity exists across currencies. In addition, illiquidity risk is priced in the cross-section of currency market returns, and the illiquidity risk premium in the FX market is close to 4.7% per annum. Likewise, Florackis et al. (2011) also investigate a new price impact ratio, RtoTR, as an alternative to Amihud (2002) return-to-volume ratio (RtoV). They show that the new ratio is free of size bias. A further study by Goyenko et al. (2009) examine the hypothesis that low-frequency measures of transaction costs, measured monthly and annually, can effectively compute high-frequency measures and, if this is the case, specify which measures are working better. Their findings reveal that the new effective/realised spread measures worked better than the majority of horseraces, while Amihud's (2002) measure better measures price impact. Similarly, Holden (2009) examines newly developed spread proxies that get three attributes of low-frequency (daily) data. All three performance dimensions of the new integrated approach and the new combined approach, namely; (1) higher individual company relation with the benchmarks, (2) higher portfolio correlation with the benchmarks, and (3) lower distance relative to the benchmarks, did a significantly better job than existing low-frequency spread proxies. Moreover, Liu (2006) consider a new measure of illiquidity, i.e.

the standardised turnover-adjusted number of zero daily trading volumes, for individual securities, and demonstrate that illiquidity is an important source of price risk. Moreover, Liu (2006) shows that a two-factor (market and illiquidity) model is able to explain the cross-section of stock market returns, explaining the illiquidity premium and subsuming documented anomalies related to size, long-term contrarian investment, and fundamental (cashflow, earnings, and dividend) to price ratios. Furthermore, the two-factor model accounts for the book-to-market impact, a finding that the Fama–French three-factor model was uanble to explain. In line with the above studies, Acharya and Pedersen (2005) employ a illiquidity adjusted capital asset pricing model to investigate how asset prices are influenced by illiquidity risk and commonality in illiquidity. They found that a security's required rate of return is affected by its expected liquidity and the covariances of its own return and illiquidity with the market return and illiquidity, and that a persistent negative innovation to a security's illiquidity leads to low concurrent returns and high predicted future returns. In addition, Lesmond et al. (1999) develop and consider a new illiqudidity proxy, the zero-return measure, to estimate transaction costs using only the time series of daily security market returns. This developed approach has continuous estimates of average round-trip transaction costs that are 1.2% and 10.3% for large and small decile companies, respectively, and a high correlation (85%) with the most commonly employed transaction cost estimators. Brennan et al. (1998), employing data on individual securities, also consider a risk-based asset pricing approach against specific non-risk alternatives, and find a powerful negative linkage between average market returns and trading volume, in line with a illiquidity premium in asset prices.

Keim and Madhavan (1996) and Kraus and Stoll (1972) consider bid-ask spread. There are two types of measures in this regard: quoted or effective bid-ask spread. The latter, i.e. effective bid-ask spread, was discussed in detail by Edwards et al. (2007). Although this is a direct method and has the potential to be recognised as a good indicator of illiquidity, it fails to fully capture many critical features of illiquidity, such as market depth and resilience (Bao et al., 2011). Another technique is transaction-by-transaction market impact (Kyle, 1985). Moreover, a third technique to measure microstructure risk that is based on intra-daily transaction data is the probability of information-based trading introduced by Easley et al. (2002), which shows both the adverse selection cost affected by asymmetric information between traders as well as the risk involved in deviation in stock price from its full-information value. The problem associated with the aforementioned techniques is that there is no access to most microstructure data in most stock markets around the world. Even when such data is available, it just covers short periods of time. However, using the technique developed by Amihud (2002), daily data on returns and volume are readily accessible over long-term periods for many stock markets. Although this may be more coarse and less accurate, it enables us to create long-term series of illiquidity that are necessary to analyse the impacts over time of illiquidity on ex-ante and contemporaneous stock excess returns (Amihud, 2002).

There is evidence that illiquidity has an association with direct costs while operating a transaction containing the asset. According to Amihud and Mendelson (1991), the illiquidity of an asset can be examined through the price of the asset while trading in comparison to the price of the same asset without trade. Another key thing to remember in terms of illiquidity and its evaluation is its two properties: namely that illiquidity emerges from market friction, e.g. cost and difficulty in trading and capital flows, and that the overall influence on the stock market is temporary (Bao et al., 2011).

This study is also influenced by the Amihud (2002) paper regarding illiquidity. Therefore, this study further investigates cross-sectional changes in expected stock returns that are associated with the sensitivities of returns to variations in aggregate illiquidity. This chapter will identify the illiquidity of trading volume for the largest listed stocks in the G7 and the BRICS countries in comparison to their corporate bond trading volume. In this context, it is worthwhile examining the stock illiquidity around the G7 and BRICS stocks through trading volume and arrange the portfolio of stocks based on higher trading volume to lower trading volume stocks. Similarly, it will develop a good comparison of illiquidity impact using different asset pricing models. This option was influenced by the methodology of Amihud et al. (2015). In particular, the financial crisis of 2008 brought renewed interest and a sense of urgency to this topic, as concerns over both illiquidity and credit risk intensified at the same time (Bao et al., 2011). This chapter will help to idenfity the impact of illiquidity in relation to stock market returns. This kind of comparison will be valuable to market investors in terms of analysing the illiquidity factors. For example, they can select different portfolios with different size (Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G)) or countries (the G7 and the BRICS countries) for diversification purposes.

4.3 Data and empirical methodology

4.3.1 Data

This study uses monthly data for illiquidity and stock market returns in the G7 and the BRICS countries over a fifteen-year period, from October 2002 to September 2017. The analysis is undertaken in local currencies, and all data are obtained from DataStream.

4.3.2 Empirical methodology

This study investigates the impact of illiquidity on stock returns. The bases of the analysis are: (i) illiquidity for period t+1 affects expected stock returns for period t+1, assuming information in period t is given. This is based on the theory developed by Amihud and Mendelson (1986b) in which there exists a positive relationship between expected stock illiquidity and expected stock returns, and (ii) high persistency exists in illiquidity, which means an unexpected increase in current illiquidity will translate to a higher probability of having illiquidity in the following period. As a result, unexpected increases in illiquidity will lead to decreases in stock prices, so investors expect a higher return due to more future illiquidity. This causes a negative relationship between contemporaneous illiquidity and realised stock returns.

To test this theory, a time series of stock market illiquidity is required, which is difficult to obtain, especially over a long period of time. For this reason Amihud (2002) approach has been applied as it uses daily data on stock prices and trading volume to create a measure for stock or security illiquidity (ILLIQ) in a given period, ${|R_{iyt}|}/{VOLD_{iyt}}$. R_{iyt} is the return for stock i on month t of year y, and $VOLD_{iyt}$ is the associated trading volume (in local currencies). Amihud (2002) considers a stock to be less liquid if, for a given trading volume, the results show a greater shift in its price. As a result, ILLIQ may be seen as a rough measure for the λ coefficient in the technique applied by Kyle (1985), which needs intraday data on quotes and trades. Instead, ILLIQ only needs monthly data on prices and trading volume. ILLIQ for individual stocks has an impact on the cross-section of stock returns, which is in line with the theory and what has been documented by Amihud and Mendelson (1986b). The monthly illiquidity measure is given by the following equation:

$$\text{ILLIQ}_{it} = [(\tfrac{1}{12})\sum_{t=1}^{12}|R_{iyt}|]/VOLD_{iyt} \tag{4.1}$$

The above illiquidity measure is associated with the liquidity ratio called the Amivest measure, $\text{LI}_{it}=\sum_{t=1}^{12} {V_{iyt}}/{|R_{iyt}|}$, which is the ratio of the summation of volume to the summation of absolute return (Amihud et al., 1997).

After calculating the monthly illiquidity based on the abovementioned method, the collected data for the firms in the G7 and BRICS stock markets are ranked based on market capitalisation, and the 100 largest firms for each country selected. These ranked firms are separated into two categories, small and large, and for all these models and portfolios, excess return and market risk premium is calculated. With access to these data, the CAPM model with and without average illiquidity has been computed.

For the Fama-French three-factor model, the book-value-to-price (BV/P) ratio for the selected firms is calculated and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories created before and following Fama and French (1993), six portfolios are created: Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G). The Fama-French three-factor model with and without average illiquidity is computed. Finally, in order to employ the Carhart four-factor model, the momentum factor is required. Thus, following Carhart (1997), the selected 100 stocks are ranked in accordance with their returns and categorised as either losers facing negative return, or winners facing positive return. Considering these two categories, small and large, created for the CAPM model, four portfolios are created: Small Loser (S/L), Small Winner (S/W), Big Loser (B/L), and Big Winner (B/W). The Carhart four-factor model with and without average illiquidity is computed. These three models are explained in the following subsections.

4.3.2.1 The CAPM model

Based on Markowitz (1959) work, the capital asset pricing model (the CAPM) was introduced. The time series regression of the CAPM takes the following form:

$$R_t - RF_t = \alpha + \beta_1(RM_t - RF_t) + \varepsilon_t \tag{4.2}$$

$$R_t - RF_t = \alpha + \beta_1(RM_t - RF_t) + \beta_2\, AILLIQ_t + \varepsilon_t \tag{4.3}$$

where $R_{i,t}$-RF_t is the excess return on a portfolio; RM_t and RF_t are the market portfolio return and risk free rate of return; AILLIQ is the average monthly illiquidity and β_1 and β_2 are the coeficients on risk factors. The difference between two equations, 4.2 and 4.3, is simply the inclusion of illiquidity as extra factor in equation 4.3.

4.3.2.2 The Fama-French three-factor model

Prior studies have employed the standard CAPM, which considers the market portfolio as the benchmark for normal returns to a stock (MacKinlay, 1997). In contrast to the CAPM, which depends on only one factor (market risk premium), the Fama-French three factor model, introduced by Fama and French (1993), incorporates two additional factors that are based on the asset capital market size and the growth. The time series model is estimated based on the following equation:

$$R_t - RF_t = \alpha + \beta_1(RM_t - RF_t) + \beta_2\, SMB_t + \beta_3\, HML_t + \varepsilon_t \tag{4.4}$$

$$R_t - RF_t = \alpha + \beta_1(RM_t - RF_t) + \beta_2\, SMB_t + \beta_3\, HML_t + \beta_4\, AILLIQ_t + \varepsilon_t \tag{4.5}$$

where $R_{i,t}$-RF_t is the excess return on a portfolio; RM_t and RF_t represent the market portfolio return and risk free rate of return; SMB is the average return on three small portfolios minus the average return on three big portfolios; HML is the average return on two value portfolios minus the average return on two growth portfolios; and β_1, β_2, β_3 and β_4 are the factor coefficients.

4.3.2.3 The Carhart four-factor model

Carhart (1997) suggests that an additional factor, price momentum, to be added to the Fama-French three-factor model to account for persistence effect in returns reported by Jegadeesh and Titman (1993). The combined equation for this four-factor time series model is:

$$R_t - RF_t = \alpha + \beta_1(RM_t - RF_t) + \beta_2\,SMB_t + \beta_3\,HML_t + \beta_4\,WML_t + \varepsilon_t \tag{4.6}$$

$$R_t - RF_t = \alpha + \beta_1(RM_t - RF_t) + \beta_2\,SMB_t + \beta_3\,HML_t + \beta_4\,WML_t + \beta_5\,AILLIQ_t + \varepsilon_t \tag{4.7}$$

where WML is Carhart's price momentum factor, which captures one-year momentum in returns and calculates the average return on two winner portfolios minus the average return on two loser portfolios; the notations of the rest of the variables remain the same; and β_1, β_2, β_3, β_4 and β_5 are the coefficients for each factor.

4.4 Empirical results

4.4.1 The CAPM model

Considering the returns of the selected portfolios – S/V, S/N, S/G, B/V, B/N, B/G, and Largest100 – in each country, the results for the CAPM model and its augmentation with illiquidity are shown in Table 4.1. It is interesting to note, that by adding illiquidity, in some countries and their related portfolios the explanatory power of the model increases based on the adjusted R-square, thereby providing a greater insight into explaining the dependent variable. For instance, in the G7 countries, the findings reveal that for two portfolios in the US, namely B/V and B/N, the impact of illiquidity is positive and significant, implying that the impact is significant when dealing with bigger firms. The impact in Germany is also positive and significant in three portfolios, namely S/V, B/N, and Largest100, a finding in line with Amihud et al. (2015). This may be because of market illiquidity expectations that correspond with Amihud's earlier paper (2002).

For Canada, the only portfolio in which the effect of illiquidity is evident is in the S/G portfolio. In contrast to the above findings, following the same investigation for Italy and Japan, the results point to the interesting fact that when illiquidity is included as a factor in our model it shows a negative and significant impact on almost all portfolios under consideration, which is consistent with the findings of Amihud and Mendelson (1986a), Chan et al. (2013), and Florackis et al. (2014a). This may be due to the fact that during liquidity limitation, investors have stronger negative responses to firms with more Level 3 (mark-to-model fair value information), illiquid assets, and liabilities on their balance sheets, and when facing less illiquidity, investors are interested more in firms with more illiquid assets (Roggi and Giannozzi, 2015). The findings of Amihud (2002) also indicate that stock market returns are negatively associated with concurrent unexpected illiquidity.

The findings for the BRICS countries indicate that illiquidity as an extra factor can also enhance the explanatory power of the model for some portfolios in each country. For example, in Brazil, the impact is positive and significant for the S/N and Largest100 portfolios. In Russia, the same impact only appears for the S/N portfolio. For China, considering illiquidity as an extra factor in the CAPM model demonstrates a significant positive impact in the S/N, S/G, B/V, and Largest100 portfolios. Thus, it has been showed that in the BRICS countries, when we are dealing with small-sized firms in the portfolios, the impact of illiquidity has more chance to be significant.

4.4.2 The Fama-French three-factor model

In this section, the Fama-French three-factor model has been applied. Just as with the CAPM model, the original version of this model was compared with the same model but also with an additional variable, illiquidity. Based on the analysis presented in Table 4.2, the findings reveal that the returns of selected portfolios consisting of S/V, S/N, S/G, B/V, B/N, B/G, and Largest100 can be explained better for some countries, based on the adjusted R-square, when we have illiquidity as an additional factor. For instance, for all these portfolios in Italy, Japan and the US, the impact of illiquidity is significant. However, in contrast to Italy and Japan, in which the results show a negative impact of illiquidity on stock market, the impact in the US is positive. For Germany, the impact is positive and significant in the S/V, B/N, B/G, and Largest100 portfolios. For Italy and Japan, the negative impact is in line with the studies of Florackis et al. (2014a), Chan et al. (2013), and Amihud and Mendelson (1986a).

However, with the same comparison for the BRICS countries, the findings indicate that the impact of illiquidity only increases the explanatory power of the model in China and Russia. In China, the impact is positive and significant in the S/N, S/G, B/V, and Largest100 portfolios. In Russia, though, the impact of illiquidity is significant in the S/V, S/N, S/G, B/V portfolios, there are mixed signals in terms of sign. For example, for S/V and S/G, the impact is negative, and for S/N and B/V, the impact is positive. Another issue that can be considered is that when the impact is significant, we are dealing more with the portfolios created by smaller firms. Thus, it seems that size is an important factor if we are dealing with illiquidity in the BRICS countries. Roggi and Giannozzi (2015) indicate that the reason behind this negative effect may be due to less access to liquidity. Amihud (2002) also shows that stock market returns are negatively related to concurrent unexpected illiquidity. However, the positive impact on the US and some portfolios in Germany is in line with the findings of Amihud et al. (2015) . The reason behind this may be due to market illiquidity expectations, which is in line with Amihud (2002).

4.4.3 The Carhart four-factor model

Finally, this study has considered the impact of illiquidity using the Carhart four-factor model, comparing the original model results with the model that added illiquidity as a fifth factor in the G7 and the BRICS countries. The findings in Table 4.3 indicate that adding illiquidity to form a new model provides greater insights into explaining the returns of chosen portfolios in some countries, based on the adjusted R-square, consistent with the findings from the CAPM and the Fama-French three-factor models. Considering the G7 countries first, the findings reveal that in the US and Italy, in all of the selected portfolios (S/V, S/N, S/G, B/V, B/N, B/G, and Largest100), the impact of illiquidity on the stock market is significant. However, the impact in Italy is negative, while in the US, it is positive. The latter impact in the US is in line with the findings of Amihud et al. (2015). This may be because of market illiquidity expectations, which is in line with Amihud (2002).

However, the negative impact in Italy is consistent with the studies of Florackis et al. (2014a), Chan et al. (2013), and Amihud and Mendelson (1986a). For Germany, the impact of illiquidity is positive and significant in the S/V, B/N, B/G, and Largest100 portfolios. We can infer that if we have big firms in our portfolio, there is a higher chance that the impact is substantial. In Japan, although there is a significant impact of illiquidity in the S/V, B/G, and Largest100 portfolios, the impact is negative. Moreover, the results suggest that the inclusion of illiquidity as an extra factor to the Carhart four-factor model can also enhance the explanatory power of the model in some of the portfolios in the BRICS countries. For example, in Brazil, China, and South Africa, the inclusion of illiquidity as an additional factor in the model has a significant positive impact in some portfolios. The impact can be seen in Brazil's Largest100 portfolio, in

South Africa's B/V portfolio, and in China's S/N, S/G, B/V, and Largest100 portfolios. However, in Russia, the study shows that the illiquidity is significant in almost all portfolios under investigation (S/V, S/N, S/G, B/V, B/N), but the impact is not conclusive in terms of its sign.

4.5 Conclusion

This chapter investigates the relationship between illiquidity and the stock market in the G7 and the BRICS countries. To do so, this study employes three asset pricing models – the CAPM, the Fama-French three-factor, and the Carhart four-factor models – once in their original format and then with an additional factor, illiquidity. This study considers the impact of illiquidity on seven portfolios, namely, S/V, S/N, S/G, B/V, B/N, B/G, and Largest100, in each country. The findings point to the fact that adding illiquidity as an extra factor to the aforementioned methods can improve the explanatory power of the models for some portfolios and provide more insight for some portfolios within each country to describe the dependent variable. The CAPM model with illiquidity as an additional factor in the G7 and the BRICS countries reveals that illiquidity as an extra factor can enhance the explanatory power of the model for some portfolios related to each country. For example, in the US adding illiquidity to the CAPM model leads to an increase of the goodness of fit by 2.6% in the B/V portfolio. This is 4.2% in the Largest100 portfolio in Germany. For Italy in almost all portfolios there is between 2% and 5% increase in the goodness of fit. In Russia, and only in S/N portfolio, we have a high increase of 35.8%. For Japan and in B/G portfolio there is 9.5% increase as a result of adding illiquidity to the model. For China, and only in Largest100 portfolio, we have a 2.1% increase. For the rest of the portfolios in all countries there are slight increases in the adjusted R-squared. Moreover, the impact of illiquidity is significantly positive in the B/V and B/N portfolios in the US and in the S/V, B/N, and Largest100 portfolios in Germany. For Canada, the only portfolio in which the effect of illiquidity is evident is the S/G portfolio. In contrast to the above findings, following the same investigation for Italy and Japan, the results point to the interesting issue, in that when illiquidity is included as a factor in our model it shows a negative and significant impact on almost all portfolios under consideration, in line with Florackis et al. (2014a). Furthermore, the impact is positive and significant for the S/N and Largest100 portfolios in Brazil, for the S/N portfolio in Russia, and for the S/N, S/G, B/V, and Largest100 portfolios in China. Thus, it was revealed that in the BRICS countries, the impact of illiquidity, when dealing with small-sized firms in the portfolios has better chance of being significant.

In applying the Fama-French three-factor model for the same purpose, the findings also reveal that the returns of some portfolios can be explained better with illiquidity as an additional factor in some portfolios. For instance, the findings indicate that the impact of illiquidity increases the explanatory power of the model. For instance, the goodness of fit increases in all portfolios in the US by adding illiquidity to the Fama-French three-factor model. This improvement in the goodness of fit differs among portfolios, by up to 3%. In Germany, this improvement almost exists in all portfolios with the highest one being in the Largest100 and by 4.2%. It is the same in Italy where the results indicate that the goodness of fit increases in all portfolios up to 3% except in B/G and Largest100 where there is no improvement in the goodness of fit. Moreover, the goodness of fit has increased in all portfolios in Japan by up to 5% when having illiquidity as an additional factor to the Fama-French three-factor model. The findings also indicate that there are only two portfolios in Russia that show improvement in the goodness of fit which are in S/N and S/G portfolios and by 21.8% and 2.1% respectively. For Brazil, China, and India, where there is such an improvement it is very small. In contrast, there is no improvement in any portfolios in Canada, France, South Africa and the UK, when having illiquidity as an additional factor in the model. Moreover, for all selected portfolios in Italy, Japan, and the US, the impact of illiquidity is significant. However, in contrast to Italy and Japan, in which there is a negative impact, the impact in the US is positive. For Germany, the impact is positive and significant in the S/V, B/N, B/G, and Largest100 portfolios. In China, the impact is positive and significant in the S/N, S/G, B/V, and Largest100 portfolios. In Russia, although the impact of illiquidity is significant in the S/V, S/N, S/G, and B/V portfolios there are mixed signals in terms of sign. For example, for S/V and S/G the impact is negative, while for S/N and B/V, the impact is positive.

Finally, in employing the Carhart four-factor model, considering the G7 and the BRICS countries, the results indicate that adding illiquidity as an extra factor to the Carhart four-factor model also enhances the explanatory power of the model in some of the portfolios under consideration. For example, the findings shows that the goodness of fit increases in all portfolios in the US by adding illiquidity to the Carhart four-factor model. However, this increase is high only in the B/N portfolio where the adjusted R-squared increases by 36.5%. In

Germany, this improvement in the goodness of fit exists in all portfolios and is highest in the Largest100 portfolio, an increase of 4.2%. This is the same in Russia as the results indicate a slight improvement in all portfolios, with the exception of the S/N portfolio where the improvement is 22.3%. In the cases of Brazil, Canada, China, India, South Africa, and the UK, the findings reveal that there is a slight improvement in portfolios where the adjusted R-squared increases. In contrast, in France there is no improvement in any of the portfolios when having illiquidity as an additional factor in the model. Moreover, we can see that for Italy and the US in all of the selected portfolios, the impact of illiquidity on the stock market is significant. However, the impact in Italy is negative rather than positive, which can also be seen in the US. For Germany, the impact is positive and significant in the S/V, B/N, B/G, and Largest100 portfolios. We can argue that if we have big firms in our portfolios in the G7 countries, there is a higher chance that the impact is substantial. In Japan, however, there is a significant negative impact in the S/V, B/G, and Largest100 portfolios. In addition to that, the impact is significantly positive for the Largest100 portfolio in Brazil, the B/V portfolio in South Africa, and the S/N, S/G, B/V, and Largest100 portfolios in China. However, in Russia, although the study shows that illiquidity is significant in almost all portfolios under investigation (S/V, S/N, S/G, B/V, and B/N), the impact is not conclusive in terms of sign.

The findings of this chapter show that illiquidity effect changes across the models for countries under investigation. For example, employing the CAPM indicate that in some portfolios in eight countries (Brazil, Canada, China, Germany, Italy, Japan, Russia, and the US), having illiquidity as an additional factor can improve the explanatory power of the model. The same results have been found in some portfolios in eight countries (Brazil, China, Germany, Italy, Japan, Russia, South Africa, and the US) when the Carhart four-factor model is employed and in six countries (China, Germany, Italy, Japan, Russia, and the US) when the Fama-French three-factor model is employed.

This study could be a good reference for global investors who desire to diversify their portfolio among different countries, the G7 and the BRICS, based on the impact of illiquidity on stock market, and who expect more returns for their investment. It has also implications for long and short-term stock market policy makers, brokers, governments and local and international investors. Having classified the relevant literature according to important issues, namely, linkage between illiquidity and market returns, and alternative approaches to measuring illiquidity, this study examines how some critical issues have been ‘solved’ or why they have not yet been sufficiently demonstrated, thereby providing new avenues for research based on recent developments. The tables in the following appendices provide further helpful information to understand the gaps, contributions, applied data, and techniques in the relevant literature.

Table 4. 1: The CAPM model

	DVs IVs	Portfolios (DVs) with Average Illiquidity							Portfolios (DVs) without Average Illiquidity						
		S/V	**S/N**	**S/G**	**B/V**	**B/N**	**B/G**	**Largest100**	**S/V**	**S/N**	**S/G**	**B/V**	**B/N**	**B/G**	**Largest100**
USA	**C**	0.008 (0.008)	0.006 (0.007)	0.003 (0.008)	-0.001 (0.006)	-0.002 (0.006)	-0.003 (0.008)	-0.002 (0.006)	0.018 (0.004)	0.012 (0.004)	0.010 (0.005)	0.011 (0.003)	0.009 (0.003)	0.005 (0.005)	0.006 (0.003)
	MRP	1.111*** (0.240)	0.971*** (0.224)	1.025*** (0.261)	0.955*** (0.182)	0.980*** (0.193)	0.886*** (0.258)	0.964*** (0.180)	1.071*** (0.232)	0.952*** (0.223)	0.998*** (0.260)	0.908*** (0.184)	0.937*** (0.194)	0.854*** (0.257)	0.935*** (0.180)
	AILLIQ	0.015 (0.093)	0.008 (0.008)	0.010 (0.010)	0.018** (0.007)	0.017** (0.007)	0.012 (0.010)	0.011 (0.007)	-	-	-	-	-	-	-
	Adj R^2 **(Difference)**	0.104 (0.009)	0.086 (-0.001)	0.071 (0)	0.141 (0.026)	0.128 (0.019)	0.055 (0.003)	0.133 (0.007)	0.095	0.087	0.071	0.115	0.109	0.052	0.126
UK	**C**	0.013 (0.006)	0.014 (0.007)	0.005 (0.006)	0.009 (0.005)	0.011 (0.006)	0.003 (0.008)	0.0003 (0.005)	0.018 (0.004)	0.019 (0.006)	0.011 (0.005)	0.010 (0.004)	0.016 (0.005)	0.007 (0.006)	0.005 (0.004)
	MRP	1.163*** (0.163)	1.288*** (0.198)	1.034*** (0.178)	1.092*** (0.141)	1.143*** (0.181)	1.083*** (0.210)	1.031 (0.140)	1.173*** (0.164)	1.297*** (0.198)	1.045*** (0.179)	1.094*** (0.140)	1.151*** (0.181)	1.091*** (0.210)	1.039*** (0.140)
	AILLIQ	0.0009 (0.006)	0.0008 (0.007))	0.0011 (0.007)	0.0003 (0.005)	0.0008 (0.007)	0.0007 (0.008)	0.0008 (0.005)	-	-	-	-	-	-	-
	Adj R^2 **(Difference)**	0.223 (0.005)	0.189 (0.001)	0.162 (0.007)	0.245 (-0.004)	0.180 (0.001)	0.125 (-0.001)	0.234 (0.005)	0.218	0.188	0.155	0.249	0.179	0.126	0.229
France	**C**	0.020 (0.009)	0.015 (0.011)	0.011 (0.011)	0.017 (0.008)	0.012 (0.009)	0.009 (0.012)	0.0091 (0.010)	0.020 (009)	0.016 (0.011)	0.011 (0.011)	0.017 (0.008)	0.012 (0.009)	0.009 (0.011)	0.010 (0.010)
	MRP	1.078*** (0.293)	1.062*** (0.330)	1.026*** (0.353)	1.164*** (0.251)	1.122*** (0.272)	1.061*** (0.356)	1.126*** (0.308)	1.076*** (0.286)	1.117*** (0.323)	1.040*** (0.344)	1.150*** (0.245)	1.109*** (0.266)	1.030*** (0.348)	1.190*** (0.302)
	AILLIQ **($\times 10^6$)**	0.0619 (1.451)	-1.351 (1.641)	-0.348 (1.751)	0.335 (1.241)	0.303 (1.351)	0.768 (1.772)	-1.551 (1.531)	-	-	-	-	-	-	-
	Adj R^2 **(Difference)**	0.062 (-0.006)	0.055 (-0.002)	0.038 (-0..005)	0.100 (-0.004)	0.078 (-0.005)	0.037 (-0.004)	0.075 (-0.001)	0.068	0.057	0.043	0.104	0.083	0.041	0.074

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs) . C (vertical intercept of the line), MRP (market risk premium), and AILLIQ (average illiquidity) are independent variables (IVs). For France where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* 10^6 *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.1: The CAPM model (continued)

	DVs / IVs	Portfolios (DVs) with Average Illiquidity							Portfolios (DVs) without Average Illiquidity						
		S/V	S/N	S/G	B/V	B/N	B/G	Largest100	S/V	S/N	S/G	B/V	B/N	B/G	Largest100
Germany	C	0.030 (0.005)	0.026 (0.006)	0.017 (0.006)	0.025 (0.006)	0.014 (0.005)	0.014 (0.006)	0.0116 (0.005)	0.031 (0.005)	0.028 (0.006)	0.018 (0.005)	0.025 (0.006)	0.016 (0.005)	0.015 (0.006)	0.014 (0.005)
	MRP	1.707*** (0.249)	1.676*** (0.297)	1.470*** (0.308)	1.756*** (0.308)	1.408*** (0.242)	1.526*** (0.299)	1.455*** (0.246)	1.590*** (0.246)	1.578*** (0.291)	1.398*** (0.259)	1.697*** (0.301)	1.278*** (0.240)	1.426 (0.293)	1.288*** (0.247)
	AILLIQ ($\times 10^6$)	3.021** (1.371)	2.531 (1.641)	1.841 (1.461)	1.501 (1.701)	3.371** (1.341)	2.601 (1.651)	4.291*** (1.361)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.201 (0.017)	0.142 (0.004)	0.138 (0.003)	0.145 (-0.001)	0.157 (0.026)	0.119 (0.008)	0.169 (0.042)	0.184	0.136	0.135	0.146	0.131	0.111	0.127
Italy	C	0.042 (0.008)	0.039 (0.008)	0.032 (0.009)	0.037 (0.007)	0.028 (0.007)	0.033 (0.011)	0.0231 (0.008)	0.021 (0.005)	0.017 (0.005)	0.011 (0.006)	0.020 (0.004)	0.009 (0.005)	0.013 (0.007)	0.007 (0.005)
	MRP	1.404*** (0.229)	1.206*** (0.232)	1.235*** (0.273)	1.400 (0.209)	1.085*** (0.226)	1.428*** (0.325)	1.248*** (0.237)	1.575*** (0.230)	1.381*** (0.233)	1.409*** (0.272)	1.534*** (0.208)	1.234*** (0.226)	1.594*** (0.322)	1.378*** (0.235)
	AILLIQ	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)	-0.0005 (0.001)	-0.001*** (0.001)	-0.001** (0.001)	-0.0005** (0.001)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.250 (0.047)	0.209 (0.050)	0.162 (0.037)	0.261 (0.033)	0.176 (0.038)	0.138 (0.023)	0.181 (0.025)	0.203	0.159	0.125	0.228	0.138	0.115	0.156
Canada	C	0.012 (0.004)	0.002 (0.004)	0.007 (0.009)	0.012 (0.003)	0.006 (0.005)	0.002 (0.006)	0.0004 (0.004)	0.012 (0.004)	0.003 (0.004)	0.008 (0.009)	0.012 (0.003)	0.007 (0.005)	0.002 (0.006)	0.001 (0.004)
	MRP	0.900*** (0.216)	0.535** (0.228)	0.631 (0.416)	0.950*** (0.171)	0.683** (0.263)	0.512* (0.278)	0.693*** (0.196)	0.885*** (0.215)	0.517** (0.226)	0.475 (0.428)	0.958*** (0.171)	0.665** (0.262)	0.512* (0.278)	0.677*** (0.196)
	AILLIQ ($\times 10^6$)	0.523 (0.788)	0.643 (0.831)	5.551*** (1.521)	-0.272 (0.623)	0.650 (0.960)	-0.002 (1.011)	0.547 (0.720)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.078 (-0.003)	0.020 (-0.002)	0.066 (0.065)	0.142 (-0.004)	0.026 (-0.003)	0.007 (-0.006)	0.054 (-0.003)	0.081	0.022	0.001	0.146	0.029	0.013	0.057

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). C (vertical intercept of the line), MRP (market risk premium), and AILLIQ (average illiquidity) are independent variables (IVs). For Canada and Germany where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* $\mathbf{10^6}$ *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.1: The CAPM model (continued)

	DVs / IVs	Portfolios (DVs) with Average Illiquidity: S/V	S/N	S/G	B/V	B/N	B/G	Largest100	Portfolios (DVs) without Average Illiquidity: S/V	S/N	S/G	B/V	B/N	B/G	Largest100
Japan	**C**	0.029 (0.006)	0.025 (0.007)	0.029 (0.009)	0.026 (0.007)	0.024 (0.007)	-0.016 (0.009)	0.0203 (0.004)	0.011 (0.004)	0.008 (0.004)	0.006 (0.005)	0.011 (0.004)	0.008 (0.004)	-0.048 (0.005)	0.005 (0.004)
	MRP	0.585 (0.481)	0.393 (0.560)	0.548 (0.646)	0.280 (0.523)	0.453 (0.546)	0.805 (0.650)	0.660 (0.196)	0.596 (0.494)	0.405 (0.570)	0.563 (0.662)	0.289 (0.531)	0.464 (0.556)	0.827 (0.684)	0.670 (0.535)
	AILLIQ	-0.003*** (0.001)	-0.003*** (0.001)	-0.004*** (0.001)	-0.002** (0.001)	-0.003*** (0.001)	-0.005*** (0.001)	-0.002*** (0.001)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.053 (0.051)	0.031 (0.033)	0.047 (0.048)	0.023 (0.026)	0.033 (0.034)	0.097 (0.099)	0.034 (0.037)	0.002	-0.002	-0.001	-0.003	-0.001	0.002	0.003
Brazil	**C**	0.040 (0.028)	0.059 (0.033)	0.150 (0.043)	0.069 (0.023)	0.028 (0.025)	0.026 (0.023)	0.0241 (0.023)	0.040 (0.027)	0.087 (0.032)	0.169 (0.041)	0.072 (0.021)	0.029 (0.024)	0.027 (0.022)	0.038 (0.023)
	MRP	1.187*** (0.232)	1.367*** (0.265)	1.765*** (0.347)	1.378*** (0.188)	1.083*** (0.205)	1.112*** (0.188)	1.147*** (0.191)	1.187*** (0.228)	1.508*** (0.267)	1.860 (0.343)	1.397*** (0.181)	1.086*** (0.201)	1.115*** (0.184)	1.215*** (0.190)
	AILLIQ ($\times 10^6$)	0.0137 (1.141)	4.971*** (1.621)	3.341 (2.212)	0.666 (1.131)	0.108 (1.251)	0.0901 (1.151)	2.401** (1.171)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.121 (-0.005)	0.184 (0.038)	0.143 (0.007)	0.243 (-0.002)	0.130 (-0.005)	0.160 (-0.005)	0.195 (0.014)	0.126	0.146	0.136	0.245	0.135	0.165	0.181
Russia	**C**	0.534 (0.941)	-0.012 (0.026)	0.018 (0.024)	-0.009 (0.018)	-0.018 (0.018)	-0.042 (0.022)	0.0145 (0.022)	0.532 (0.938)	-0.016 (0.032)	0.018 (0.024)	-0.010 (0.018)	-0.019 (0.018)	-0.042 (0.022)	0.014 (0.022)
	MRP	3.736 (0.122)	0.780** (0.343)	0.938*** (0.322)	0.568** (0.236)	0.478** (0.240)	0.211 (0.294)	1.046*** (0.293)	3.514 (0.121)	0.458 (0.427)	0.934*** (0.320)	0.540** (0.235)	0.448* (0.240)	0.206 (0.292)	1.045*** (0.291)
	AILLIQ ($\times 10^6$)	0.414 (2.141)	0.601*** (0.059)	0.075 (0.056)	0.0514 (0.041)	0.0562 (0.042)	0.0096 (0.051)	0.0019 (0.051)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	-0.010 (-0.005)	0.359 (0.360)	0.034 (-0.004)	0.026 (0.003)	0.018 (0.005)	-0.008 (-0.006)	0.056 (-0.005)	-0.005	0.001	0.040	0.023	0.013	-0.002	0.061

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). C (vertical intercept of the line), MRP (market risk premium), and AILLIQ (average illiquidity) are independent variables (IVs). For Brazil and Russia where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* $\mathbf{10^6}$ *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.1: The CAPM model (continued)

	DVs / IVs	Portfolios (DVs) with Average Illiquidity							Portfolios (DVs) without Average Illiquidity						
		S/V	S/N	S/G	B/V	B/N	B/G	Largest100	S/V	S/N	S/G	B/V	B/N	B/G	Largest100
India	C	-0.397	-0.388	-0.381	-0.415	-0.435	-0.395	-0.4155	-0.236	-0.224	-0.214	-0.251	-0.274	-0.229	-0.253
		(0.636)	(0.635)	(0.635)	(0.635)	(0.633)	(0.634)	(0.636)	(0.622)	(0.621)	(0.622)	(0.621)	(0.620)	(0.621)	(0.622)
	MRP	11.649	11.805	11.995	11.438	11.331	11.802	11.561	13.061	13.236	13.459	12.871	12.734	13.252	12.984
		(9.347)	(9.33)	(9.335)	(9.336)	(9.315)	(9.328)	(9.345)	(9.285)	(9.273)	(9.276)	(9.275)	(9.263)	(9.269)	(9.284)
	AILLIQ	0.001	0.001	0.001	0.001	0.001	0.001	0.001	-	-	-	-	-	-	-
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)							
	Adj R^2	0.007	0.008	0.009	0.007	0.007	0.008	0.007	0.005	0.005	0.006	0.005	0.004	0.005	0.005
	(Difference)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)							
China	C	0.005	-0.018	0.009	0.045	0.033	0.020	0.0464	0.004	-0.020	0.006	0.042	0.031	0.020	0.044
		(0.034)	(0.042)	(0.037)	(0.035)	(0.041)	(0.034)	(0.033)	(0.034)	(0.042)	(0.038)	(0.035)	(0.041)	(0.034)	(0.034)
	MRP	0.687	0.335	1.132	1.930	1.661	1.333	2.420**	0.545	0.035	0.825	1.669	1.486	1.271	2.176**
		(1.088)	(1.324)	(1.180)	(1.103)	(1.283)	(1.090)	(1.060)	(1.084)	(1.331)	(1.191)	(1.109)	(1.278)	(1.082)	(1.065)
	AILLIQ	0.005	0.010**	0.010**	0.009**	0.006	0.002	0.008**	-	-	-	-	-	-	-
		(0.003)	(0.004)	(0.004)	(0.003)	(0.04)	(0.002)	(0.003)							
	Adj R^2	-0.001	0.014	0.025	0.029	0.005	-0.001	0.038	-0.004	-0.005	-0.002	0.007	0.001	0.002	0.017
	(Difference)	(0.003)	(0.019)	(0.027)	(0.022)	(0.004)	(-0.003)	(0.021)							
S. Africa	C	-0.055	0.034	0.007	0.028	0.034	0.046	0.0279	-0.055	0.031	0.001	0.024	0.031	0.044	0.025
		(0.011)	(0.012)	(0.015)	(0.012)	(0.013)	(0.011)	(0.011)	(0.011)	(0.011)	(0.015)	(0.011)	(0.011)	(0.011)	(0.011)
	MRP	1.160***	1.293***	0.980***	1.172***	1.293***	1.465***	1.260***	1.158***	1.226***	0.854***	1.082	1.226***	1.433***	1.199***
		(0.161)	(0.165)	(0.211)	(0.167)	(0.183)	(0.156)	(0.161)	(0.145)	(0.151)	(0.193)	(0.152)	(0.152)	(0141)	(0.147)
	AILLIQ ($\times 10^6$)	1.391	51.11	95.31	67.61	12.41	24.11	46.31	-	-	-	-	-	-	-
		(50.41)	(52.01)	(66.41)	(52.51)	(57.61)	(49.01)	(50.71)							
	Adj R^2	0.253	0.266	0.093	0.218	0.177	0.357	0.267	0.257	0.266	0.099	0.215	0.177	0.360	0.267
	(Difference)	(-0.004)	(0)	(-0.006)	(0.003)	(0)	(-0.003)	(0)							

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). C (vertical intercept of the line), MRP (market risk premium), and AILLIQ (average illiquidity) are independent variables (IVs). For South Africa where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* 10^6 *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4. 2: The Fama-French three-factor model

	DVs / IVs	Portfolios (DVs) with Average Illiquidity							Portfolios (DVs) without Average Illiquidity						
		S/V	S/N	S/G	B/V	B/N	B/G	Largest100	S/V	S/N	S/G	B/V	B/N	B/G	Largest100
USA	C	-0.006 (0.006)	-0.002 (0.006)	-0.006 (0.006)	-0.004 (0.006)	-0.006 (0.006)	-0.004 (0.006)	-0.004 (0.005)	0.011 (0.004)	0.009 (0.003)	0.010 (0.003)	0.010 (0.003)	0.009 (0.003)	0.011 (0.004)	0.006 (0.003)
	SMB	1.732*** (0176)	1.292*** (0.170)	1.500*** (0.164)	0.350** (0.164)	0.592*** (0.166)	0.582*** (0.197)	0.479*** (0.153)	1.674*** (0.179)	1.251*** (0.171)	1.444*** (0.167)	0.300* (0.167)	0.539*** (0.168)	0.530*** (0.179)	0.441*** (0.154)
	HML	0.042 (0.097)	0.479*** (0.093)	1.007*** (0.090)	0.077 (0.090)	0.339*** (0.091)	1.111*** (0.097)	0.370*** (0.084)	0.019 (0.099)	0.463*** (0.094)	0.986*** (0.092)	0.058 (0.092)	0.319*** (0.092)	1.091*** (0.098)	0.356*** (0.085)
	MRP	0.949*** (0.194)	0.885*** (0.187)	0.960*** (0.181)	0.928*** (0.181)	0.950*** (0.182)	0.917*** (0.195)	0.947*** (0.169)	0.893*** (0.198)	0.847*** (0.188)	0.906*** (0.184)	0.880*** (0.184)	0.899*** (0.182)	0.867*** (0.198)	0.910*** (0.170)
	AILLIQ	0.024*** (0.007)	0.016** (0.007)	0.023*** (0.007)	0.020*** (0.007)	0.021*** (0.007)	0.021*** (0.007)	0.015** (0.006)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.415 (0.029)	0.365 (0.014)	0.559 (0.023)	0.156 (0.034)	0.229 (0.033)	0.464 (0.001)	0.242 (-0.002)	0.386	0.351	0.536	0.122	0.196	0.445	0.224
UK	C	0.012 (0.006)	0.016 (0.006)	0.010 (0.005)	0.010 (0.005)	0.015 (0.006)	0.013 (0.006)	0.004 (0.005)	0.016 (0.004)	0.017 (0.005)	0.012 (0.004)	0.012 (0.004)	0.019 (0.005)	0.015 (0.004)	0.009 (0.004)
	SMB	0.674*** (0.183)	1.009*** (0.206)	0.838*** (0.163)	-0.160 (0.164)	0.007 (0.198)	0.325* (0.187)	-0.295 (0.152)	0.693*** (0.182)	1.017*** (0.205)	0.853*** (0.162)	-0.151 (0.163)	0.027 (0.197)	-0.311* (0.185)	-0.270** (0.151)
	HML	0.242** (0.118)	0.743*** (0.132)	1.049*** (0.105)	0.099 (0.105)	0.644*** (0.127)	1.291*** (0.120)	0.463*** (0.097)	0.250** (0.117)	0.746*** (0.132)	1.056*** (0.104)	0.103 (0.105)	0.653*** (0.127)	1.297*** (0.119)	0.474*** (0.097)
	MRP	1.142*** (0.158)	1.283*** (0.177)	1.059*** (0.140)	1.107*** (0.141)	1.187*** (0.171)	1.190*** (0.161)	1.079*** (0.130)	1.148*** (0.158)	1.285*** (0.177)	1.064*** (0.140)	1.110* (0.141)	1.193*** (0.170)	1.194*** (0.160)	1.086*** (0.131)
	AILLIQ	0.0006 (0.006)	0.0003 (0.007)	0.0005 (0.005)	0.0003 (0.005)	0.0006 (0.006)	0.0004 (0.006)	0.0008 (0.005)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.277 (-0.001)	0.353 (-0.003)	0.481 (-0.001)	0.246 (-0.003)	0.278 (-0.001)	0.489 (-0.002)	0.340 (0.005)	0.278	0.356	0.482	0.249	0.279	0.491	0.335

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C (vertical intercept of the line), MRP (market risk premium), and AILLIQ (average illiquidity) are independent variables (IVs). Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.2: The Fama-French three-factor model (continued)

	DVs IVs	Portfolios (DVs) with Average Illiquidity S/V	S/N	S/G	B/V	B/N	B/G	Largest100	Portfolios (DVs) without Average Illiquidity S/V	S/N	S/G	B/V	B/N	B/G	Largest100
France	**C**	0.017 (0.008)	0.018 (0.009)	0.018 (0.008)	0.018 (0.008)	0.016 (0.008)	0.018 (0.009)	0.010 (0.009)	0.017 (0.008)	0.018 (0.009)	0.017 (0.008)	0.018 (0.008)	0.016 (0.008)	0.018 (0.009)	0.011 (0.009)
	SMB	1.325*** (0.196)	1.186*** (0.208)	1.286*** (0.176)	0.257 (0.184)	0.244 (0.188)	0.297 (0.206)	1.101*** (0.205)	1.293*** (0.194)	1.190*** (0.205)	1.264*** (0.174)	0.244 (0.181)	0.232 (0.185)	0.273 (0.203)	1.111*** (0.202)
	HML	0.118 (0.103)	0.701*** (0.110)	1.192*** (0.093)	0.262*** (0.097)	0.562*** (0.099)	1.188*** (0.109)	0.475*** (0.108)	0.119 (0.103)	0.701*** (0.110)	1.192*** (0.093)	0.262*** (0.097)	0.562*** (0.099)	1.188*** (0.108)	0.475*** (0.108)
	MRP	1.167*** (0.262)	1.188*** (0.279)	1.195*** (0.236)	1.199*** (0.246)	1.180*** (0.251)	1.171*** (0.275)	1.230*** (0.274)	1.109*** (0.256)	1.194*** (0.272)	1.157*** (0.231)	1.175*** (0.240)	1.157*** (0.245)	1.127*** (0.269)	1.248*** (0.268)
	AILLIQ **($\times 10^6$)**	1.401 (1.311)	-0.152 (1.401)	0.941 (1.181)	0.593 (1.231)	0.544 (1.261)	1.051 (1.381)	-0.444 (1.371)	-	-	-	-	-	-	-
	Adj R^2 **(Difference)**	0.253 (0)	0.331 (-0.003)	0.570 (-0.001)	0.136 (-0.004)	0.220 (-0.003)	0.425 (-0.002)	0.269 (-0.004)	0.253	0.334	0.571	0.140	0.223	0.427	0.273
Germany	**C**	0.022 (0.005)	0.023 (0.006)	0.021 (0.006)	0.024 (0.006)	0.016 (0.005)	0.025 (0.006)	0.016 (0.005)	0.023 (0.005)	0.024 (0.006)	0.022 (0.005)	0.025 (0.006)	0.017 (0.005)	0.027 (0.006)	0.018 (0.005)
	SMB	0.164 (0.156)	0.152 (0.198)	0.164 (0.173)	-0.960*** (0.190)	-0.601*** (0.156)	-0.960*** (0.178)	-0.907**** (0.151)	0.162 (0.158)	0.151 (0.199)	0.163 (0.173)	-0.961*** (0.190)	-0.602*** (0.158)	-0.961*** (0.179)	-0.909*** (0.155)
	HML	-0.589*** (0.126)	-0.196 (0.160)	0.423*** (0.140)	-0.574*** (0.154)	-0.204 (0.126)	0.415*** (0.143)	-0.149 (0.121)	-0.590*** (0.127)	-0.198 (0.160)	0.422*** (0.140)	-0.574*** (0.154)	-0.205 (0.128)	0.414*** (0.144)	-0.151 (0.125)
	MRP	1.561*** (0.235)	1.622*** (0.299)	1.559*** (0.261)	1.674*** (0.287)	1.393*** (0.235)	1.675*** (0.268)	1.469*** (0.227)	1.444*** (0.232)	1.524*** (0.293)	1.487*** (0.256)	1.617*** (0.281)	1.263*** (0.234)	1.575*** (0.263)	1.304*** (0.229)
	AILLIQ **($\times 10^6$)**	3.001** (1.291)	2.531 (1.631)	1.861 (1.431)	1.451 (1.571)	3.351** (1.291)	2.591* (1.471)	4.261*** (1.241)	-	-	-	-	-	-	-
	Adj R^2 **(Difference)**	0.301 (0.017)	0.146 (0.007)	0.172 (0.004)	0.267 (-0.001)	0.215 (0.025)	0.302 (0.008)	0.303 (0.042)	0.284	0.139	0.168	0.268	0.190	0.294	0.261

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C (vertical intercept of the line), MRP (market risk premium), and AILLIQ (average illiquidity) are independent variables (IVs). For Germany and France where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* $\mathbf{10^6}$ *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.2: The Fama-French three-factor model (continued)

	DVs / IVs	S/V	S/N	S/G	B/V	B/N	B/G	Largest100	S/V	S/N	S/G	B/V	B/N	B/G	Largest100
		Portfolios (DVs) with Average Illiquidity							Portfolios (DVs) without Average Illiquidity						
Italy	**C**	0.041	0.040	0.036	0.040	0.033	0.044	0.028	0.023	0.022	0.020	0.023	0.016	0.026	0.014
		(0.007)	(007)	(0.007)	(0.007)	(0.006)	(0.007)	(0.006)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)
	SMB	0.885***	0.794	0.902	-0.174	-0.056	-0.190	0.108	0.942***	0.851***	0.954***	-0.120	-0.001	-0.132	0.153
		(0.172)	(0.164)	(0.161)	(0.165)	(0.155)	(0.172)	(0.159)	(0.175)	(0.168)	(0.163)	(0.168)	(0.159)	(0.175)	(0.161)
	HML	0.444***	0.742***	1.257***	0.263**	0.729***	1.451***	0.850***	0.470***	0.768***	1.280***	0.287***	0.754***	1.477***	0.870***
		(0.106)	(0.101)	(0.099)	(0.101)	(0.095)	(0.106)	(0.097)	(0.108)	(0.103)	(0.101)	(0.103)	(0.098)	(0.108)	(0.099)
	MRP	1.455***	1.276***	1.344***	1.415***	1.135***	1.526***	1.311***	1.599***	1.421***	1.475***	1.549***	1.274***	1.673***	1.424***
		(0.212)	(0.202)	(0.198)	(0.203)	(0.191)	(0.212)	(0.196)	(0.212)	(0.203)	(0.198)	(0.203)	(0.192)	(0.212)	(0.194)
	AILLIQ	-0.0005***	-0.0005***	-0.0005***	-0.0005***	-0.0005***	-0.0005***	-0.0004***	-	-	-	-	-	-	-
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)							
	Adj R^2	0.357	0.398	0.558	0.301	0.412	0.634	0.443	0.325	0.365	0.538	0.268	0.378	0.615	0.424
	(Difference)	(0.032)	(0.033)	(0.020)	(0.033)	(0.034)	(0.019)	(0.019)							
Canada	**C**	0.012	0.003	0.017	0.013	0.011	0.008	0.003	0.012	0.003	0.017	0.013	0.011	0.008	0.003
		(0.004)	(0.004)	(0.003)	(0.003)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.005)	(0.004)	(0.004)
	SMB	0.363***	0.353***	0.997***	-0.015	-0.624***	-0.648***	-0.042	0.347***	0.342***	0.993***	-0.029	-0.613***	-0.676***	-0.050
		(0.116)	(0.123)	(0.101)	(0.095)	(0.129)	(0.121)	(0.103)	(0.113)	(0.120)	(0.098)	(0.093)	(0.126)	(0.118)	(0.101)
	HML	0.105	0.091	1.340***	0.087	0.597***	0.852***	0.329***	0.098	0.087	1.339***	0.081	0.603***	0.840***	0.326***
		(0.076)	(0.081)	(0.066)	(0.062)	(0.085)	(0.079)	(0.068)	(0.075)	(0.080)	(0.065)	(0.062)	(0.084)	(0.079)	(0.067)
	MRP	0.947***	0.576**	1.131***	0.981***	0.877***	0.796***	0.808***	0.957***	0.583***	1.133***	0.990***	0.870***	0.814***	0.813***
		(0.209)	(0.222)	(0.182)	(0.172)	(0.233)	(0.001)	(0.187)	(0.208)	(0.221)	(0.181)	(0.171)	(0.232)	(0.218)	(0.186)
	AILLIQ ($\times 10^6$)	-0.523	-0.344	-0.106	-0.472	0.388	-0.889	-0.235	-	-	-	-	-	-	-
		(0.796)	(0.848)	(0.693)	(0.656)	(0.888)	(0.833)	(0.713)							
	Adj R^2	0.152	0.081	0.824	0.143	0.249	0.396	0.165	0.155	0.086	0.825	0.145	0.253	0.395	0.170
	(Difference)	(-0.003)	(-0.005)	(-0.001)	(-0.002)	(-0.004)	(0.001)	(-0.005)							

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C (vertical intercept of the line), MRP (market risk premium), and AILLIQ (average illiquidity) are independent variables (IVs). For Canada where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* $\mathbf{10^6}$ *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.2: The Fama-French three-factor model (continued)

	DVs / IVs	Portfolios (DVs) with Average Illiquidity S/V	S/N	S/G	B/V	B/N	B/G	Largest100	Portfolios (DVs) without Average Illiquidity S/V	S/N	S/G	B/V	B/N	B/G	Largest100
Japan	**C**	0.019 (0.007)	0.024 (0.008)	0.036 (0.008)	0.030 (0.008)	0.036 (0.007)	0.013 (0.008)	0.024 (0.008)	0.004 (0.006)	0.015 (0.006)	0.026 (0.006)	0.020 (0.006)	0.028 (0.006)	-0.003 (0.006)	0.015 (0.006)
	SMB	0.781*** (0.246)	0.938*** (0.268)	1.069*** (0.271)	0.041 (0.272)	-0.007 (0.248)	-0.247 (0.266)	0.315 (0.266)	0.778*** (0.253)	0.936*** (0.270)	1.067*** (0.273)	0.039 (0.274)	-0.008 (0.268)	-0.249 (0.255)	0.313 (0.268)
	HML	0.144 (0.106)	0.682*** (0.116)	1.173*** (0.117)	0.229* (0.117)	0.570*** (0.107)	1.200*** (0.115)	0.438*** (0.115)	0.211* (0.107)	0.723*** (0.114)	1.217*** (0.115)	0.275** (0.116)	0.609*** (0.113)	1.268*** (0.108)	0.480*** (0.113)
	MRP	0.553 (0.471)	0.231 (0.514)	0.266 (0.519)	0.224 (0.521)	0.314 (0.475)	0.511 (0510)	0.554 (0.519)	0.547 (0484)	0.227 (0.517)	0.262 (0.523)	0.220 (0.526)	0.310 (0.513)	0.506 (0.488)	0.551 (0.513)
	AILLIQ	-0.003*** (0.001)	-0.002* (0.001)	-0.002* (0.001)	-0.002** (0.001)	-0.002* (0.001)	-0.003*** (0.001)	-0.002* (0.001)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.094 (0.048)	0.188 (0.011)	0.387 (0.010)	0.035 (0.016)	0.160 (0.009)	0.520 (0.026)	0.098 (0.013)	0.046	0.177	0.377	0.019	0.151	0.494	0.085
Brazil	**C**	0.019 (0.025)	0.004 (0.027)	0.071 (0.027)	0.064 (0.022)	0.018 (0.023)	0.012 (0.019)	0.011 (0.023)	0.012 (0.025)	0.013 (0.026)	0.069 (0.026)	0.067 (0.022)	0.018 (0.022)	0.010 (0.018)	0.018 (0.023)
	SMB	0.772*** (0.109)	1.001*** (0.115)	0.838*** (0.118)	-0.075 (0.098)	-0.172* (0.100)	-0.142* (0.083)	0.257** (0.102)	0.746*** (0107)	1.036*** (0.113)	0.829*** (0.115)	-0.066 (0.095)	-0.175* (0.087)	-0.149* (0.081)	0.286*** (0.100)
	HML	-0.327*** (0.084)	0.373*** (0.089)	1.293*** (0.090)	0.228*** (0.075)	0.504*** (0.077)	0.608*** (0.064)	0.071 (0.190)	-0.334*** (0.084)	0.382*** (0.089)	1.291*** (0.090)	0.230*** (0.075)	0.503*** (0.076)	0.606*** (0.063)	0.079 (0.079)
	MRP	1.046*** (0.204)	1.060*** (0.215)	1.354*** (0.219)	1.361*** (0.182)	1.047*** (0.186)	1.052*** (0.155)	1.072*** (0.001)	1.014*** (0.202)	1.103*** (0.213)	1.343*** (0.217)	1.373*** (0.180)	1.044*** (0.184)	1.044*** (0.153)	1.108*** (0.189)
	AILLIQ ($\times 10^6$)	-1.451 (1.271)	1.971 (1.341)	-0.521 (1.361)	0.540 (0.113)	-0.156 (0.116)	-0.393 (0.963)	1.671 (1.181)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.336 (0.001)	0.476 (0.003)	0.664 (-0.001)	0.273 (-0.003)	0.296 (-0.004)	0.439 (-0.002)	0.220 (0.005)	0.335	0.473	0.665	0.276	0.300	0.441	0.215

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C (vertical intercept of the line), MRP (market risk premium), and AILLIQ (average illiquidity) are independent variables (IVs). For Brazil where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* $\mathbf{10^6}$ *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.2: The Fama-French three-factor model (continued)

	DVs / IVs	Portfolios (DVs) with Average Illiquidity							Portfolios (DVs) without Average Illiquidity						
		S/V	S/N	S/G	B/V	B/N	B/G	Largest100	S/V	S/N	S/G	B/V	B/N	B/G	Largest100
Russia	**C**	-0.039	-0.027	-0.002	-0.006	-0.019	-0.043	0.010	-0.035	-0.036	0.000	-0.008	-0.020	-0.043	0.010
		(0.025)	(0.024)	(0.020)	(0.017)	(0.018)	(0.022)	(0.022)	(0.026)	(0.028)	(0.020)	(0.017)	(0.018)	(0.022)	(0.022)
	SMB	1.036***	0.708***	0.860***	-0.238***	-0.095	-0.062	0.233*	0.903***	1.045***	0.774***	-0.179**	-0.048	-0.050	0.210*
		(0.130)	(0.123)	(0.102)	(0.090)	(0.093)	(0.114)	(0.114)	(0.126)	(0.138)	(0.098)	(0.086)	(0.088)	(0.108)	(0.108)
	HML	-1.320***	0.471***	0.564***	-0.165***	-0.071	-0.048	0.155*	-1.409***	0.698***	0.506***	-0.125***	-0.040	-0.040	0.139*
		(0.088)	(0.083)	(0.069)	(0.060)	(0.062)	(0.077)	(0.077)	(0.085)	(0.093)	(0.066)	(0.058)	(0.059)	(0.073)	(0.072)
	MRP	0.204	0.533*	0.624**	0.641***	0.499**	0.221	0.964***	0.343	0.182	0.713***	0.579**	0.450**	0.209	0.988***
		(0.336)	(0.318)	(0.269)	(0.233)	(0.239)	(0.295)	(0.294)	(0.341)	(0.374)	(0.265)	(0.233)	(0.238)	(0.292)	(0.291)
	AILLIQ ($\times 10^6$)	-0.195***	0.493***	-0.126***	0.0863**	0.0691	0.0174	-0.0337	-	-	-	-	-	-	-
		(0.061)	(0.058)	(0.048)	(0.042)	(0.043)	(0.054)	(0.053)							
	Adj R^2 (Difference)	0.999	0.460	0.367	0.064	0.042	0.002	0.070	0.999	0.242	0.346	0.048	0.034	0.007	0.073
		(0)	(0.218)	(0.021)	(0.016)	(0.008)	(-0.005)	(-0.003)							
India	**C**	-0.681	-0.683	-0.686	-0.679	-0.698	-0.673	-0.687	-0.527	-0.528	-0.531	-0.523	-0.545	-0.518	-0.532
		(0.659)	(0.658)	(0.659)	(0.659)	(0.658)	(0.659)	(0.659)	(0.649)	(0.648)	(0.649)	(0.649)	(0.648)	(0.649)	(0.649)
	SMB	14.252*	14.401*	14.284*	13.427*	13.114*	13.396*	13.748*	14.423*	14.573*	14.456*	13.601*	13.283*	13.568*	13.921*
		(7.376)	(7.368)	(7.376)	(7.377)	(7.366)	(7.377)	(7.381)	(7.388)	(7.379)	(7.388)	(7.389)	(7.377)	(7.390)	(7.393)
	HML	-5.023	-4.593	-3.859	-4.888	-4.536	-4.052	-4.947	-4.501	-4.069	-3.333	-4.357	-4.020	-3.526	-4.420
		(3.882)	(3.877)	(9.881)	(3.882)	(3.876)	(3.882)	(3.884)	(3.861)	(3.862)	(3.867)	(3.867)	(9.861)	(3.868)	(3.869)
	MRP	9.262	9.221	9.185	9.244	9.103	9.320	9.294	10.492	10.454	10.425	10.493	10.319	10.560	10.534
		(9.557)	(9.545)	(9.556)	(9.557)	(9.543)	(9.558)	(9.562)	(9.524)	(9.513)	(9.524)	(9.525)	(9.501)	(9.526)	(9.530)
	AILLIQ	0.001	0.001	0.001	0.001	0.001	0.001	0.001	-	-	-	-	-	-	-
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)							
	Adj R^2 (Difference)	0.021	0.021	0.020	0.019	0.017	0.018	0.020	0.018	0.018	0.017	0.015	0.014	0.014	0.016
		(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)							

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C (vertical intercept of the line), MRP (market risk premium), and AILLIQ (average illiquidity) are independent variables (IVs). For Russia where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* $\mathbf{10^6}$ *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.2: The Fama-French three-factor model (continued)

	DVs / IVs	Portfolios (DVs) with Average Illiquidity: S/V	S/N	S/G	B/V	B/N	B/G	Largest100	Portfolios (DVs) without Average Illiquidity: S/V	S/N	S/G	B/V	B/N	B/G	Largest100
China	**C**	0.027 (0.031)	0.014 (0.039)	0.040 (0.033)	0.029 (0.033)	0.035 (0.040)	0.017 (0.030)	0.052 (0.034)	0.027 (0.031)	0.013 (0.040)	0.039 (0.033)	0.028 (0.033)	0.034 (0.040)	0.017 (0.030)	0.051 (0.034)
	SMB	0.747*** (0.129)	0.869*** (0.165)	0.746*** (0.138)	-0.288* (0.138)	-0.064 (0.166)	-0.287** (0.127)	0.210 (0.141)	0.757*** (0.128)	0.899*** (0.165)	0.780*** (0.139)	-0.252* (0.139)	-0.039 (0.166)	-0.274** (0.127)	0.240* (0.141)
	HML	-0.284*** (0.093)	0.229* (0.119)	0.586*** (0.100)	-0.508*** (0.099)	0.418*** (0.120)	0.622*** (0.092)	-0.119 (0.101)	-0.284*** (0.093)	0.229* (0.120)	0.586*** (01.01)	-0.508*** (0.101)	0.418*** (0.120)	0.622*** (0.092)	-0.119 (0.102)
	MRP	1.355 (0.975)	1.155 (1.243)	1.865* (1.044)	1.625 (1.038)	1.634 (1.255)	1.116 (0.961)	2.605** (1.061)	1.290 (0.970)	0.954 (1.246)	1.645 (1.053)	1.386 (1.050)	1.472 (1.253)	1.032 (0.957)	2.411** (1.066)
	AILLIQ	0.002 (0.003)	0.008* (0.004)	0.008** (0.003)	0.009** (0.003)	0.006 (0.004)	0.003 (0.003)	0.007** (0.003)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.208 (-0.002)	0.144 (0.010)	0.249 (0.019)	0.152 (0.026)	0.063 (0.006)	0.233 (0)	0.050 (0.017)	0.210	0.134	0.230	0.126	0.057	0.233	0.033
S. Africa	**C**	-0.018 (0.013)	0.038 (0.014)	-0.005 (0.015)	0.015 (0.014)	-0.002 (0.016)	0.002 (0.012)	-0.007 (0.013)	-0.018 (0.012)	0.036 (0.014)	-0.009 (0.015)	0.011 (0.014)	-0.003 (0.015)	0.001 (0.012)	-0.009 (0.013)
	SMB	0.448*** (0.166)	0.127 (0.186)	0.681*** (0.196)	-0.545*** (0.181)	-0.420** (0.203)	-0.778*** (0.160)	-0.525*** (0.171)	0.449*** (0.165)	0.135 (0.185)	0.691*** (0.196)	-0.532*** (0.182)	-0.418** (0.202)	-0.774*** (0.159)	-0.518*** (0.171)
	HML	-0.522*** (0.098)	0.015 (0.111)	0.917*** (0.116)	-0.174 (0.108)	0.197 (0.121)	0.388*** (0.095)	0.402*** (0.102)	-0.521*** (0.098)	0.020 (0.111)	0.923*** (0.176)	-0.166 (0.108)	0.198*** (0.121)	0.390*** (0.095)	0.407*** (0.101)
	MRP	1.232*** (0.149)	1.305*** (0.167)	0.993*** (0.176)	1.130*** (0.163)	1.031*** (0.182)	1.369*** (0.144)	1.188*** (0.154)	1.222*** (0.136)	1.241*** (0.152)	0.911*** (0.001)	1.025*** (0.149)	1.013 (0.166)	1.335*** (0.131)	1.130*** (0.141)
	AILLIQ ($\times 10^6$)	7.981 (46.71)	48.91 (52.31)	62.31 (55.11)	80.01 (51.11)	13.51 (57.11)	25.71 (45.11)	43.81 (48.21)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.361 (-0.003)	0.260 (-0.001)	0.382 (0.001)	0.264 (0.006)	0.196 (-0.004)	0.459 (-0.002)	0.341 (-0.001)	0.364	0.261	0.381	0.258	0.200	0.461	0.342

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C (vertical intercept of the line), MRP (market risk premium), and AILLIQ (average illiquidity) are independent variables (IVs). For South Africa where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* $\mathbf{10^6}$ *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4. 3: The Carhart four-factor model

	DVs / IVs	S/V	S/N	S/G	B/V	B/N	B/G	Largest100	S/V	S/N	S/G	B/V	B/N	B/G	Largest100
		Portfolios (DVs) with Average Illiquidity							**Portfolios (DVs) without Average Illiquidity**						
USA	**C**	-0.009 (0.006)	-0.004 (0.006)	-0.007 (0.006)	-0.005 (0.006)	-0.006 (0.006)	-0.007 (0.006)	-0.006 (0.005)	0.007 (0.004)	0.007 (0.003)	0.009 (0.003)	0.008 (0.003)	0.008 (0.003)	0.007 (0.003)	0.004 (0.003)
	SMB	1.612*** (0.173)	1.226*** (0.171)	1.453*** (0.166)	0.286* (0.166)	0.562*** (0.169)	0.445** (0.172)	0.390** (0.152)	1.553*** (0.176)	1.185*** (0.172)	1.395*** (0.169)	0.234*** (0.168)	0.507*** (0.171)	0.392** (0.174)	0.351** (0.153)
	HML	0.015 (0.094)	0.464*** (0.093)	0.997*** (0.090)	0.063 (0.089)	0.333*** (0.091)	1.081*** (0.093)	0.351*** (0.082)	-0.007 (0.096)	0.449*** (0.093)	0.975*** (0.092)	0.044*** (0.091)	0.312*** (0.093)	1.061*** (0.094)	0.336*** (0.083)
	MRP	0.954*** (0.188)	0.888*** (0.186)	0.962*** (0.180)	0.930*** (0.180)	0.951*** (0.183)	0.923*** (0.186)	0.951*** (0.165)	0.900*** (0.191)	0.851*** (0.187)	0.909*** (0.184)	0.883*** (0.182)	0.901*** (0.186)	0.875*** (0.189)	0.916*** (0.166)
	WML	0.034*** (0.009)	0.018** (0.009)	0.013 (0.009)	0.018** (0.008)	0.009 (0.008)	0.039*** (0.009)	0.025*** (0.006)	0.034*** (0.009)	0.019** (0.009)	0.014 (0.009)	0.019** (0.008)	0.009 (0.009)	0.039*** (0.009)	0.025*** (0.008)
	AILLIQ	0.023*** (0.007)	0.016** (0.007)	0.022*** (0.007)	0.020*** (0.007)	0.021*** (0.007)	0.020*** (0.007)	0.015** (0.006)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.454 (0.027)	0.376 (0.013)	0.562 (0.023)	0.171 (0.023)	0.561 (0.365)	0.512 (0.019)	0.278 (0.018)	0.427	0.363	0.539	0.138	0.196	0.493	0.260
UK	**C**	0.008 (0.006)	0.011 (0.007)	0.009 (0.005)	0.010 (0.005)	0.010 (0.006)	0.008 (0.006)	0.004 (0.005)	0.013 (0.004)	0.014 (0.005)	0.012 (0.005)	0.012 (0.004)	0.015 (0.005)	0.012 (0.005)	0.009 (0.004)
	SMB	0.527*** (0.186)	0.865*** (0.211)	0.827*** (0.170)	-0.168 (0.171)	-0.144 (0.202)	-0.469** (0.190)	-0.313* (0.158)	0.559*** (0.185)	0.883*** (0.209)	0.847*** (0.170)	-0.157 (0.169)	-0.111 (0.201)	-0.444** (0.188)	-0.281* (0.157)
	HML	0.029 (0.136)	0.535*** (0.154)	1.033*** (0.124)	0.087 (0.125)	0.426*** (0.147)	1.083*** (0.172)	0.436*** (0.115)	0.051 (0.135)	0.546*** (0.153)	1.046*** (0.124)	0.095 (0.129)	0.448*** (0.147)	1.100*** (0.138)	0.457*** (0.115)
	MRP	1.039*** (0.158)	1.182*** (0.179)	1.052*** (0.144)	1.102*** (0.145)	1.081*** (0.172)	1.089*** (0.162)	1.066*** (0.134)	1.051*** (0.158)	1.188*** (0.179)	1.059*** (0.144)	1.106*** (0.145)	1.094*** (0.172)	1.098*** (0.161)	1.078*** (0.134)
	WML	0.028*** (0.009)	0.028** (0.010)	0.002 (0.008)	0.002 (0.008)	0.029*** (0.010)	0.027*** (0.009)	0.004 (0.008)	0.027*** (0.009)	0.027** (0.010)	0.001 (0.008)	0.001 (0.008)	0.027*** (0.010)	0.026*** (0.009)	0.002 (0.008)
	AILLIQ	0.0008 (0.001)	0.0004 (0.001)	0.0005 (0.001)	0.0003 (0.001)	0.0008 (0.001)	0.0006 (0.001)	0.0008 (0.001)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.307 (0.002)	0.372 (-0.002)	0.478 (-0.001)	0.242 (-0.003)	0.305 (0.002)	0.509 (0)	0.337 (0.005)	0.305	0.374	0.479	0.245	0.303	0.509	0.332

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C (vertical intercept of the line), MRP (market risk premium), WML (the average return on two winner portfolios minus the average return on two loser portfolios), and AILLIQ (average illiquidity) are independent variables (IVs). Difference is Adj R^2 of portfolio with Average Illiquidity minus Adj R^2 of portfolio without Average Illiquidity.*

Table 4.3: The Carhart four-factor model (continued)

	DVs / IVs	Portfolios (DVs) with Average Illiquidity							Portfolios (DVs) without Average Illiquidity						
		S/V	**S/N**	**S/G**	**B/V**	**B/N**	**B/G**	**Largest100**	**S/V**	**S/N**	**S/G**	**B/V**	**B/N**	**B/G**	**Largest100**
France	**C**	0.011 (0.008)	0.012 (0.009)	0.016 (0.008)	0.016 (0.008)	0.012 (0.008)	0.011 (0.009)	0.008 (0.009)	0.010 (0.008)	0.012 (0.009)	0.015 (0.008)	0.016 (0.008)	0.012 (0.008)	0.011 (0.009)	0.009 (0.009)
	SMB	1.348*** (0.192)	1.207*** (0.206)	1.293*** (0.177)	0.266 (0.184)	0.259 (0.008)	0.322 (0.201)	1.108*** (0.206)	1.314*** (0.190)	1.209*** (0.203)	1.271*** (0.174)	0.252 (0.181)	0.245 (0.184)	0.296 (0.199)	1.117*** (0.203)
	HML	0.167 (0.102)	0.744*** (0.110)	1.207*** (0.094)	0.282*** (0.098)	0.594*** (0.184)	1.242*** (0.107)	0.489*** (0.110)	0.167 (0.103)	0.744*** (0.109)	1.207*** (0.094)	0.282*** (0.098)	0.594*** (0.099)	1.242*** (0.107)	0.489*** (0.103)
	MRP	1.002*** (0.263)	1.041*** (0.281)	1.145*** (0.242)	1.131*** (0.251)	1.070*** (0.099)	0.987*** (0.275)	1.183*** (0.281)	0.942*** (0.258)	1.044*** (0.275)	1.107*** (0.237)	1.106*** (0.246)	1.046*** (0.249)	0.941*** (0.270)	1.200*** (0.275)
	WML	0.039*** (0.013)	0.034** (0.014)	0.012 (0.012)	0.016 (0.012)	0.026** (0.249)	0.043*** (0.013)	0.011 (0.014)	0.038*** (0.013)	0.034** (0.014)	0.011 (0.012)	0.016 (0.012)	0.026** (0.012)	0.043*** (0.013)	0.011 (0.014)
	AILLIQ ($\times 10^6$)	1.491 (1.291)	-0.0744 (1.381)	0.967 (1.181)	0.629 (1.231)	0.602 (1.251)	1.151 (1.351)	-0.420 (1.381)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.284 (0.001)	0.349 (-0.003)	0.570 (0)	0.139 (-0.003)	0.233 (-0.003)	0.452 (-0.001)	0.268 (-0.003)	0.283	0.352	0.570	0.142	0.236	0.453	0.272
Germany	**C**	0.021 (0.005)	0.022 (0.006)	0.020 (0.006)	0.023 (0.006)	0.015 (0.005)	0.024 (0.006)	0.015 (0.005)	0.023 (0.005)	0.023 (0.006)	0.021 (0.005)	0.024 (0.006)	0.017 (0.005)	0.026 (0.006)	0.017 (0.005)
	SMB	0.131 ((0.158)	0.080 (0.199)	0.113 (0.175)	-1.029*** (0.192)	-0.636*** (0.158)	-1.011*** (0.180)	-0.980*** (0.150)	0.128 (0.160)	0.078 (0.200)	0.112 (0.175)	-1.030*** (0.192)	-0.639*** (0.161)	-1.013*** (0.181)	-0.983*** (0.155)
	HML	-0.574*** (0.126)	-0.165 (0.159)	0.445*** (0.140)	-0.544*** (0.153)	-0.188 (0.126)	0.437*** (0.143)	-0.117 (0.120)	-0.575*** (0.128)	-0.166 (0.160)	0.444*** (0.140)	-0.544*** (0.153)	-0.189 (0.128)	0.436*** (0.144)	-0.119 (0.123)
	MRP	1.544*** (0.235)	1.584*** (0.296)	1.533*** (0.260)	1.638*** (0.285)	1.375*** (0.235)	1.649*** (0.267)	1.431*** (0.223)	1.428*** (0.232)	1.488*** (0.291)	1.462*** (0.255)	1.583*** (0.279)	1.245*** (0.234)	1.549*** (0.263)	1.267*** (0.225)
	WML	0.015 (0.012)	0.032** (0.015)	0.022 (0.013)	0.030** (0.15)	0.016 (0.012)	0.023 (0.14)	0.032*** (0.011)	0.015 (0.012)	0.032** (0.15)	0.023 (0.013)	0.031** (0.015)	0.016 (0.012)	0.023 (0.014)	0.033*** (0.012)
	AILLIQ ($\times 10^6$)	2.981** (1.281)	2.481 (1.621)	1.831 (1.421)	1.411 (1.561)	3.321** (1.291)	2.561* (1.461)	4.221*** (1.221)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.303	0.161	0.179	0.280	0.218	0.309	0.328	0.285	0.155	0.176	0.281	0.192	0.300	0.286

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C (vertical intercept of the line), MRP (market risk premium), WML (the average return on two winner portfolios minus the average return on two loser portfolios), and AILLIQ (average illiquidity) are independent variables (IVs). For Germany and France where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* $\mathbf{10^6}$ *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.3: The Carhart four-factor model (continued)

	DVs / IVs	S/V	S/N	S/G	B/V	B/N	B/G	Largest100	S/V	S/N	S/G	B/V	B/N	B/G	Largest100
		Portfolios (DVs) with Average Illiquidity							**Portfolios (DVs) without Average Illiquidity**						
Italy	**C**	0.040	0.043	0.038	0.041	0.037	0.043	0.029	0.022	0.025	0.022	0.024	0.020	0.025	0.015
		(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)
	SMB	0.873***	0.857***	0.938***	-0.145	0.023	-0.210	0.113	0.929***	0.914***	0.989***	-0.093	0.078	-0.153	0.157
		(0.174)	(0.162)	(0.161)	(0.166)	(0.151)	(0.174)	(0.161)	(0.177)	(0.166)	(0.164)	(0.169)	(0.155)	(0.177)	(0.163)
	HML	0.451***	0.703***	1.235***	0.246**	0.681***	1.463***	0.847***	0.478***	0.730***	1.259***	0.271**	0.707***	1.490***	0.867***
		(0.107)	(0.100)	(0.099)	(0.102)	(0.093)	(0.107)	(0.099)	(0.109)	(0.102)	(0.101)	(0.104)	(0.095)	(0.109)	(0.100)
	MRP	1.429***	1.418***	1.426***	1.478***	1.312***	1.482***	1.324***	1.570***	1.561***	1.555***	1.611***	1.451***	1.625***	1.435***
		(0.219)	(0.205)	(0.203)	(0.209)	(0.190)	(0.219)	(0.202)	(0.219)	(0.206)	(0.204)	(0.209)	(0.192)	(0.220)	(0.201)
	WML	0.006	-0.030***	-0.017	-0.014	-0.038***	0.009	-0.003	0.006	-0.030***	-0.017	-0.013	-0.037***	0.010	-0.002
		(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.011)	(0.010)	(0.011)	(0.011)	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)
	AILLIQ	-0.0005***	-0.0005***	-0.0005***	-0.0005***	-0.0005***	-0.0005***	-0.0004***	-	-	-	-	-	-	-
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)							
	Adj R^2 (Difference)	0.354	0.421	0.563	0.303	0.454	0.633	0.440	0.322	0.386	0.541	0.269	0.418	0.614	0.421
Canada	**C**	0.012	0.003	0.017	0.013	0.011	0.008	0.002	0.012	0.003	0.017	0.013	0.011	0.008	0.003
		(0.004)	(0.004)	(0.003)	(0.003)	(0.005)	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)	(0.005)	(0.004)	(0.003)
	SMB	0.453***	0.495***	0.979***	0.065	-0.677***	-0.461***	0.068	0.447***	0.497***	0.975***	0.059	-0.671***	-0.469***	0.071
		(0.118)	(0.120)	(0.105)	(0.097)	(0.134)	(0.115)	(0.104)	(0.116)	(0.120)	(0.103)	(0.095)	(0.132)	(0.114)	(0.102)
	HML	0.151*	0.163**	1.332***	0.128**	0.571***	0.948***	0.385***	0.149*	0.164**	1.330***	0.125**	0.573***	0.944***	0.386***
		(0.076)	(0.078)	(0.068)	(0.063)	(0.087)	(0.075)	(0.067)	(0.076)	(0.078)	(0.067)	(0.062)	(0.086)	(0.074)	(0.066)
	MRP	0.956***	0.590***	1.129***	0.989***	0.872***	0.815***	0.819***	0.961***	0.589***	1.133***	0.993***	0.868***	0.821***	0.817***
		(0.205)	(0.211)	(0.182)	(0.168)	(0.232)	(0.200)	(0.180)	(0.204)	(0.211)	(0.181)	(0.167)	(0.231)	(0.199)	(0.179)
	WML	0.013***	0.020***	-0.002	0.011***	-0.007	0.027***	0.016***	0.013***	0.020***	-0.002	0.012***	-0.008	0.027***	0.016***
		(0.004)	(0.004)	(0.004)	(0.003)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.005)	(0.004)	(0.004)
	AILLIQ ($\times 10^6$)	-0.253	0.079	-0.158	-0.243	0.233	-0.330	0.0943	-	-	-	-	-	-	-
		(0.788)	(0.817)	(0.701)	(0.647)	(0.893)	(0.771)	(0.692)							
	Adj R^2 (Difference)	0.183	0.160	0.823	0.179	0.253	0.491	0.226	0.187	0.165	0.824	0.183	0.257	0.494	0.230
		(-0.004)	(-0.005)	(-0.001)	(-0.004)	(-0.004)	(-0.003)	(-0.004)							

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C (vertical intercept of the line), MRP (market risk premium), WML (the average return on two winner portfolios minus the average return on two loser portfolios), and AILLIQ (average illiquidity) are independent variables (IVs). For Canada where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* $\mathbf{10^6}$ *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.3: The Carhart four-factor model (continued)

	DVs / IVs	Portfolios (DVs) with Average Illiquidity: S/V	S/N	S/G	B/V	B/N	B/G	Largest100	Portfolios (DVs) without Average Illiquidity: S/V	S/N	S/G	B/V	B/N	B/G	Largest100
Japan	**C**	0.010	0.013	0.024	0.018	0.026	0.004	0.024	-0.005	0.005	0.016	0.009	0.018	-0.011	0.014
		(0.008)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)
	SMB	0.830***	0.999***	1.133***	0.107	0.052	-0.197	0.316	0.837***	1.002***	1.137***	0.111	0.056	-0.190	0.321
		(0.244)	(0.264)	(0.266)	(0.267)	(0.263)	(0.245)	(0.268)	(0.249)	(0.265)	(0.267)	(0.268)	(0.263)	(0.251)	(0.270)
	HML	-0.020***	0.477***	0.957***	0.009	0.372***	1.033***	0.433***	0.006	0.491***	0.972***	0.025	0.384***	1.060***	0.452***
		(0.125)	(0.135)	(0.136)	(0.137)	(0.134)	(0.125)	(0.137)	(0.127)	(0.135)	(0.136)	(0.137)	(0.134)	(0.128)	(0.138)
	MRP	0.548	0.225	0.260	0.218	0.308	0.507	0.554	0.543	0.222	0.257	0.215	0.306	0.501	0.550
		(0.465)	(0.504)	(0.508)	(0.512)	(0.501)	(0.468)	(0.511)	(0.474)	(0.505)	(0.510)	(0.512)	(0.502)	(0.478)	(0.514)
	WML	0.028**	0.035***	0.037***	0.038***	0.034***	0.029**	0.001	0.033***	0.038***	0.040***	0.041***	0.037***	0.034***	0.005
		(0.011)	(0.0126)	(0.012)	(0.012)	(0.125)	(0.011)	(0.012)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)	(0.011)	(0.012)
	AILLIQ	-0.002***	-0.001	-0.001	-0.001	-0.001	-0.002***	-0.002*	-	-	-	-	-	-	-
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)							
	Adj R^2 (Difference)	0.118	0.218	0.412	0.076	0.190	0.533	0.093	0.083	0.214	0.408	0.069	0.187	0.514	0.081
		(0.035)	(0.004)	(0.004)	(0.007)	(0.003)	(0.019)	(0.012)							
Brazil	**C**	-0.013	0.003	0.037	0.043	-0.009	-0.007	-0.008	-0.015	0.012	0.040	0.049	-0.006	-0.006	0.003
		(0.024)	(0.027)	(0.025)	(0.022)	(0.022)	(0.022)	(0.023)	(0.023)	(0.027)	(0.025)	(0.021)	(0.021)	(0.018)	(0.023)
	SMB	0.865***	1.006***	0.938***	-0.013	-0.091	-0.086	0.311***	0.857***	1.037***	0.946***	0.005	-0.081	-0.084	0.346***
		(0.101)	(0.117)	(0.109)	(0.094)	(0.093)	(0.093)	(0.100)	(0.099)	(0.116)	(0.107)	(0.093)	(0.092)	(0.078)	(0.099)
	HML	-0.329***	0.373***	1.291***	0.226***	0.502***	0.607***	0.070	-0.331***	0.382***	1.293***	0.232***	0.505***	0.607***	0.080
		(0.077)	(0.089)	(0.083)	(0.072)	(0.071)	(0.071)	(0.076)	(0.076)	(0.089)	(0.082)	(0.072)	(0.071)	(0.060)	(0.077)
	MRP	0.826***	1.050***	1.118***	1.215***	0.857***	0.922***	0.944***	0.813***	1.101***	1.131***	1.245***	0.874***	0.927***	1.001***
		(0.190)	(0.229)	(0.204)	(0.177)	(0.175)	(0.175)	(0.188)	(0.187)	(0.218)	(0.201)	(0.175)	(0.173)	(0.148)	(0.187)
	WML	0.054***	0.002	0.058***	0.036***	0.047***	0.032***	0.031***	0.054***	0.0003	0.057***	0.035***	0.046***	0.032***	0.029***
		(0.009)	(0.010)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.010)	(0.009)	(0.008)	(0.008)	(0.007)	(0.008)
	AILLIQ ($\times 10^6$)	-0.501	2.011	0.503	1.172	0.669	0.171	2.231*	-	-	-	-	-	-	-
		(1.171)	(1.351)	(1.261)	(1.091)	(1.081)	(0.927)	(1.161)							
	Adj R^2 (Difference)	0.445	0.473	0.719	0.337	0.399	0.493	0.267	0.448	0.470	0.720	0.336	0.401	0.496	0.256
		(-0.003)	(0.003)	(-0.001)	(0.001)	(-0.002)	(-0.003)	(0.011)							

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C (vertical intercept of the line), MRP (market risk premium), WML (the average return on two winner portfolios minus the average return on two loser portfolios), and AILLIQ (average illiquidity) are independent variables (IVs). For Brazil where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* 10^6 *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.3: The Carhart four-factor model (continued)

	DVs / IVs	Portfolios (DVs) with Average Illiquidity S/V	S/N	S/G	B/V	B/N	B/G	Largest100	Portfolios (DVs) without Average Illiquidity S/V	S/N	S/G	B/V	B/N	B/G	Largest100
Russia	**C**	-0.013 (0.023)	-0.022 (0.024)	0.012 (0.019)	0.003 (0.017)	-0.005 (0.017)	-0.021 (0.020)	0.018 (0.022)	-0.009 (0.023)	-0.035 (0.029)	0.014 (0.019)	0.001 (0.017)	-0.008 (0.017)	-0.023 (0.020)	0.018 (0.022)
	SMB	1.063*** (0.115)	0.713*** (0.123)	0.874*** (0.097)	-0.228** (0.088)	-0.081 (0.087)	-0.039 (0.103)	0.242** (0.113)	0.968*** (0.111)	1.046*** (0.139)	0.809*** (0.093)	-0.159* (0.084)	-0.018 (0.084)	0.000 (0.098)	0.230** (0.107)
	HML	-1.303*** (0.078)	0.475*** (0.083)	0.573*** (0.065)	-0.159*** (0.059)	-0.063 (0.059)	-0.035 (0.069)	0.160** (0.076)	-1.367*** (0.075)	0.699*** (0.094)	0.529*** (0.062)	-0.112* (0.057)	-0.020 (0.056)	-0.008 (0.066)	0.152** (0.072)
	MRP	0.629** (0.304)	0.613* (0.324)	0.852*** (0.255)	0.798*** (0.231)	0.722*** (0.230)	0.575* (0.271)	1.094*** (0.297)	0.751** (0.305)	0.188 (0.381)	0.936*** (0.255)	0.709*** (0.232)	0.641*** (0.230)	0.524* (0.268)	1.109*** (0.292)
	WML	0.086*** (0.012)	0.016 (0.013)	0.046*** (0.101)	0.032*** (0.009)	0.045*** (0.009)	0.071*** (0.010)	0.026** (0.011)	0.090*** (0.012)	0.001 (0.015)	0.049*** (0.010)	0.029*** (0.009)	0.042*** (0.009)	0.069*** (0.010)	0.027** (0.011)
	AILLIQ ($\times 10^6$)	-0.144*** (0.054)	0.503*** (0.058)	-0.098** (0.046)	0.105** (0.041)	0.095** (0.041)	0.059 (0.049)	-0.018 (0.053)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.999 (0)	0.461 (0.223)	0.429 (0.012)	0.118 (0.027)	0.150 (0.020)	0.193 (0.003)	0.090 (-0.004)	0.999	0.238	0.417	0.091	0.130	0.190	0.094
India	**C**	-0.552 (0.625)	-0.553 (0.631)	-0.558 (0.632)	-0.550 (0.632)	-0.569 (0.631)	-0.545 (0.632)	-0.557 (0.632)	-0.374 (0.625)	-0.374 (0.623)	-0.378 (0.625)	-0.370 (0.625)	-0.392 (0.623)	-0.365 (0.625)	-0.377 (0.624)
	SMB	13.034* (7.105)	13.175* (7.064)	13.068* (7.078)	12.208* (7.077)	11.895* (7.065)	12.175* (7.077)	12.517* (7.075)	13.263* (7.105)	13.405* (7.092)	13.298* (7.106)	12.440* (7.106)	12.121* (7.092)	12.405* (7.105)	12.748* (7.103)
	HML	3.413 (4.275)	3.900 (4.255)	4.561 (4.263)	3.555 (4.263)	3.912 (4.256)	4.407 (4.263)	3.579 (4.262)	3.836 (4.275)	4.324 (4.264)	4.987 (4.276)	3.984 (4.273)	4.332 (4.264)	4.833 (4.271)	4.005 (4.271)
	MRP	9.436 (9.152)	9.396 (9.143)	9.359 (9.162)	9.418 (9.161)	9.278 (0.446)	9.495 (9.160)	9.470 (9.158)	10.880 (9.152)	10.845 (9.135)	10.812 (9.153)	10.881 (9.153)	10.708 (9.135)	10.948 (9.151)	10.926 (9.150)
	WML	-1.813*** (0.448)	-1.825*** (0.446)	-1.809*** (0.447)	-1.814*** (.446)	-1.815*** (0.446)	-1.817*** (0.446)	-1.832*** (0.446)	-1.771*** (0.448)	-1.783*** (0.447)	-1.768*** (0.448)	-1.772*** (0.448)	-1.774*** (0.447)	-1.776*** (0.448)	-1.790*** (0.447)
	AILLIQ	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	-	-	-	-	-	-	-
	Adj R^2 (Difference)	0.101 (0.008)	0.102 (0.008)	0.099 (0.007)	0.098 (0.007)	0.097 (0.007)	0.098 (0.008)	0.101 (0.008)	0.093	0.094	0.092	0.091	0.090	0.090	0.093

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C (vertical intercept of the line), MRP (market risk premium), WML (the average return on two winner portfolios minus the average return on two loser portfolios), and AILLIQ (average illiquidity) are independent variables (IVs). For Russia where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* 10^6 *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Table 4.3: The Carhart four-factor model (continued)

		Portfolios (DVs) with Average Illiquidity							Portfolios (DVs) without Average Illiquidity						
	DVs IVs	S/V	S/N	S/G	B/V	B/N	B/G	Largest100	S/V	S/N	S/G	B/V	B/N	B/G	Largest100
China	C	0.027	0.015	0.041	0.031	0.035	0.017	0.052	0.027	0.014	0.039	0.029	0.034	0.017	0.051
		(0.031)	(0.039)	(0.033)	(0.033)	(0.040)	(0.030)	(0.034)	(0.031)	(0.040)	(0.034)	(0.033)	(0.040)	(0.030)	(0.034)
	SMB	0.736***	0.988***	0.798***	-0.176	-0.064	-0.238*	0.148	0.740***	1.000***	0.810***	-0.162	-0.055	-0.233*	0.157
		(0.141)	(0.178)	(0.151)	(0.149)	(0.182)	(0.139)	(0.153)	(0.141)	(0.180)	(0.153)	(0.151)	(0.182)	(0.139)	(0.154)
	HML	-0.278***	0.165	0.558***	-0.568***	0.418***	0.595***	-0.085	-0.275***	0.177	0.570***	-0.554***	0.426***	0.600***	-0.076
		(0..098)	(0.124)	(0.105)	(0.103)	(0.126)	(0.096)	(0.106)	(0.098)	(0.125)	(0.106)	(0.105)	(0.127)	(0.096)	(0.107)
	MRP	1.346	1.263	1.912*	1.727*	1.634	1.160	2.549**	1.280	1.018	1.664	1.442	1.461	1.058	2.358**
		(0.979)	(1.238)	(1.046)	(1.032)	(1.260)	(0.963)	(1.062)	(0.973)	(1.244)	(1.056)	(1.041)	(1.258)	(0.959)	(1.065)
	WML	-0.003	0.029*	0.012	0.027*	-9.94E-05	0.012	-0.015	-0.004	0.023	0.007	0.021	-0.004	0.010	-0.019
		(0..013)	(0.016)	(0.014)	(0.014)	(0.017)	(0.013)	(0.014)	(0.013)	(0.016)	(0.014)	(0.014)	(0.017)	(0.013)	(0.014)
	AILLIQ	0.002	0.009**	0.009**	0.010***	0.006	0.004	0.007*	-	-	-	-	-	-	-
		(0.003)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)							
	Adj R^2 (Difference)	0.203	0.153	0.248	0.165	0.057	0.232	0.050	0.206	0.138	0.226	0.131	0.052	0.231	0.037
		(-0.003)	(0.015)	(0.022)	(0.034)	(0.005)	(0.001)	(0.013)							
S. Africa	C	-0.015	0.043	-0.001	0.018	0.004	0.004	-0.002	-0.016	0.039	-0.005	0.013	0.003	0.002	-0.005
		(0.013)	(0.014)	(0.015)	(0.014)	(0.015)	(0.012)	(0.013)	(0.013)	(0.014)	(0.015)	(0.014)	(0.015)	(0.012)	(0.013)
	SMB	0.496***	0.199	0.753***	-0.496***	-0.304	-0.753***	-0.443**	0.497***	0.205	0.761***	-0.486***	-0.301	-0.750***	-0.437**
		(0.168)	(0.187)	(0.197)	(0.184)	(0.201)	(0.163)	(0.171)	(0.167)	(0.187)	(0.197)	(0.185)	(0.201)	(0.163)	(0.171)
	HML	-0.530***	0.003	0.905***	-0.182*	0.177	0.383***	0.388***	-0.528***	0.009	0.912***	-0.173	0.180	0.386***	0.394***
		(0.098)	(0.109)	(0.115)	(0.108)	(0.118)	(0.095)	(0.101)	(0.098)	(0.109)	(0.116)	(0.108)	(0.117)	(0.095)	(0.101)
	MRP	1.173***	1.215***	0.904***	1.068***	0.886***	1.337***	1.086***	1.157***	1.145***	0.817***	0.962***	0.854***	1.302***	1.021***
		(0.153)	(0.171)	(0.180)	(0.168)	(0.184)	(0.149)	(0.156)	(0.142)	(0.158)	(0.167)	(0.156)	(0.171)	(0.149)	(0.145)
	WML	0.009	0.014**	0.014**	0.010	0.023***	0.005	0.016***	0.009	0.013**	0.013*	0.009	0.022***	0.005	0.015**
		(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.005)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.001)	(0.006)
	AILLIQ ($\times 10^6$)	13.01	56.51	69.92	85.22	25.81	28.32	52.42	-	-	-	-	-	-	-
		(46.61)	(51.91)	(54.81)	(51.01)	(55.81)	(45.21)	(47.51)							
	Adj R^2 (Difference)	0.366	0.274	0.392	0.269	0.235	0.458	0.362	0.369	0.273	0.390	0.262	0.239	0.460	0.361
		(-0.003)	(0.001)	(0.002)	(0.007)	(-0.004)	(-0.002)	(0.001)							

Notes: *Asterisks *, ** and *** denote significance level at 10%, 5% and 1% levels, respectively. Book-value-to-price ratio for the 100 largest companies (Largest100) has been calculated, based on the Fama-French three-factor model, and placed in three BV/P categories: low (value stocks), medium (neutral stocks), and high (growth stocks). Using the small and large categories and following Fama and French (1993), 6 portfolios, Small Value (S/V), Small Neutral (S/N), Small Growth (S/G), Big Value (B/V), Big Neutral (B/N), and Big Growth (B/G), have been created as dependent variables (DVs). SMB (the average return on three small portfolios minus the average return on three big portfolios), HML (the average return on two value portfolios minus the average return on two growth portfolios), C is vertical intercept of the line, MRP (market risk premium) WML (the average return on two winner portfolios minus the average return on two loser portfolios) and AILLIQ (average illiquidity) are independent variables (IVs). For South Africa where the coefficients and standard errors for AILLIQ are too low, they are reported after having been multiplied with* $\mathbf{10^6}$ *for scale. Difference is Adj* R^2 *of portfolio with Average Illiquidity minus Adj* R^2 *of portfolio without Average Illiquidity.*

Chapter – Five

Conclusion

5.1 Introduction

Kakwani (1993) and Adams (2004) show that economic growth has a substantial impact on poverty and it can lead to reduction in poverty. In addition, a number of previous studies argue that, for developing countries in particular, economic growth should be seen as the main priority (see, for instance, Brady et al., 2007). Hence, exploring ways to achieve economic growth is an important consideration when designing policies to improve welfare and well-being in developing countries.

The study of stock market determinants could help in achieving this goal, as the performance of the stock market is often regarded as a key indicator of the health of the overall economy (Nayak et al., 2015). Studies by Cho et al. (1986) and Saci et al. (2009) have also highlighted the importance of the stock market for economic growth. In this spirit, this study explores the determinants of stock market returns, by focusing on crude oil price changes (Chapter 2), the implied volatilities of other stock markets (Chapter 3), and illiquidity (Chapter 4).

5.2 Implications

The empirical findings of this thesis have important implications for a wide set of market participants, such as investors, brokers, investment advisers, commercial banks and other financial institutions. For example, the second chapter could provide guidance to global investors who seek to diversify their portfolios across different countries and sectors, by better understanding how developing, fast developing, and developed stock markets tend to react to crude oil price changes. The empirical findings of the second chapter could also prove useful for short-term investors when assessing potential returns on investments during periods of distress, such as oil crises, and for policy-makers and regulators who are primarily concerned with the stability of stock markets.

The findings in the third chapter could be useful for policy-makers in BRICS countries who are interested in monitoring and anticipating uncertainty in stock markets. Other market participants, such as investors and portfolio managers, would be expected to be interested in these empirical findings, particularly with respect to incorporating volatility-based derivatives in the risk management of equity portfolios.

The findings presented in the fourth chapter have important implications for investors who are concerned about liquidity risk. Even though liquidity tends to be associated with developing markets, the analysis in the fourth chapter shows that liquidity risk is an important driver of stock returns across developed and developing markets. Therefore, a better understanding of the relationship between liquidity and stock returns across different markets can help investors allocate their portfolios more efficiently according to market conditions and their expectations about liquidity in different markets.

5.3 Research contributions and findings

This thesis consists of three empirical studies. The first study examines the effect of crude oil price changes on stock market returns across a sample of oil-exporting and oil-importing countries at different stages of economic development. Overall, this relationship is found to vary significantly across different countries. Importantly, the Quantile Regression results show that the relationship between crude oil price changes and stock returns depends on the specific quantile of the latter's distribution, something that the OLS approach cannot capture.

The second study examines the extent to which the implied volatility extracted from developed stock markets and commodity markets can be used to forecast the implied volatility in developing BRICS markets. This study contributes to the existing literature by expanding the analysis of forecasting implied volatility from developed to developing markets, as well as by applying the novel structural VAR model of Ahelegbey et al. (2016) to model the relationship among implied volatility indices. The empirical findings highlight the importance of the US implied volatility index in forecasting implied volatility in BRICS countries, consistent with the findings of Sarwar and Khan (2016). Implied volatility from the crude oil and gold markets was also found to have significant predictive power over BRICS markets. Nevertheless, the results suggest that local and regional implied volatility indices also contain important forecasting information over developing markets, in contrast to what has been commonly reported in the previous literature who has tended to focus on the predictive power of information from developed markets.

Finally, the third study examines the relationship between illiquidity and stock market returns in the G7 and the BRICS countries. The results indicate that adding illiquidity as an additional factor in the CAPM, the Fama-French 3-factor model and the Carhart 4-factor model improves the explanatory power of these models and it can explain a significantly higher part of the cross-section of stock returns. For example, the liquidity factor improves the explanatory power of the CAPM in eight countries (US, Italy, Germany, Canada, Japan, Brazil, Russia, and China) , in the Carhart model in eight countries (US, Italy, Germany, Japan, Brazil, Russia, South Africa, and China), and the Fama-French model in six countries (US, Italy, Germany, Japan, China, and Russia). This study could be of interest to market participants that are expected to be concerned about market liquidity in these countries, such as long and short-term investors, policy makers, brokers, and regulators.

5.4 Directions for future research

The main aim of this thesis is to provide a better understanding of the determinants of stock markets in an international context. To this end, the empirical analysis has focused primarily on the role of crude oil price changes, implied volatility indices, and liquidity as potential drivers of stock returns, with a particular emphasis on developing markets. In addition to reporting a number of new and important findings on the determinants of stock markets, this study can hopefully also serve as a motivation for further research into this area.

For instance, it would be interesting to explore the impact of political, industrial, and credit crises on the relationship among crude oil price changes, illiquidity and stock market returns. Although such an analysis lies outside the scope of the present study, more research in that direction could allow for a deeper understanding of how this kind of infrequent events might affect the determinants of stock returns in an international context.

Another avenue for further research could refer to expanding the analysis to even more countries. While this study has focused on a large and diverse set of international stock markets, further research could explore additional countries (for which data availability regrettably tends to be a constraint) as well as place a greater emphasis on whether these relationships vary across different sectors and different economies. Finally, further research could potentially focus on methodological contributions in terms of estimating the relationship between stock returns and their determinants. For example, it would be interesting to explore whether wavelet analysis or machine learning techniques could provide additional insight into what drives stock returns in global markets. In this sense, the area of stock market determinants might stand to benefit from more interdisciplinary research, with recent advances in computer science, operational research and statistics potentially allowing for an even more accurate estimation of the underlying relationships.

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Appendix A

Table A. 1: No relationship between crude oil price changes and stock market returns

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Chen et al. (1986)	Examine whether changes in macroeconomic variables (such as oil) have impact on stock market	A factor model of the form. The Fama-MacBeth regression and Cross sectional regression tests	Oil price changes have no overall impact on asset pricing.	Bureau of Labor Statistics, U.S. Department of Labor, and DRl series no. 388. Long term bonds from Ibbotson and Sinquefield (1982) Center for Research in Securities Prices (CRSP)	371 observations	Jan. 1953–Nov.1983 and three subperiods with breaks at Dec.1977–Jan.1973
Huang et al. (1996)	Test the relationship of oil futures returns and stock market returns during the 1980s	The vector autoregressive (VAR) technique	Oil futures returns are not related to stock returns, except for oil company returns.	NYMEX, monthly S&P 500 Bulletin, CRSP NYSE/AMEX file, and Interactive Data Corporation (IDC)	2584 observations for all series. Only exception is crude oil futures with 1721 observations	Oct. 1979 (for heating oil), and Apr.1983 (for crude oil), through Mar. 1990.
Filis et al. (2011)	Analyse the time-varying relation between stock market prices and oil prices for oil-importing (US, Germany and Netherlands) and oil-exporting countries(Canada, Mexico, Brazil)	A DCC-GARCH-GJR technique.	Supply-side oil price changess do not influence stock markets.	Datastream Database. S&P/TSX 60 (Canada), MXICP35 (Mexico), Bovespa Index (Brazil), Dow Jones Industrial (USA), DAX 30 (Germany) and AEX General Index (Netherlands)	Monthly data for oil prices and stock market indices	Jan. 1987–Sep. 2009
Al Janabi et al. (2010)	Test whether stock markets retun in the Gulf Cooperation Council (GCC) are efficient with respect to changes in crude oil and gold price	Causality test in the Granger (1969)	Neither gold nor oil prices lead to changes in the stock price index in each market.	Standard & Poor's (S&P) Emerging Market Indexes for Bahrain,Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). Reuters's 3000 Xtra Hosted Terminal Platform	Daily observations April 03, 2006 through March 28, 2008.	Apr. 2006–Mar. 2008

Table A. 1: No relationship between crude oil price changes and stock market returns (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
El-Sharif et al. (2005)	Explore linkage between the price of crude oil and equity values in the oil and gas sector	Multi-factor model	In non-oil sector in the UK relationship between the price of crude oil and equity values is weak.	Datastream	Daily data in the UK	Jan. 1989–Jun. 2001
Kilian and Park (2009)	Consider real stock returns in the U.S. to an oil price change	A structural VAR model	Changes in crude oil supply are less significant compared to other changes such as global demand for entire industrial commodities, and precautionary demand associated to concerns of shortfalls in future oil supply.	The Center for Research in Security Prices (CRSP) value-weighted market portfolio, the U.S., Department of Energy and the U.S. and the Bureau of Labor Statistics	Monthly data in the U.S.	Jan. 1973–Dec. 2006
Georgios and Theodore (2017)	Explore the impact of financial shocks on the cross-market relationship between oil prices (spot and futures) and stock markets for four main crises.	Local Gaussian correlation technique	The 2007 – 2009 financial crisis augmented the degree of dependence between stock and crude oil markets, and revealed that stock and crude oil markets tend to move together after a common financial shock, though with stronger magnitude, when markets are under pressure (in the left tail).	Energy Information Administration (EIA), and Datastream	270 daily observations for the Mexican " Tequila " crisis, 261 daily observations for the Asian " flu " crisis, 1,304 daily observations for dot.com crisis and 1,200 daily observations for global financial crisis.	Mexican " Tequila " crisis 19 Dec 1994 to 31 Dec 1995, the Asian " flu " crisis 2 Jul 97 to 30 Jun 98, dot.com crisis 1 Jan 1998 to 31 Dec 2002 and for global financial crisis 1 Jan 2005 to 7 Aug 2009.
Apergis and Miller (2009)	Explore how explicit structural shocks that define the endogenous character of crude oil price changes influence stock-market returns	Kilian and Park (2009) structural VAR model	International stock market returns do not have much effect on oil market changes.	International Financial Statistics (IFS) database and Bloomberg, Datastream and the U.S. Department of Energy.	324 Monthly data in each country (Australia, Canada, France, Germany, Italy, Japan, the UK, and the U.S.)	1981–2007

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Table A. 1: No relationship between crude oil price changes and stock market returns (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Boubaker and Raza (2017)	Explore the spillover impacts of volatility and shocks between crude oil prices and the BRICS stock markets	Multivariate method and wavelet technique	Crude oil price and stock market prices are directly influenced by their own news and volatilities and indirectly influenced by the volatilities of other prices and wavelet scale.	Energy Information Administration (EIA), and Datastream	Daily Brent oil price, and daily stock market indices in Brazil, Russia, India, China and the South Africa (3785 observations)	4 Jan. 2000–25 Mar. 2015
Guntner (2014)	Explore the differences and commonalities of stock price performances in response to oil shocks in both oil exporting and importing countries	Kilian and Park (2009) structural VAR model	Unexpected cuts in global crude oil supply have no influence on stock market returns in any of six OECD countries.	The U.S. Energy Information Administration (EIA), European Central Bank (ECB) and the St. Louis Federal Reserve Economic Data (FRED)	Monthly date in the U.S (S&P 500), Japan (NIKKEI225), France (CAC40), Germany (CDAX), Canada (S&P/TSX), and Norway (OBX)	1974–2011
Reboredo et al. (2017)	Investigate co-movement and causality between oil and renewable energy stock prices	Continuous and discrete wavelets	Dependence between oil and renewable energy returns was weak in the short run but gradually strengthened i long run, mainly for the period 2008–2012	US Energy Information Agency, the Société Générale, and Bloomberg New Energy Finance	Daily spot prices for WTI and three global and three sectoral renewable energy indices	1 Jan. 2006–16 Mar. 2015
Reboredo and Ugolini (2016)	Analyse the effect of quantile and interquantile crude oil price shocks on different stock return quantiles before and after the global financial crisis	The Kolmogorov–Smirnov (KS) bootstrapping test, introduced by Abadie (2002)	The effect of extreme upward and downward shocks in oil price on upper and lower stock price quantiles is far smaller before crisis compared to after its inception and the downside spillover impacts are higher than the upside spillover impacts for most economies before crisis inception and for all economies after crisis; finally, small positive and negative changes in oil price had no effect on any stock market return quantiles either before or after crisis.	US Energy Information Agency and Datastream database	Weekly data for three developed economies (the US, the UK and the European Monetary Union) and the five BRICS countries (Brazil, Russia, India, China and South Africa)	Jan. 2000–Dec. 2014.
Sukcharoen et al. (2014)	Explore the relationship between crude oil price and stock market index	The copula technique	A weak dependence between crude oil prices and stock market indices for most cases with exceptions in United States and Canada.	The Datastream Global Equity Indices	Daily data for Canada, French, Germany, Hong Kong, Italy, Japan, Netherlands, Switzerland, United Kingdom, United States, China,Czech Republic Republic, Finland, Hungary, Poland, Russia, Spain, and Venezuela	Jan. 1982–Dec. 2007

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Table A. 1: No relationship between crude oil price changes and stock market returns (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Badeeb and Lean (2018)	Explore non-linearity linkage between crude oil price and Islamic stock market index	Non-linear Autoregressive Distributed Lag cointegration approach	There is weak relationship between oil price shocks and the Islamic composite index. In the short term, these indices are affected positively and in a linear way by oil price shocks. In the long run, the responses of the Islamic real sectors indices related to negative shocks in the oil price are higher than those associated with positive shocks in oil price.	DataStream	Monthly data and a total of 246 observations for 10 sectoral global Islamic indices and the composite index (Dow Jones Islamic Market World Index that has 2578 companies from 58 countries representing 10 main economic sectors)	Jan. 1996– June. 2016
Wei (2003)	Investigate the role of the 1973-1974 rise in energy cost that play a role in determining the market value of companies through capital obsolescence	Putty-clay approach	An 80% increase in the real energy price leads to a 2% decline in the stock market value	Annual Energy Review, Energy Information Administration, 1999, and Energy Information Administration (EIA)	The U.S. stock market	1973-1974
Zhang (2017)	Study the relationship between crude oil shocks and stock markets	Measuring connectedness proposed by Diebold and Yilmaz (2009), Diebold and Yilmaz (2012), Diebold and Yılmaz (2014)	Crude oil shocks may be important to a single market but have no strong or significant impact on major international financial markets. In contrast, the global crude oil market draws important information from global financial markets	The Energy Information Administration, and RESSET Financial Research Database	Monthly data in six major stock markets (the Dow Jones Industrial Average (DJI), FTSE 100, DAX, Nikkei 225,Singapore Straits Times Index (STI), and the Shanghai Stock Exchange(SSE) Composite Index.)	Jan. 2000 – Mar. 2016

Table A. 2: The relationship between oil price changes and stock market returns is negative

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Ghosh and Kanjilal (2016)	Investigate nonlinear cointegration between global oil price and stock market	Nonlinear threshold cointegration analysis, and Toda–Yamamoto version of Granger causality technique to test non-causality	No long-term equilibrium linkage among the variables for the entire data span. Crude oil shocks have a negative indirect influence on stock market performance in India from rise in crude oil price.	Energy Information Administration (EIA), Reserve Bank of India (RBI) website and Bombay Stock Exchange (BSE)	Daily data for Indian stock market (SENSEX) and Brent crude oil price	Jan. 2003–July. 2011
Sadorsky (1999)	Consider the effect of both oil price and oil price changes on real stock returns	vector autoregression	The impact of oil price volatility on the economy is asymmetric and positive shocks in crude oil prices lead to decline in real stock market returns.	The DRI/McGraw-Hill data base.	Monthly data for the S & P 500	Jan. 1947–Apr. 1996
Driesprong et al. (2008)	Study the role of crude oil price to predict stock market returns	Regression model	Changes in oil prices predict stock market returns worldwide. We find significant predictability in both developed and emerging markets.	Bloomberg, Global Financial Data, and Datastream	Monthly data for 48 countries and a world market index	Oct. 1973–Apr. 2003
Westerlund and Sharma (2018)	Analyse the impact of oil returns on stock market returns	The common correlated effects (CCE) approach, and panel data methods	In the panel as a whole, lagged crude oil price returns has a significant negative impact on current stock market returns.	the Commodity Research Bureau data CD, Kenneth French's data library,and IFS	Monthly data for the G7 countries	Aug. 2002–Apr. 2015
Papapetrou (2001)	Explore dynamic relationship among crude oil prices, real stock prices, interest rates, real economic activity and employment	Multivariate vector-autoregression VAR technique	Crude oil price shocks influence real economic activity and employment and oil prices are important to explain movement in stock price and the linkage is negative.	Bulletin of Conjectural Indicators of the Bank of Greece	Monthly data in Greece	Jan. 1989–June. 1999
Nandha and Faff (2008)	Explore whether and to what extent crude oil price changes influence stock market returns	Standard market model augmented by the oil price factor.	Increases in crude oil price have a negative influence on equity market returns for all sectors with exception of mining, oil and gas industries.	DataStream global industry indices	35 industry sectors	Apr. 1983–Sep. 2005

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Table A. 2: The relationship between oil price changes and stock market returns is negative (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Aloui and Jammazi (2009)	Study the relationship between crude oil shocks and stock markets.	Two regime Markov-switching EGARCH approach developed by Henry [Henry, O., 2009	Increases in crude oil price has a significant effect in determining both the volatility of stock market returns and the probability of transition across regimes.	228 observations for Japan (Nikkei225), UK (FTSE 100) and France (CAC40) are taken from the International Financial Statistics databases (IFS) ,and the US Department of Energy	Monthly data for Stock markets of UK, France and Japan	Jan. 1989 – Dec. 2007
Chen (2010)	Explore whether rise in crude oil price leads to bear territory in the stock market in the US	Time-varying transition-probability Markov-switching techniques	Rise in crude oil prices have higher chances of a bear market appearance.	The International Financial Statistics published by International Monetary Fund	Monthly data for S&P 500 stock price index and the world average crude oil price index	Jan.1957– May 2009
Barsky and Kilian (2004)	Study the linkage between shocks in crude oil price and market performance in the US	Generalized autoregressive conditional heteroskedasticity model.	Increases in crude oil price innovation in 1973-1974, 1979-1980 and 1990-1991 may have been related to subsequent decreases in market performance, i.e. car sales, but with long lags.	The National Bureau of Economic Research, Department of Energy, and Federal Reserve Economic Database (FRED)	Monthly data in the U.S.	Mar. 1971– Dec. 2003
Jones and Kaul (1996)	Explore the reaction of international stock markets to oil shocks and whether it can be explained by current and future changes in real cash flows and/or changes in expected returns	A standard cash-flow/dividend valuation approach following Campbell (1991)	The reaction of Canadian and US stock prices to changes in crude oil price, mostly detrimental effect, is due to the effect of these changes on real cash flows. The findings for Japan and the UK are, however, not as solid.	Citihase database , main economic indicator and Financial Statistics (an OECD publication)	Quarterly data in the United States, Canada, Japan, and the United Kingdom	US 1947-1991, Canada 1960-1991 Japan, 1970-1991 UK,1962-1991
Bouri et al. (2016)	Study the causality between global crude oil prices and sectoral equity in Jordan	Cross-correlation functions approaches, a bivariate VARMA (1, 1)-BEKK-AGARCH (1, 1) model	Depressing impact of crude oil price changes on the performance of the three sectors, including the Industrial, and even larger effect in the period that followed the Uprising	DataStream, the US Energy Information Administration, and the Amman stock exchange	Daily data for two samples, before and after the political turmoil in the Arab world on December 18, 2010	18 Dec. 2004–15 May. 2007 & 18 Dec. 2010–18 June. 2013
Ewing et al. (2018)	Explore the effect of structural oil supply changes on the US real stock market return in oil and gas exploration and production firms	A time-varying parameter VAR approach	The effect of the real return of upstream stock market returns to global non-US oil supply changes has surged since 2006. The effect of the real return of upstream stocks to negative US oil supply changes had a positive and constant value of about 3.60% over time.	Data for oil and gas exploration and production compnaies in NYSE, AMEX and Nasdaq stock markets are taken from the Center for Research in Security Prices (CRSP), the US Bureau of Labor Statistics, and the US Department of Energy	Quarterly data in the U.S.	1968Q1–2014Q4

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Table A. 2: The relationship between oil price changes and stock market returns is negative (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Kilian and Park (2009)	Consider real stock returns in the US to an oil price change.	A structural VAR model	Precautionary demand shocks can cause a large, immediate and sharp decline or rise in stock market performance, particularly due to instable political conditions in the Middle East.	The Center for Research in Security Prices (CRSP) value-weighted market portfolio, the U.S., Department of Energy and the U.S. and the Bureau of Labor Statistics	Monthly data in the US.	Jan. 1973–Dec. 2006
Sim and Zhou (2015)	Explore the linkage between crude oil prices and US equities	Dubbed quantile-on-quantile (QQ) technique	Large negative oil price changes can influence US equities positively when the US market is doing well	U.S. Department of Energy, and the real return on the US stock market constructed from the log returns on the Center for Research in Security Prices (CRSP) value-weighted market portfolio adjusted for CPI inflation following Kilian and Park (2009)	Monthly data in the US.	Jan. 1973–Dec. 2007
Miller and Ratti (2009)	Examine the long-run relationship between the global crude oil price and international stock markets	Cointegrated vector error correction approach with additional macroeconomic variables as regressors	The crude oil price has negative impact on stock market indices in the long run	International Monetary Fund, S&P 500 (US), and Main Economic Indicators, OECD (other countries), FRED, FRB of St. Louis (PPIACO), German Federal Bank, and National Institute for Statistics and Economic Studies (INSEE).	Monthly data in six OECD countries namely Canada, France, Germany, Italy, UK and US.	Jan. 1971–Mar. 2008
Joo and Park (2017)	Explore marginal impact of uncertainty about the stock and oil prices on the returns	VAR-DCC-BGARCH-in-Mean model specification	Crude oil price uncertainty has significant negative impact on stock market returns and such impacts are time-varying. Moreover, the time-varying impacts of oil price uncertainty are quite strongly linked with the degree of correlation between stock market and oil returns.	Datastream	5109 daily observations data in U.S., Japan, Korea, and Hong Kong	2 Jan. 1996–31 Jul. 2015

Table A. 3: The relationship between oil price changes and stock market returns is positive

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Narayan and Narayan (2010)	Examine the effect of oil prices on Vietnam's stock prices	The Johansen cointegration model and the Gregory and Hansen technique	Crude oil prices have a significant positive influence on stock market prices	The Bloomberg database	Daily data in Vietnam	28 Jul. 2000–16 June. 2008
Kilian and Park (2009)	Consider real stock returns in the U.S. to an oil price change.	A structural VAR model	If unpredicted growth in the world economy is the reason for oil price increases, it will lead to a constant positive impact on the performance of stock market within the first year	The Center for Research in Security Prices (CRSP) value-weighted market portfolio, the U.S., Department of Energy and the U.S. and the Bureau of Labor Statistics	Monthly data in the US.	Jan. 1973–Dec. 2006
Kang et al. (2017)	Examine the impacts of crude oil price changes and economic policy uncertainty on the stock market returns of oil and gas firms.	A structural VAR model	Oil demand-side shock has a positive effect on the return of oil and gas companies on average, whereas shocks to policy uncertainty have a negative effect on the return.	Fama-French Data Library, and Finance Yahoo.com	Monthly observations of seven oil and gas firms plus an aggregate composite index of oil and gas industry	Jan. 1985–Dec. 2015
Sadorsky (2001)	Study the expected returns to Canadian oil and gas industry stock prices	multifactor market model	Exchange rates, crude oil prices and interest rates each play a significant and large role to influence stock price returns in the Canadian oil and gas industry (i.e. a rise in the market or oil price factor leads to increases in the return to Canadian oil and gas stock prices)	The Statistics Canada economic database, the Toronto Stock Exchange (TSE), and Prophet Information Services, Inc. 1999 data bank.	Monthly data for oil and gas industry stock prices in Canada	Apr. 1983–Apr. 1999
El-Sharif et al. (2005)	Explore the linkage between the price of crude oil and equity values in the oil and gas sector in the UK	Multi-factor model	Return in oil and gas sectors impacted positively by changes in crude oil.	Datastream	Daily data in the UK	Jan. 1989–Jun. 2001

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Table A. 3: The relationship between oil price changes and stock market returns is positive (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Zhu et al. (2016)	Investigate the linkage between real oil price shocks and Chinese real industry stock returns	The quantile regression model	The response of stock market returns to crude oil is highly heterogeneous across conditional distribution of industry stock market returns and this response is positive and only exists in recessions or bearish markets with low expected returns	The Resset Financial Database, the OECD database, the Energy Information Administration (EIA)	Monthly data for fourteen industries namely: Agriculture; Mining; Manufacturing; Production and Supply of Power, Heat, Gas and Water (PS); Construction; Wholesale and retail trade (WR); Transportation; Accommodation and Catering (AC); IT; Financial; Realty; Water, environment and public facilities management (WEP); Culture, Sports and Entertainment (CSE); and Complex	Mar. 1994 – June. 2014
Zhang and Chen (2011)	Analyse the effect of global oil price changes on China's stock market	The autoregressive conditional jump intensity (ARJI) and its extended version (ARJI-ht), and the exponential generalized conditional heteroscedasticity (EGARCH)	Global crude oil prices have a insignificant positive influence on China's stock returns	Shanghai Stock Exchange (SSE) Composite Index, Europe Brent Spot Price obtained from the Wind Database and U.S. Energy Information Administration respectively	2965 daily observations in China	1 Jun., 1998– 30 Nov. 2010
Li et al. (2012)	Examine the relationship between crude oil prices and the Chinese stock market at the sector level.	Westerlund (2006) panel cointegration approaches and Granger causality framework	In the long run the influence of increased real oil price on sectoral stocks is positive.	The OECD database, the International Financial Statistics (IFS) database, the International Money Fund (IMF), the Energy Information Administration (EIA), and the Shenzhen stock exchange	Monthly data for real oil price and the real stock price indices for the 13 major sectors in China, namely, Agriculture, Mining, Manufacturing, Utilities, Construction, Transportation, IT, Wholesale & Retail (W&R), Financials, Real Estate, Social services, Media and Conglomerates	July. 2001 – Dec. 2010

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Table A. 3: The relationship between oil price changes and stock market returns is positive (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Chen and Lv (2015)	Explore the asymptotic dependence between the Chinese stock market and the global crude oil market	Extreme Value technique	A positive extremal dependence in the relationship between crude oil return and various stock returns	Energy Information Agency database (EIA) database, National Development and Reform Commission documents, the Wind Information Database, and the Shenwan Research database	The Europe Brent Spot Price (Dollars per Barrel), the Shanghai A share index (SSE-A) and the Shenzhen A share index (SZ-A)	1 Jan. 2000–14 Apr. 2014
Arouri and Rault (2012)	Analyse long-term relationship between oil prices and stock markets in Gulf Cooperation Council (GCC)	Bootstrap panel cointegration approaches and seemingly unrelated regression (SUR) techniques	Rises in oil price have a positive effect on stock prices, except in Saudi Arabia	The Arab Monetary Fund (AMF) database, and OPEC spot prices from the Energy Information Administration	Monthly data in stock markets in four GCC countries (Bahrain, Kuwait, Oman and Saudi Arabia)	Jan. 1996–Dec. 2007
Guntner (2014)	Examine the differences and commonalities of stock price performances in response to oil shocks in both oil exporting and importing countries	Kilian and Park (2009) structural VAR model	Rise in aggregate demand consistently leads to a rise in price of real oil and the performance of real stock market returns in all countries, especially in oil exporters.	The U.S. Energy Information Administration (EIA), European Central Bank (ECB) and the St. Louis Federal Reserve Economic Data (FRED)	Monthly date in the U.S, Japan, France, Germany, Canada, and Norway	1974–2011
Arouri et al. (2012)	Investigate the volatility spillovers between oil and stock markets in Europe	Developed VAR–GARCH technique of Ling and McAleer (2003)	Significant volatility spillovers relationship between crude oil price and sector stock returns and significant positive impact of one-period lagged oil market shocks on the conditional volatility of the stock sector	The European global market index and seven stock sector indices, and Energy Infor- mation Administration (EIA)	Weekly data for the Dow Jones (DJ) Stoxx Europe 600 index and seven DJ Stoxx sector indices: Automobile & Parts, Financials, Industrials, Basic Materials, Technology, Telecommunications, and Utilities.	1 Jan. 1998–31 Dec. 2009
Silvapulle et al. (2017)	Study the long-run linkage between the monthly crude oil price index and stock market price indices of ten large net crude oil importing countries.	Nonparametric panel data approach	The impact of crude oil prices on stock market price indices was positive and significant. Althogh the impact was largely positive, it showed several downward trends round about 2003, 2005 and from about 2010, becoming slightly negative in 2005.	Datastream, S&P 500 Composite, Nikkei 225, Shanghai SE Composite, Korea SE KOSPI 200, S&P BSE (SENSEX) 30, DAX 30, CAC 40, Straits Times , FTSE MIB, and IBEX 35, the OECD, the Department of Statistics in Singapore and Energy Information Administration	190 monthly observations in the United States, Japan, China, South Korea, India, Germany, France, Singapore, Italy and Spain	Sep. 1999–June. 2015

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Table A. 3: The relationship between oil price changes and stock market returns is positive (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Kayalar et al. (2017)	Analyse the dependence structure between crude oil prices and stock market indices	Copula techniques	For several countries, stock market indices had significant (positive) dependence with WTI prices. For these countries, higher dependence values were generally shown by energy exporters but in developing oil importer countries there was less dependence. Moreover, it shows that the dependence of stock market indices increases significantly after the crisis.	Bloomberg data stream	Daily observations in 10 selected countries stock market index.	10 Jan. 2005–6 Apr. 2016

Table A. 4: The existence of a positive or negative relationship is condition-dependent

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Cai et al. (2017)	Investigate the interdependence and causality linkage between oil and East Asian stock market returns	Wavelet coherence approach	Independence between crude oil and stock market returns for East Asian countries is almost homogenous and crude oil and stock market returns move in phase at all frequencies and oil prices lead to stock returns in the long-run cycle. In the medium and short-term scales, the phase difference withnegative and positive values changes across scales.	Energy Information Administration (EIA), and Datastream	Daily data in 10 East Asian countries (China, Chinese Taipei, Hong Kong, Indonesia, Japan, Malaysia, the Philippines, Singapore South Korea, and Thailand)	3 Jan. 1992–22 Oct. 2015
Cong et al. (2008)	Analyse the relationship between crude oil price changes and Chinese stock market indices	Multivariate vector auto-regression	Crude oil price changes have no significant effect on the real stock market returns in most Chinese stock market indices, except for manufacturing index and some oil firms. Some ''important'' crude oil price changes lead to decline in oil firm stock prices. Rise in crude oil volatility may cause increases in the speculations in mining index and petrochemicals index, which increase theirstock market returns	EIA, People's Bank of China, the National Bureau of Statistic of China and Shanghai stock exchange and Shenzhen stock exchange.	Monthly data for two composite indices, 10 classification indices, and four oil companies' stock prices and UK Brent crude oil price as a representative of world real oil price	Jan. 1996–Dec. 2007
You et al. (2017)	Explore the effect of crude oil shocks and uncertainty over China's economic policy on stock market returns at different locations on the return distributions	The quantile regression approach	The effects of oil price shocks and economic policy uncertainty are asymmetric and highly related to stock market conditions (The relationship acts differently in varying market environments)	Resset Financial Database (www.resset.cn), Monetary and Financial Statistics of the OECD database for China, and Energy Information Administration	Monthly data for Fourteen industries in China	Jan. 1995 – Mar. 2016
Lambertides et al. (2017)	Examine the impacts of oil demand shocks and crude oil supply shocks on stock order flow imbalances leading to changes in stock returns	A structural VAR approach	Positive oil demand shocks lead to a negative rather than positive stock returns reaction. In contrast, crude oil supply shocks have a negative and marginally significant impact on stock order flow imbalances.	The Trade and Quote (TAQ) database, the US Department of Energy, the Bureau of Labor Statistics and the Center for Research in Security Prices (CRSP)	In the U.S. equity market	Jan. 1993–Dec. 2011

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Table A. 4: The existence of a positive or negative relationship is condition-dependent (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Narayan and Sharma (2011)	Investigate the linkage between crude oil price and company returns for 560 US companies listed on the NYSE	Regression model is based on GARCH (1, 1) approach, threshold approach	Crude oil price influences returns of companies differently depending on their sectoral location, company's size and regimes.	Energy Information Adminis-Tration and NYSE	Daily data for 560 US compnaies in 14 sectors listed on the New York Stock Exchange	5 Jan. 2000–31 Dec. 2008
Abul Basher et al. (2018)	Consider the effect of oil-market changes on stock market performance in main oil-exporting countries	Multi-factor Markov-switching technique.	Flow oil-demand changes have a statistically important effect on stock market returns in Canada, Norway, Russia, Kuwait, Saudi Arabia, and the UAE. Special oil-market changes influence stock market returns in Norway, Russia, Kuwait, Saudi Arabia and UAE. Speculative changes have statistically important effect on stock returns in Canada, Russia, Kuwait and the UAE. Oil-supply changes work more in the UK, Kuwait, and UAE, as changes reveal statistical significance in at least one state. Stock market returns in Mexico are unchanged by oil-market changes.	US Energy Information Administration's (EIA), Lutz Kilian's website, and MSCI	Monthly data in Canada, Mexico, Norway, Russia, the UK, Kuwait, Saudi Arabia, and the United Arab Emirates	Jan.1974–Aug. 2015
Phan et al. (2015b)	Employ out-of-sample forecasting of returns to explore explanatory power of crude oil price to predict stock market returns .	Feasible Generalised Least Squares (FGLS, Westerlund and Narayan (2014)) forecasting approach	Explanatory power of oil price to forecast stock market returns depends not only on the data frequency but also on the estimator. Oil price relatively has more impact in some sectors than others and return predictability has relationship with certain industry characteristics, such as book-to-market ratio, dividend yield, size, price–earnings ratio, and trading volume.	The Bloomberg database and the Energy Information Administration.	Daily, weekly, and monthly data	4 Jan. 1988–to 31 Dec. 2012
Antonakakis et al. (2017)	Investigate the dynamic structural relationship between changes in crude oil price and stock market returns or volatility	Extending the Diebold and Yılmaz (2014) dynamic connectedness measure using structural forecast error variance decomposition	Aggregate demand changes create stronger co-movement of the two markets, while changes in both supply-side and oil-specific demand shocks cause negative correlation.	Datastream, Energy Information Administration and Lutz Kilian's personal website (http://www-personal.umich.edu/~lkilian/)	Monthly data in Canada S&P/TSX), China (SSE), ESP (IBEX35), France (CAC40), Germany (DAX30), Italy (FTSEITA), Japan (NIKKEI225), Norway (OSE), Russia (RTS) the UK (FTSE 100) and the US (S&P 500)	Sep. 1995–July. 2013

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Table A. 4: The existence of a positive or negative relationship is condition-dependent (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Phan et al. (2015a)	Explore different stock returns response of oil producers and oil consumers to oil price changes	Following Narayan and Sharma (2011) and Arouri (2011) to measure Generalised Autoregressive Conditional Heteroskedasticity (GARCH (1, 1)) regression model	Oil price changes influence stock returns of oil producers positively, no matter whether the result of increase or decrease in oil price. But innovation in oil price in oil consumers does not influence all consumer sub-sectors and where it does, this influence is not homogeneous. And crude oil price returns have an asymmetric impact on stock marlet returns for most sub-sectors.	Compustat database, and US Energy Information Administration website	No less than 6306 observations. Daily time-series data for the top-20 firms listed under construction, air transport, truck transport, chemical manufacturing and petroleum sub-sectors, and for the top-60 firms listed under the CONGEP sub-sector to form sub-sector-specific indices employing a market capitalization-weighted approach and two producer sub-sectors, namely, exploring activity (CONGEP sub-sector) and the refining activity (petroleum sub-sector).	2 Jan 1986–31 Dec. 2010
Park and Ratti (2008)	Analyse the impact of shocks and volatility in crude oil price on real stock returns	Multivariate VAR analysis	Real oil price shocks have significant impact on stock market in all countries. When spillover impacts are allowed for, all three oil price change measures show statistically significant negative influence on stock prices in the U.K. But positive reaction of real stock market returns to rise in crude oil price in Norway. For many European economies, but not for the US, rise in volatility of oil prices significantly leads to decline in real stock returns.	OECD, FRED, IFS, IMF, Bank of Netherlands, INSEE (National Institute for Statistics and Economic Studies), and COMPUSTAT	Monthly data in the U.S. and 13 European countries	Jan. 1986–Dec. 2005

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Table A. 4: The existence of a positive or negative relationship is condition-dependent (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Doko Tchatoka et al. (2018)	Examine the relationship between oil price changes and stock market returns	The quantile-on-quantile (QQ) regression approach following Sim and Zhou (2015)	In China, Japan and India, huge negative oil price changes can reinforce stock market returns when markets are performing well, based on data between 1988:1 and 2007:12. However, based on recent data (period 1988:1–2016:12), findings reveal that the China and India markets get higher returns when markets perform well and there is a huge positive crude oil price innovation. Also, huge positive oil price changes often lead to higher stock market returns when markets perform well for both oil exporting countries, including Canada, Russia, Norway, and moderately oil dependent countries, such as Malaysia, Philippines and Thailand.	Datastream, and US Department of Energy	Monthly data in 15 countries including China, Japan, India, South Korea, Germany, Taiwan, Russia, Canada, Noway, Mexico, Venezuela	Jan.1988–Dec. 2016
Mensi et al. (2017)	Explore the dependence structure between crude oil prices and major regional developed stock markets during bear, normal and bull markets under different investment horizons. Moreover, they examine the upside and downside short- and long-run risk spillovers between oil and stock markets	The variational mode decomposition (VMD) method and static and time-varying symmetric and asymmetric copula functions	A tail dependence between crude oil and all stock markets for the raw return series but this dependence could be positive or negative. Moreover, they also indicate strong evidence of up and down risk asymmetric spillovers from oil to stock markets and vice versa in the short- and long run horizons.	Datastream, Bloomberg and Energy Information Administration	Daily data in the US, and four regional developed stock markets (i.e., S&P 500, stoxx600, Dow Jones Pacific Stock Index and TSX-Toronto Stock Exchange 300 Composite Index).	4 June 1998–6 May 2016
Kilian (2009)	Examine the reaction of the US economy to oil price fluctuations.	Structural VAR model	Unexpected changes in crude oil supply will contribute little to depression in real economic activity but precautionary demand for specific crude oil can lead to a temporary increase in real economic performance	Drewry's Shipping Monthly, and US Department of Energy	Monthly data in the US	Jan. 1973–Dec. 2007

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Table A. 4: The existence of a positive or negative relationship is condition-dependent (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Peng et al. (2018)	Analyse the extreme risk spillover of global oil to stock market returns	A kernel-based nonparametric technique devel oped by Candelon and Tokpavi (2016)	Asymmetry in the relationship of extreme movements from crude oil to company returns (positive risk spillovers are more severe than negative risk spillovers, with down-to-down risk spillover being especially crucial). Also, risk transmission from crude oil price changes to company returns depends on the firm's industry features	US Energy Information Agency database, and CSMAR Solution (www.gtarsc.com)	529 companies listed on the A-share market of the Shanghai stock exchange.	Jan. 4, 2005–Feb. 28, 2017
Arouri (2011)	Analyse the reactions of European sector stock returns to shocks in crude oil price	Multifactor asset pricing model, linear and asymmetric models	Existence of strong significant relationship between crude oil price for most European sectors and in some sectors strong evidence of asymmetry in the response of stock market returns to shocks in the crude oil price.	DataStream database	Weekly data in the DJ Stoxx 600 and twelve European sector indices: Automobile & Parts, Financials, Food & Beverages, Oil & Gas, Health Care, Industrials, Basic Materials, Personal & Household Goods, Consumer Services, Technology, Telecommunications, and Utilities	Jan.1998–June. 2010
Hamilton (2003)	Investigate the nonlinear relationship between oil price changes and GDP growth	Flexible, unrestricted, approach	Rise in crude oil price has more impact than decline in oil price on GDP growth, and those rises have significantly less explanatory power if they simply correct earlier declines.	the Bureau of Economic Analysis web page, Data from 1947:II to 1974:I are from Hamilton (1983), Data from 1974:II to 1999:IV are from Citibase and the last 2 years from Bureau of Labor Statistics	210 quarterly observations	1945Q2–2001Q3
Mork (1989)	Examine the impact of rise and decline in oil price on macroeconomy	The vector autoregressive (VAR) technique following Sims (1980) model	Asymetric relationship between changes in crude oil price and macroeconomy	NA	Monthly data in the US	Jan. 1949–Feb. 1988

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Table A. 4: The existence of a positive or negative relationship is condition-dependent (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Cologni and Manera (2009)	Explore how oil price changes influence the growth rate of output in developed economies by comparing alternative regime switching models	Extended Markov–Switching (MS) regime autoregressive models	Oil changes influences tend to be asymmetric and depend on whether or not the rises in the price are simple corrections of past declines. Over time explanatory power of oil shocks has diminished due to improvements in energy efficiency together with a better systematic approach to external supply and demand changes by monetary authorities.	International Financial Statistics databases (IFS), ISTAT, and National Institute for Statistics and Economic Studies (INSEE)	Quarterly data in G-7 countries	1970q1–2005q1
Guntner (2014)	Explore the differences and commonalities of stock price performances in response to oil shocks in both oil exporting and importing countries	Kilian and Park (2009) structural VAR model	Shocks in precautionary demand have a downturn impact on the performance of oil importing nations, and a statistically insignificant influence in Canada, and a significantly positive impact in Norway	The U.S. Energy Information Administration (EIA), European Central Bank (ECB) and the St. Louis Federal Reserve Economic Data (FRED)	Monthly date in the U.S (S&P 500), Japan (NIKKEI225), France (CAC40), Germany (CDAX), Canada (S&P/TSX), and Norway (OBX)	1974–2011
Filis et al. (2011)	Analyse the time-varying relation between stock market prices and oil prices for oil-importing (US, Germany and Netherlands) and oil-exporting countries (Canada, Mexico, Brazil)	A DCC-GARCH-GJR technique.	Aggregate demand-side oil price changes have positive impact and precautionary demand oil price changes have negative impact on stock markets.	Datastream Database	S&P/TSX 60 (Canada), MXICP 35 (Mexico), Bovespa Index (Brazil), Dow Jones Industrial (USA), DAX 30 (Germany) and AEX General Index (Netherlands)	1987 to 2009
Ftiti et al. (2015)	Analyse the relationship between crude oil and stock markets	Wavelet and evolutionary spectral technique	Interdependency in this relationship is more pronounced in the short and medium runs than in the long run.	S&P 500 (US), NIKKEI 225 (Japan), DAX 30 (Germany), CAC 40 (France), FTSE 100 (UK), FTSE MIB (Italy), and S&P/TSX Composite (Canada) and DataStream International	Monthly data in the G7 countries	Feb. 1998–Feb 2013

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Table A. 4: The existence of a positive or negative relationship is condition-dependent (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Zhang et al. (2018)	Explore the effects of crude oil price changes, especially dynamic jumps in its returns on China's bulk commodity markets, at both the aggregate and industry levels	The Autoregressive Jump Intensity (ARJI) approch by setting a zero lower bound to its intensity series before using it to get the jump behavior of international crude oil price movements.	There are dynamic jumps in oil price movements. Also, under changes of oil price jumps, not only the returns but also the risks of China's bulk commodity markets are influenced significantly, and there is overreaction in responses to risks. Moreover, by decomposing crude oil price changes into expected positive (negative), and unexpected positive (negative) components, finding shows that the effects of unexpected changes are positive and significantly asymmetric at both levels, while those of the expected changes are negative and insignificantly asymmetric at the industry level.	China's Webstock (http://www.wenhua.com.cn), and the U.S. Energy Information Administration (EIA)	2882 data points for China, including the market indices of bulk Commodity (CCMI), energy products (CEMI), metals (CMMI), and agricultures (CAMI)	3 Jan. 2005– 30 Dec. 2016
Wang et al. (2013)	Investigate the difference in the linkage between the impact of oil price changes and stock markets performance in oil-exporting and oil-importing countries	Kilian and Park (2009) structural VAR model	Oil price shocks have more impact in oil-exporting countries than importing ones and depending whether that shock is driven by supply or demand. As oil supply and aggregate demand uncertainty can lead to decline in stock markets in oil-exporting and importing countries but effect of demand uncertainty is stronger and more persistent in oil-exporting countries than in oil-importing countries.	Datastream. S&P 500 (US), NIKKEI 225 (Japan), DAX (Germany), CAC 40 (France), FTSE 100 (UK), FTSE MIB (Italy), Shanghai Composite (China), KOSPI Composite (Korea), BSE Sensex (India), Tadawul All Share (Saudi Arabia), Kuwait Stock Exchange Index (Kuwait), Bolsa IPC (Mexico), OSEAX (Norway), MICEX (Russia), IBVC (Venezuela) and S&P/TSX Composite (Canada)	Nine oil-importing countries (US, Japan, Germany, France, UK, Italy, China, Korea and India) and seven oil-exporting countries (Saudi Arabia, Kuwait, Mexico, Norway, Russia, Venezuela and Canada)	Jan.1999 to Dec. 2011

Appendix B

Table B. 1: Benchmark Lag 3 – Europe

	Panel A: Low-Medium Quantiles										
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Spain	0.014	***0.212***	***0.180***	0.084	0.058	0.075	0.033	0.008	0.010	-0.001	-0.014
Netherlands	0.005	***0.191***	***0.081***	**0.059**	0.043	0.025	0.025	-0.005	-0.016	-0.032	-0.036
Sweden	-0.014	0.070	0.072	0.061	0.024	-0.021	-0.038	-0.050	-0.047	-0.033	-0.046
Poland	***0.098***	***0.348***	0.170	0.050	0.050	0.055	0.052	0.041	0.075	0.102	0.090
Belgium	-0.014	0.107	0.031	0.024	-0.038	-0.026	-0.015	-0.009	0.007	0.007	-0.003
Austria	0.037	***0.220***	***0.160***	0.108	0.066	0.026	0.016	0.011	-0.019	0.016	-0.003
Denmark	0.007	***0.096***	***0.102***	***0.068***	0.040	0.001	-0.015	-0.037	-0.052	-0.036	-0.045
Ireland	0.032	0.080	0.066	0.041	0.031	0.024	0.029	0.020	0.004	0.021	0.037
Finland	0.007	***0.169***	***0.151***	***0.102***	0.021	-0.016	-0.025	-0.043	-0.038	-0.054	-0.021
Portugal	0.001	0.109	0.016	0.053	0.033	-0.013	-0.021	-0.046	-0.052	-0.038	-0.027
Greece	-0.030	-0.057	0.062	0.117	***0.127***	***0.142***	***0.146***	0.048	0.052	0.044	0.014
Czech	***0.097***	***0.335***	***0.171***	***0.107***	0.080	***0.095***	0.067	0.055	0.030	-0.008	0.009
Romania	0.050	0.151	-0.128	-0.050	-0.005	0.012	0.012	0.015	-0.009	-0.031	-0.033
Hungary	0.029	0.206	***0.103***	0.065	0.005	0.000	0.001	-0.012	-0.014	0.028	0.021
Slovakia	0.017	0.024	-0.022	-0.022	-0.035	-0.013	-0.000	0.015	0.020	0.008	0.018
Luxembourg	0.061	**0.180**	*0.204*	*0.123*	0.116	0.062	0.004	0.013	0.009	-0.041	-0.038
Bulgaria	0.086	0.174	0.201	**0.134**	**0.151**	0.075	0.014	0.001	0.009	0.026	0.072
Croatia	0.080	**0.367**	0.228	0.047	0.027	-0.007	-0.005	-0.012	0.033	0.011	0.007
Slovenia	0.013	0.033	-0.041	-0.032	0.022	-0.013	-0.001	0.005	0.009	-0.003	-0.019
Lithuania	**0.096**	0.145	0.049	0.033	0.024	0.029	0.008	0.021	0.035	0.045	0.033
Latvia	**0.136**	***0.404***	***0.159***	***0.168***	0.034	0.046	0.058	***0.074***	***0.082***	***0.082***	***0.072***
Estonia	0.022	**0.354**	**0.182**	0.097	0.069	0.009	-0.009	0.000	0.016	0.006	0.020
Cyprus	**0.308**	*0.906*	***0.793***	***0.544***	***0.485***	0.277	0.268	0.106	0.081	0.100	0.084
Malta	**0.052**	0.075	0.018	0.030	0.004	0.014	0.025	0.003	-0.001	-0.004	0.000
Iceland	0.088	0.061	0.021	0.030	0.009	0.002	-0.007	-0.030	-0.015	-0.034	-0.003
Norway	-0.020	-0.021	-0.013	-0.007	0.002	-0.000	-0.015	-0.041	-0.023	-0.021	-0.040
Swiss	0.015	0.115	**0.085**	**0.067**	**0.054**	0.045	0.013	0.010	0.006	-0.003	-0.002
Serbia	0.116	0.406	0.114	0.061	0.132	0.046	0.053	0.055	0.078	0.071	0.061
Ukraine	**0.167**	0.048	0.185	**0.142**	0.094	0.123	**0.166**	0.127	0.099	0.090	0.058
	Panel B: Medium-High Quantiles										
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	0.014	-0.014	-0.014	-0.024	-0.025	-0.049	-0.042	-0.050	**-0.092**	**-0.105**	-0.060
Netherlands	0.005	-0.036	**-0.062**	**-0.071**	**-0.062**	**-0.058**	**-0.053**	**-0.061**	**-0.071**	**-0.111**	-0.059
Sweden	-0.014	-0.046	-0.031	*-0.065*	*-0.059*	-0.051	**-0.063**	**-0.065**	-0.016	-0.022	-0.023
Poland	**0.098**	0.090	0.085	**0.111**	0.066	0.055	0.034	0.046	0.010	0.054	0.089
Belgium	-0.014	-0.003	-0.027	-0.025	***-0.057***	***-0.077***	***-0.065***	***-0.063***	***-0.068***	**-0.069**	-0.042
Austria	0.037	-0.003	-0.028	-0.016	-0.032	-0.030	-0.014	-0.024	0.003	-0.008	**-0.061**
Denmark	0.007	-0.045	-0.041	-0.029	-0.015	-0.034	-0.048	-0.054	-0.044	**-0.088**	-0.074
Ireland	0.032	0.037	0.009	0.002	0.003	0.001	-0.012	-0.027	-0.043	-0.021	-0.065
Finland	0.007	-0.021	-0.029	-0.006	-0.014	-0.023	-0.047	-0.066	**-0.081**	-0.063	-0.119
Portugal	0.001	-0.027	-0.009	-0.028	-0.015	0.006	-0.017	-0.008	0.030	0.013	-0.029
Greece	-0.030	0.014	-0.006	-0.033	-0.063	-0.077	-0.088	-0.074	**-0.097**	*-0.142*	*-0.216*
Czech	**0.097**	0.009	-0.021	-0.037	-0.038	-0.026	-0.000	0.039	0.026	0.036	**0.130**
Romania	0.050	-0.033	0.015	-0.004	-0.017	-0.021	0.012	0.014	0.048	0.063	0.155
Hungary	0.029	0.021	-0.009	-0.028	-0.026	-0.023	-0.034	-0.023	-0.041	0.033	-0.009
Slovakia	0.017	0.018	0.005	-0.018	-0.015	-0.011	0.010	0.039	0.069	**0.097**	**0.197**
Luxembourg	0.061	-0.038	-0.019	-0.031	-0.011	0.005	0.025	-0.010	-0.010	-0.026	0.000
Bulgaria	0.086	0.072	0.034	-0.021	0.011	-3E-05	-0.012	-0.014	-0.019	0.003	0.153
Croatia	0.080	0.007	0.018	-0.005	-0.027	-0.015	-0.020	0.023	0.008	0.011	0.036
Slovenia	0.013	-0.019	-0.002	0.031	0.026	0.016	0.018	0.040	0.006	0.037	0.089
Lithuania	**0.096**	0.033	0.026	0.002	0.014	0.055	0.055	0.056	0.102	0.024	0.075
Latvia	**0.136**	**0.072**	**0.077**	0.067	0.056	0.079	**0.114**	**0.130**	**0.175**	**0.180**	**0.253**
Estonia	0.022	0.020	0.015	-0.010	-0.053	-0.045	-0.031	-0.046	-0.045	-0.003	**0.152**
Cyprus	**0.308**	0.084	0.086	0.152	**0.160**	0.123	0.105	**0.222**	0.171	0.181	**0.409**
Malta	**0.052**	0.000	0.000	0.008	0.016	0.026	0.044	**0.072**	**0.097**	**0.126**	0.119
Iceland	0.088	-0.003	0.008	0.013	0.011	0.012	0.030	0.010	-0.002	0.008	0.108
Norway	-0.020	-0.040	-0.039	-0.026	-0.015	-0.019	-0.035	0.019	0.004	0.046	0.004
Swiss	0.015	-0.002	-0.015	-0.017	-0.022	-0.024	-0.025	-0.025	-0.009	0.005	-0.030
Serbia	0.116	0.061	0.055	0.029	0.038	0.071	0.061	0.091	**0.214**	0.172	**0.326**
Ukraine	**0.167**	0.058	0.023	0.037	0.077	0.099	0.119	**0.155**	***0.189***	***0.216***	**0.509**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 2: Benchmark Lag 3 – G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	0.015	**0.029**	0.010	0.016	-0.008	-0.003	0.007	-0.001	0.002	0.016	0.017
Japan	0.013	**0.072**	0.028	**0.068**	0.057	0.039	**0.043**	**0.039**	0.021	0.013	0.023
Canada	0.007	0.001	-0.005	-0.015	0.017	0.020	0.017	0.011	0.023	0.022	0.014
Germany	-0.000	-0.012	0.017	0.014	0.003	-0.003	-0.008	-0.003	-0.010	-0.025	-0.021
UK	0.027	0.008	0.033	***0.064***	***0.054***	0.033	0.018	0.003	0.016	0.023	0.035
France	**0.065**	0.127	0.110	**0.080**	0.047	*0.084*	*0.081*	0.043	0.041	0.030	0.016
Italy	0.033	0.157	0.010	-0.005	0.060	0.052	0.035	0.007	-0.004	-0.013	-0.030
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	0.015	0.017	0.025	0.015	0.019	0.029	-0.001	-0.010	0.011	0.009	-0.004
Japan	0.013	0.023	0.028	0.013	0.012	-0.002	0.003	0.002	-0.000	-0.024	**-0.032**
Canada	0.007	0.014	**0.032**	0.021	0.017	0.010	-0.000	-0.003	-0.009	-0.007	0.019
Germany	-0.000	-0.021	-0.024	-0.026	-0.017	-0.014	-0.019	-0.010	-0.000	-0.017	0.045
UK	0.027	0.035	***0.036***	***0.036***	0.027	0.017	0.027	0.027	**0.043**	0.052	0.028
France	**0.065**	0.016	0.032	0.031	0.009	0.016	0.016	0.024	0.029	0.060	0.053
Italy	0.033	-0.030	-0.030	0.002	0.011	0.027	0.024	0.021	0.042	***0.115***	0.092

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 3: Benchmark Lag 3 – BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	0.012	**0.255**	*0.164*	0.081	***0.134***	0.037	0.010	0.011	0.008	0.019	-0.006
Russia	0.144	***0.560***	***0.324***	0.197	***0.269***	0.084	0.126	0.101	0.100	0.050	0.048
India	-0.019	-0.056	0.026	0.009	-0.049	-0.057	-0.036	-0.006	-0.019	-0.039	-0.029
China	0.063	-0.038	-0.015	-0.076	-0.052	0.006	0.006	0.063	0.078	0.067	0.084
South Africa	-0.000	0.068	0.010	-0.010	-0.024	0.001	0.016	-0.000	-0.048	-0.051	-0.040
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	0.012	-0.006	-0.042	-0.096	-0.054	-0.078	-0.074	-0.050	-0.067	-0.355	-0.465
Russia	0.144	0.048	0.058	0.000	-0.034	0.008	0.076	0.088	0.131	0.080	0.231
India	-0.019	-0.029	-0.029	-0.046	-0.034	-0.044	-0.048	-0.018	-0.012	-0.042	-4E-05
China	0.063	0.084	0.037	-0.032	-0.007	0.008	0.005	0.023	0.099	0.064	0.136
South Africa	-0.000	-0.040	-0.035	-0.062	-0.074	**-0.086**	-0.038	-0.024	0.043	0.043	0.019

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 4: Benchmark Lag 3 – N11

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
South Korea	0.047	0.130	0.056	0.032	0.063	0.048	0.035	0.023	0.014	0.001	-0.009
Mexico	0.009	0.121	0.062	0.073	0.076	0.015	-0.008	-0.015	0.000	-0.022	-0.009
Indonesia	-0.004	0.028	-0.050	-0.060	-0.043	-0.020	-0.034	-0.028	-0.014	-0.022	-0.032
Turkey	0.065	0.028	0.083	0.039	***0.111***	***0.118***	0.094	0.066	0.053	0.007	-0.012
Philippines	-0.026	0.075	-0.036	-0.039	-0.009	0.002	-0.024	-0.025	0.002	0.002	-0.033
Pakistan	-0.008	-0.024	-0.034	0.037	0.061	0.027	0.006	0.009	0.007	0.024	0.010
Bangladesh	-0.006	-0.150	-0.055	-0.009	0.019	0.034	0.036	0.054	0.013	0.026	0.026
Egypt	0.086	0.205	0.130	***0.179***	***0.188***	***0.140***	**0.150**	**0.172**	**0.126**	0.105	0.087
Vietnam	0.090	0.037	0.065	0.134	0.071	0.121	0.023	0.039	0.062	0.031	0.043
Iran	0.025	0.084	0.026	-0.006	0.020	0.024	0.012	0.001	0.040	0.045	0.038
Nigeria	-0.013	0.040	0.060	0.123	0.119	0.052	0.052	0.021	-0.011	-0.048	-0.091
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	0.047	-0.009	-0.010	-0.014	-0.019	-0.028	-0.014	0.006	**0.077**	**0.080**	**0.164**
Mexico	0.009	-0.009	-0.027	-0.037	-0.029	-0.044	-0.070	-0.067	-0.045	-0.080	-0.023
Indonesia	-0.004	-0.032	-0.031	-0.020	-0.009	-0.020	0.007	0.010	0.033	-0.039	-0.009
Turkey	0.065	-0.012	0.012	0.040	0.004	-0.045	0.052	0.068	0.145	0.165	-0.020
Philippines	-0.026	-0.033	-0.052	-0.034	-0.019	0.002	0.027	0.031	0.015	-0.064	-0.090
Pakistan	-0.008	0.010	-0.022	-0.046	-0.049	-0.059	-0.083	***-0.118***	***-0.137***	-0.107	-0.095
Bangladesh	-0.006	0.026	0.029	0.012	0.028	0.024	0.031	0.039	0.012	0.085	0.054
Egypt	0.086	0.087	0.044	0.067	0.092	0.073	0.027	-0.022	-0.028	-0.101	-0.116
Vietnam	0.090	0.043	0.053	0.061	0.095	*0.165*	*0.140*	*0.184*	**0.136**	0.008	-0.034
Iran	0.025	0.038	0.052	**0.055**	0.045	0.042	0.030	0.050	0.026	-0.083	-0.015
Nigeria	-0.013	-0.091	-0.061	-0.065	-0.058	-0.099	-0.075	-0.033	0.010	-0.033	-0.022

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 5: Benchmark Lag 3 – OPEC

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Iran	0.025	0.084	0.026	-0.006	0.020	0.024	0.012	0.001	0.040	0.045	0.038
Nigeria	-0.013	0.040	0.060	0.123	0.119	0.052	0.052	0.021	-0.011	-0.048	-0.091
Saudi Arabia	0.035	0.306	0.030	-0.022	0.003	0.032	0.023	0.039	0.035	0.037	0.030
Iraq	**-0.517**	0.251	-0.023	0.005	0.030	0.163	0.152	0.106	0.100	0.059	0.037
Qatar	**0.081**	**0.329**	**0.211**	0.151	0.072	0.054	0.041	0.030	0.043	0.046	0.039
UAE	0.031	**0.342**	0.093	0.089	0.018	0.043	0.016	0.032	0.035	0.019	-0.011
Kuwait	**0.104**	*0.196*	*0.182*	**0.094**	***0.072***	***0.122***	***0.113***	***0.115***	***0.074***	0.034	0.034
Algeria	0.020	**-0.067**	-0.035	-0.031	-0.007	0.016	0.009	0.009	0.009	0.000	0.000
Ecuador	-0.005	**-0.032**	**-0.037**	-0.024	-0.023	-0.001	-0.011	-0.018	-0.013	-0.000	0.000
Venezuela	-0.042	-0.014	-0.044	-0.039	-0.003	-0.004	-0.002	0.030	0.042	0.005	0.029
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	0.025	0.038	0.052	**0.055**	0.045	0.042	0.030	0.050	0.026	-0.083	-0.015
Nigeria	-0.013	-0.091	-0.061	-0.065	-0.058	-0.099	-0.075	-0.033	0.010	-0.033	-0.022
Saudi Arabia	0.035	0.030	0.038	0.044	0.018	0.029	-0.039	0.015	0.041	0.030	0.143
Iraq	**-0.517**	0.037	0.029	0.035	-0.078	-0.084	-0.066	**-0.179**	**-0.200**	-0.251	**-0.373**
Qatar	***0.081***	0.039	0.056	0.069	***0.116***	***0.121***	0.096	0.056	0.031	-0.045	-0.051
UAE	0.031	-0.011	-0.007	-0.049	-0.045	-0.058	-0.060	-0.078	-0.071	-0.004	0.094
Kuwait	**0.104**	0.034	0.049	0.035	0.026	0.020	0.052	0.079	0.080	**0.125**	**0.116**
Algeria	0.020	0.000	0.000	0.008	0.012	0.024	**0.041**	*0.058*	*0.048*	*0.066*	**0.092**
Ecuador	-0.005	0.000	-0.008	0.003	0.010	0.016	0.032	**0.050**	0.047	0.045	0.046
Venezuela	-0.042	0.029	0.038	0.058	0.026	0.004	-0.057	-0.065	-0.203	**-0.409**	-0.418

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 6: Benchmark Lag 3 –Asia and Oceania

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Australia	0.028	0.047	0.017	0.055	***0.050***	***0.059***	0.047	**0.073**	**0.070**	0.043	0.043
Hong Kong	**0.075**	0.127	**0.131**	0.052	0.012	0.025	0.024	0.040	0.049	0.032	0.040
Malaysia	0.027	***0.148***	0.079	0.056	0.039	0.041	0.054	0.012	0.028	0.005	0.000
New Zealand	0.000	0.113	0.110	0.022	0.025	0.019	-0.011	-0.012	-0.033	-0.035	-0.024
Thailand	0.044	-0.011	0.084	**0.081**	0.078	0.051	0.031	0.024	0.046	0.049	0.030
Singapore	0.004	***0.187***	0.106	0.038	0.027	-0.019	-0.012	-0.008	-0.036	-0.025	-0.019
Taiwan	0.042	***0.043***	0.083	0.024	0.001	0.028	0.006	0.029	0.020	-0.015	-0.012
Bahrain	0.041	***0.118***	**0.059**	0.016	0.044	0.058	0.056	**0.070**	*0.062*	0.058	0.052
Jordan	0.040	0.045	-0.018	-0.009	-0.004	-0.000	0.035	0.017	0.024	0.024	0.010
Lebanon	0.000	-0.055	-0.023	-0.030	0.008	0.015	0.028	0.034	0.007	-0.009	-0.003
Oman	**0.077**	0.241	**0.140**	0.045	0.047	0.056	**0.073**	*0.081*	*0.085*	0.054	0.040
Sri Lanka	0.014	**0.140**	0.050	***0.064***	0.057	0.021	-0.007	-0.011	-0.006	0.004	-0.001
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	0.028	0.043	0.033	0.023	0.034	0.012	-0.001	0.019	0.013	0.022	-0.018
Hong Kong	**0.075**	0.040	0.057	0.061	0.031	0.043	0.090	0.063	0.076	**0.124**	**0.122**
Malaysia	0.027	0.000	-0.014	-0.011	0.008	-0.013	-0.029	-0.001	0.025	0.030	-0.049
New Zealand	0.000	-0.024	-0.037	**-0.043**	-0.029	-0.027	-0.017	-0.011	-0.008	-0.009	0.027
Thailand	0.044	0.030	0.038	0.033	0.051	**0.073**	**0.071**	0.055	0.066	0.058	0.014
Singapore	0.004	-0.019	-0.018	-0.051	-0.059	-0.071	**-0.098**	**-0.088**	**-0.092**	-0.075	0.016
Taiwan	0.042	-0.012	-0.038	-0.036	-0.028	-0.045	-0.037	-0.004	0.035	0.057	-0.035
Bahrain	0.041	0.043	0.033	0.023	0.034	0.012	-0.001	0.019	0.013	0.022	-0.018
Jordan	0.040	0.052	0.036	0.026	0.020	0.014	-0.024	-0.044	-0.044	-0.108	-0.071
Lebanon	0.000	0.010	0.009	0.019	0.030	0.045	**0.061**	0.052	0.061	0.064	0.053
Oman	**0.077**	-0.003	-0.002	0.002	0.012	0.009	-0.000	-0.010	-0.041	0.025	-0.121
Sri Lanka	0.014	0.040	0.058	0.034	0.048	0.002	0.007	-0.009	0.047	0.082	0.083

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 7: Benchmark Lag 3 –Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	**0.065**	0.000	0.016	0.031	0.033	0.001	0.025	0.029	0.032	0.045	**0.063**
Cote 'Ivoire	0.049	0.076	-0.058	0.017	-0.005	0.033	0.064	0.036	0.015	0.020	0.028
Kenya	0.055	**0.200**	**0.118**	0.038	0.039	**0.064**	**0.058**	**0.048**	0.036	0.023	0.026
Mauritius	**0.051**	**0.133**	**0.077**	**0.059**	***0.045***	***0.033***	***0.033***	***0.040***	***0.038***	0.036	0.022
Morocco	-0.009	-0.009	0.025	0.001	0.016	0.013	-0.000	-0.020	-0.035	-0.022	-0.046
Namibia	-0.003	*-0.038*	-0.015	**-0.031**	**-0.021**	**-0.017**	-0.008	-0.012	-0.010	-0.016	-0.010
Tanzania	-0.006	*0.092*	0.031	0.020	-0.009	-0.002	-0.004	-0.003	0.000	0.001	0.004
Tunisia	-0.008	0.063	0.021	0.007	0.023	-0.003	-0.019	-0.008	-0.019	-0.027	-0.027
Uganda	**0.134**	**0.424**	**0.177**	0.140	0.134	0.152	0.118	0.086	0.093	0.057	0.051
Zambia	**0.096**	***0.280***	***0.092***	***0.093***	0.064	**0.068**	**0.070**	**0.064**	**0.110**	**0.118**	**0.106**
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	**0.065**	**0.063**	**0.065**	**0.078**	**0.088**	**0.099**	**0.087**	**0.094**	*0.102*	*0.090*	**0.197**
Cote 'Ivoire	0.049	0.028	0.028	**0.042**	**0.052**	**0.045**	*0.056*	*0.079*	**0.082**	**0.120**	0.064
Kenya	0.055	0.026	0.007	0.008	-0.009	0.003	0.020	0.014	-0.015	-0.020	0.061
Mauritius	**0.051**	0.022	0.022	0.014	0.028	0.024	0.014	0.005	0.023	0.052	-0.004
Morocco	-0.009	-0.046	-0.031	-0.016	-0.024	-0.000	0.006	0.002	0.013	-0.009	-0.037
Namibia	-0.003	-0.010	-0.007	-0.010	-0.014	-0.003	0.022	0.015	0.027	0.041	0.070
Tanzania	-0.006	0.004	-0.003	-0.008	-0.014	-0.048	-0.040	-0.050	-0.068	-0.080	0.041
Tunisia	-0.008	-0.027	-0.025	-0.012	-0.010	-0.031	-0.013	-0.021	-0.005	0.039	0.056
Uganda	**0.134**	0.051	0.038	0.027	0.067	0.050	0.042	0.025	0.064	0.067	**0.090**
Zambia	**0.096**	**0.106**	***0.089***	***0.104***	***0.118***	***0.091***	0.064	0.064	0.126	**0.245**	0.004

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 8: Benchmark Lag 3 –American countries

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Panel A: Low-Medium Quantiles											
Chile	0.026	**0.118**	***0.096***	0.054	0.029	0.010	0.031	0.043	0.050	0.003	0.000
Argentina	**-0.132**	-0.092	0.013	-0.046	-0.086	-0.022	-0.075	-0.091	**-0.112**	**-0.123**	**-0.123**
Colombia	0.017	0.075	-0.040	0.031	0.012	-0.027	-0.013	-0.012	-0.016	-0.026	-0.040
Costa Rica	***0.064***	***0.130***	0.045	0.050	**0.041**	0.032	0.038	0.039	0.014	0.013	0.037
Peru	0.038	0.151	0.016	0.073	0.031	0.020	0.022	0.018	0.025	0.024	0.004
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	0.026	0.000	0.001	-0.030	-0.041	-0.025	-0.005	0.005	-0.051	-0.037	0.031
Argentina	***-0.132***	***-0.123***	**-0.122**	-0.083	-0.079	-0.094	**-0.133**	-0.096	-0.051	-0.155	**-0.387**
Colombia	0.017	-0.040	-0.012	-0.007	0.005	0.021	0.032	0.045	-0.028	0.029	0.007
Costa Rica	**0.064**	0.037	0.036	*0.060*	0.049	0.053	0.048	0.029	0.005	-0.035	-0.022
Peru	0.038	0.004	0.015	-0.034	0.001	0.001	0.011	-0.025	-0.000	0.019	0.193

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 9: Benchmark Lag 3 – Global indices

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Panel A: Low-Medium Quantiles											
MSCI ACWI	0.031	0.035	0.056	**0.074**	**0.059**	0.042	0.044	0.037	0.032	0.021	0.013
MSCI World	0.014	**0.021**	0.000	0.030	0.016	0.030	0.030	0.027	0.006	-0.003	0.009
MSCI EAFE	0.016	**0.031**	0.048	0.036	0.027	0.021	0.020	0.017	0.018	0.021	0.005
MSCI EM	-0.009	-0.012	-0.027	-0.003	-0.040	-0.040	-0.060	-0.043	-0.051	-0.025	-0.036
MSCI EU	0.014	0.003	0.037	0.014	0.035	0.036	0.021	0.018	0.028	0.026	0.019
MSCI USA	0.015	**0.031**	0.010	0.001	-0.001	-0.002	0.008	0.002	0.005	0.020	0.024
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	0.031	0.013	0.020	0.014	0.022	0.030	0.029	0.022	0.007	-0.014	0.002
MSCI World	0.014	0.009	0.014	0.004	0.011	0.023	0.017	0.001	-0.000	-0.012	0.000
MSCI EAFE	0.016	0.005	0.012	0.010	0.014	0.021	0.007	-0.015	-0.028	-0.008	0.040
MSCI EM	-0.009	-0.036	-0.044	-0.030	-0.002	0.012	-0.016	0.009	0.004	0.058	0.027
MSCI EU	0.014	0.019	0.004	0.001	0.012	0.025	0.012	0.002	-0.006	-0.015	0.018
MSCI USA	0.015	0.024	0.018	0.017	0.029	0.037	0.007	-0.014	0.005	0.006	-0.020

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 10: Benchmark Lag 6 – Europe

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Spain	0.001	-0.046	-0.027	-0.001	0.041	0.032	0.019	0.012	0.052	0.034	0.017
Netherlands	-0.013	-0.112	-0.070	-0.021	-0.025	-0.020	-0.009	0.018	0.023	0.015	0.009
Sweden	0.002	-0.045	-0.052	-0.030	-0.037	-0.012	-0.022	-0.017	-0.005	-0.006	-0.004
Poland	0.001	0.145	-0.026	0.025	0.033	0.015	-0.027	-0.011	-0.024	-0.020	-0.020
Belgium	-0.011	-0.118	***-0.102***	***-0.079***	-0.044	-0.029	-0.023	0.000	-0.007	0.007	0.018
Austria	-0.026	-0.117	-0.013	0.014	0.003	0.007	-0.006	-0.063	*-0.074*	*-0.066*	-0.037
Denmark	-0.035	-0.132	-0.097	-0.079	-0.035	-0.001	-0.018	-0.002	-0.015	-0.030	-0.024
Ireland	-0.033	-0.007	-0.055	0.004	0.007	-0.009	0.007	-0.018	-0.006	-0.002	0.001
Finland	-0.015	0.080	0.006	0.054	0.021	-0.007	-0.026	-0.041	-0.050	-0.040	-0.052
Portugal	0.006	0.030	0.031	0.047	0.049	**0.074**	0.065	0.023	0.023	0.013	-0.005
Greece	0.044	-0.071	0.070	0.089	0.099	0.070	0.033	0.020	0.024	0.042	0.025
Czech	-0.049	0.037	0.062	-0.036	-0.083	-0.022	-0.017	0.020	0.001	-0.008	0.003
Romania	-0.046	0.087	0.039	-0.083	-0.004	0.013	0.032	0.012	-0.022	-0.048	-0.036
Hungary	-0.027	0.066	-0.083	-0.051	-0.018	-0.004	-0.009	-0.010	0.009	0.002	0.008
Slovakia	-0.009	0.012	-0.077	-0.019	-0.031	-0.000	-0.027	0.008	-0.002	-0.016	-0.025
Luxembourg	-0.062	**-0.261**	-0.069	-0.116	-0.090	-0.083	**-0.086**	-0.060	-0.042	-0.045	-0.048
Bulgaria	-0.082	**-0.262**	**-0.273**	-0.134	-0.085	-0.061	-0.027	-0.029	-0.004	-0.002	-0.004
Croatia	**-0.097**	-0.230	**-0.180**	-0.099	-0.068	-0.008	-0.009	-0.024	-0.007	0.004	-0.002
Slovenia	**-0.095**	*-0.300*	*-0.153*	*-0.121*	-0.057	-0.056	-0.051	-0.043	-0.042	-0.065	-0.069
Lithuania	-0.027	-0.031	-0.069	**-0.103**	**-0.059**	-0.042	-0.053	-0.054	-0.035	-0.025	-0.010
Latvia	0.013	0.071	-0.068	-0.005	0.000	0.026	0.022	-0.000	-0.008	0.010	-0.002
Estonia	-0.003	0.106	0.083	0.046	-0.088	-0.044	-0.059	**-0.085**	**-0.082**	-0.050	-0.034
Cyprus	**-0.354**	-0.151	-0.476	**-0.545**	-0.257	***-0.326***	***-0.292***	**-0.265**	-0.164	-0.138	-0.110
Malta	-0.016	0.070	0.023	0.005	-0.013	0.003	-0.005	-0.013	0.002	-0.006	-0.011
Iceland	-0.002	-0.042	0.010	-0.013	0.002	0.040	0.031	0.049	0.040	0.041	0.025
Norway	0.021	-0.042	0.014	0.021	0.048	0.056	0.052	***0.086***	***0.065***	**0.057**	0.042
Swiss	0.022	0.072	0.033	0.001	0.026	0.038	0.056	0.038	0.037	0.021	0.000
Serbia	**-0.173**	**-0.237**	**-0.202**	***-0.239***	-0.197	-0.127	-0.060	-0.046	-0.062	-0.057	-0.085
Ukraine	-0.109	0.202	-0.078	0.025	0.046	-0.016	-0.009	-0.014	-0.050	-0.058	-0.057

Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	0.001	0.017	0.002	-0.002	-0.012	-0.002	0.016	0.019	0.010	-0.012	-0.001
Netherlands	-0.013	0.009	-0.006	-0.008	0.003	0.027	0.023	0.025	-0.005	-0.031	-6E-05
Sweden	0.002	-0.004	0.001	0.023	0.025	0.041	0.025	0.056	0.024	0.048	0.088
Poland	0.001	-0.020	0.004	0.011	0.009	0.000	-0.035	-0.071	-0.050	0.043	-0.000
Belgium	-0.011	0.018	0.037	0.041	**0.063**	0.046	0.033	0.012	-0.012	-0.029	0.047
Austria	-0.026	-0.037	-0.042	-0.010	-0.001	0.007	0.019	0.030	-0.002	-0.013	**-0.159**
Denmark	-0.035	-0.024	-0.033	-0.044	-0.027	-0.025	-0.013	-0.026	-0.009	-0.005	-0.032
Ireland	-0.033	0.001	-0.008	-0.026	-0.027	-0.043	***-0.066***	***-0.050***	**-0.054**	-0.033	-0.014
Finland	-0.015	-0.052	-0.057	-0.059	-0.043	-0.064	-0.046	-0.053	-0.058	-0.074	-0.006
Portugal	0.006	-0.005	-0.011	-0.025	-0.011	0.008	0.022	-0.028	-0.028	0.013	0.004
Greece	0.044	0.025	0.040	0.067	0.082	0.063	0.039	-0.016	-0.016	-0.066	-0.013
Czech	-0.049	0.003	-0.017	-0.047	-0.044	-0.035	-0.022	-0.090	-0.081	**-0.120**	**-0.190**
Romania	-0.046	-0.036	-0.015	-0.007	-0.022	-0.024	-0.074	-0.074	-0.129	**-0.224**	**-0.218**
Hungary	-0.027	0.008	0.017	0.000	-0.016	-0.075	-0.056	**-0.071**	-0.039	**-0.071**	0.008
Slovakia	-0.009	-0.025	-0.029	-0.043	-0.061	***-0.075***	***-0.097***	-0.054	**-0.070**	-0.031	-0.031
Luxembourg	-0.062	-0.048	-0.050	-0.021	-0.013	-0.006	0.009	-0.015	-0.041	**-0.085**	**-0.064**
Bulgaria	-0.082	-0.004	0.029	0.025	0.048	0.052	0.040	0.083	0.015	-0.027	**-0.179**
Croatia	**-0.097**	-0.002	-0.002	0.031	0.022	-0.011	-0.038	-0.105	**-0.145**	**-0.124**	-0.097
Slovenia	**-0.095**	-0.069	-0.061	-0.049	-0.058	-0.027	-0.069	-0.090	-0.087	-0.121	-0.127
Lithuania	-0.027	-0.010	0.004	0.012	0.003	0.043	0.045	0.024	0.014	-0.000	0.012
Latvia	0.013	-0.002	-0.016	-0.003	-0.008	0.006	0.005	0.031	-0.016	0.018	0.072
Estonia	-0.003	-0.034	-0.038	-0.054	-0.062	-0.058	-0.052	-0.045	0.004	0.063	0.061
Cyprus	**-0.354**	-0.110	-0.101	-0.088	-0.084	-0.145	***-0.267***	***-0.368***	**-0.521**	**-0.522**	**-0.610**
Malta	-0.016	-0.011	-0.029	-0.022	-0.033	**-0.061**	**-0.061**	**-0.062**	-0.017	0.024	-0.013
Iceland	-0.002	0.025	0.021	0.027	0.035	0.040	**0.049**	**0.058**	**0.067**	0.064	0.096
Norway	0.021	0.042	0.039	0.027	0.021	-0.000	-0.007	-0.050	-0.038	-0.043	-0.008
Swiss	0.022	0.000	0.004	-0.010	-0.001	0.013	0.012	0.003	-0.005	-0.008	0.031
Serbia	**-0.173**	-0.085	-0.083	-0.054	-0.120	**-0.149**	-0.133	**-0.151**	-0.099	-0.041	***-0.579***
Ukraine	-0.109	-0.057	-0.028	-0.097	-0.126	-0.120	-0.101	-0.136	-0.208	-0.224	***-0.502***

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 11: Benchmark Lag 6 – G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	-0.017	**-0.020**	**-0.040**	-0.028	0.006	-0.003	0.009	-0.001	-0.003	0.006	0.005
Japan	-0.028	0.027	***0.025***	0.013	-0.000	-0.018	-0.018	-0.023	*-0.030*	*-0.033*	**-0.038**
Canada	-0.010	**-0.033**	***-0.045***	-0.029	-0.000	0.022	0.015	0.018	0.024	0.022	0.028
Germany	-0.009	0.004	0.018	**0.036**	**0.026**	0.019	0.013	0.007	0.000	-0.003	-0.008
UK	0.013	-0.016	0.018	0.035	0.025	0.024	0.042	0.037	0.030	0.033	0.024
France	0.015	0.017	-0.025	-0.012	0.017	0.065	0.057	0.049	0.059	0.036	0.048
Italy	-0.031	-0.033	**-0.107**	-0.043	-0.036	0.012	0.034	0.050	0.048	-0.001	-0.015

Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	-0.017	0.005	0.009	0.010	0.000	-0.013	-0.004	-0.006	0.003	-0.021	-0.037
Japan	-0.028	**-0.038**	**-0.042**	***-0.039***	***-0.041***	***-0.054***	**-0.059**	-0.039	-0.030	-0.049	-0.053
Canada	-0.010	0.028	0.023	0.006	0.002	0.017	0.028	0.017	0.002	-0.025	-0.014
Germany	-0.009	-0.008	-0.013	-0.018	-0.022	-0.020	**-0.033**	**-0.040**	**-0.039**	0.000	**-0.060**
UK	0.013	0.024	0.013	-0.008	0.001	0.004	0.002	0.001	0.007	-0.033	0.011
France	0.015	0.048	0.047	0.041	0.038	0.040	0.023	-0.005	0.020	0.023	-0.005
Italy	-0.031	-0.015	-0.031	-0.054	-0.042	-0.034	0.001	-0.007	-0.037	-0.081	-0.077

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 12: Benchmark Lag 6 – BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	-0.098	**-0.366**	**-0.183**	-0.088	-0.055	-0.010	0.011	-0.021	-0.031	-0.066	-0.062
Russia	**-0.437**	**-0.617**	**-0.342**	**-0.294**	-0.231	-0.145	-0.125	-0.097	-0.108	-0.147	-0.187
India	-0.017	**-0.125**	-0.031	0.004	0.012	0.018	0.000	0.018	0.025	0.021	0.032
China	-0.083	-0.042	0.163	0.024	-0.037	0.010	-0.009	-0.027	-0.045	-0.050	-0.050
South Africa	0.042	**0.154**	0.031	0.038	0.023	0.045	**0.050**	0.027	0.018	-0.000	0.003

Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	-0.098	-0.062	-0.071	-0.085	-0.115	**-0.203**	**-0.198**	**-0.183**	-0.082	0.111	0.127
Russia	**-0.437**	-0.187	-0.170	**-0.268**	**-0.272**	***-0.253***	***-0.334***	***-0.254***	***-0.230***	**-0.200**	-0.117
India	-0.017	0.032	0.041	0.022	0.009	-0.018	-0.019	-0.002	-0.056	0.005	**-0.156**
China	-0.083	-0.050	-0.059	-0.053	-0.067	-0.055	-0.074	-0.079	-0.018	-0.071	-0.109
South Africa	0.042	0.003	0.016	0.016	0.029	0.046	0.059	0.041	0.016	-0.056	-0.035

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 13: Benchmark Lag 6 – N11

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
South Korea	**-0.055**	-0.029	**-0.096**	-0.034	-0.034	-0.020	-0.034	-0.016	-0.014	-0.015	-0.045
Mexico	-0.051	0.058	0.044	-0.020	0.039	0.003	0.016	-0.013	-0.018	-0.037	-0.021
Indonesia	-0.032	**-0.197**	**-0.135**	-0.039	-0.022	-0.011	-0.006	0.004	0.009	0.002	-0.002
Turkey	-0.003	-0.183	-0.008	-0.038	0.020	-0.006	-0.008	0.011	0.012	0.051	0.038
Philippines	-0.024	-0.075	-0.107	-0.082	-0.063	-0.059	-0.034	-0.016	-0.068	-0.064	*-0.090*
Pakistan	-0.002	0.085	0.049	**0.095**	0.035	0.015	-0.000	-0.007	0.002	-0.014	-0.020
Bangladesh	0.001	-0.027	0.026	0.017	0.040	0.027	0.019	-0.012	-0.013	-0.014	0.003
Egypt	0.025	0.065	-0.059	-0.022	0.041	0.111	0.124	**0.138**	0.082	0.022	0.057
Vietnam	-0.108	-0.227	***-0.294***	-0.119	-0.171	-0.102	-0.067	-0.089	-0.108	-0.118	-0.094
Iran	-0.023	**-0.092**	-0.021	-0.028	-0.048	-0.034	-0.015	0.000	0.015	0.016	-0.003
Nigeria	-0.020	**0.257**	-0.005	-0.080	-0.038	-0.084	-0.080	-0.034	-0.098	-0.091	-0.126
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	**-0.055**	-0.045	-0.033	-0.034	-0.050	-0.038	-0.044	-0.077	**-0.113**	**-0.075**	**-0.128**
Mexico	-0.051	-0.021	-0.011	-0.034	-0.057	-0.066	-0.056	-0.082	-0.080	**-0.100**	**-0.122**
Indonesia	-0.032	-0.002	-0.013	0.002	-0.027	-0.034	-0.029	-0.053	**-0.168**	**-0.117**	**-0.115**
Turkey	-0.003	0.038	0.000	-0.036	-0.018	-0.002	-0.033	0.022	0.067	0.055	0.177
Philippines	-0.024	**-0.090**	**-0.097**	**-0.083**	-0.059	-0.041	-0.024	-0.001	0.025	0.070	0.049
Pakistan	-0.002	-0.020	-0.009	-0.030	-0.025	0.007	0.020	0.073	**0.113**	0.084	**-0.222**
Bangladesh	0.001	0.003	0.034	0.030	0.021	0.027	0.007	0.000	-0.029	0.008	0.041
Egypt	0.025	0.057	0.058	0.049	0.045	0.008	-0.047	-0.020	-0.020	**-0.134**	-0.046
Vietnam	-0.108	-0.094	-0.080	-0.074	-0.094	**-0.116**	-0.067	-0.074	-0.049	0.004	**-0.206**
Iran	-0.023	-0.003	-0.021	-0.010	-0.032	-0.016	-0.036	-0.034	-0.031	-0.016	0.013
Nigeria	-0.020	-0.126	-0.079	-0.119	-0.024	-0.117	-0.103	-0.072	-0.067	0.021	0.017

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 14: Benchmark Lag 6 – OPEC

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Iran	-0.023	**-0.092**	-0.021	-0.028	-0.048	-0.034	-0.015	0.000	0.015	0.016	-0.003
Nigeria	-0.020	**0.257**	-0.005	-0.080	-0.038	-0.084	-0.080	-0.034	-0.098	-0.091	-0.126
Saudi Arabia	-0.042	-0.143	0.026	-0.015	0.010	-0.033	0.008	-0.020	-0.018	-0.052	-0.037
Iraq	**-0.415**	-0.178	0.049	-0.002	-0.123	-0.128	-0.026	-0.041	-0.053	-0.088	-0.129
Qatar	**-0.093**	-0.173	**-0.175**	**-0.118**	-0.071	-0.057	-0.043	-0.029	-0.039	-0.041	-0.030
UAE	-0.011	-0.170	***-0.080***	-0.047	-0.030	-0.029	-0.046	-0.005	0.013	-0.016	-0.000
Kuwait	**-0.065**	-0.010	***-0.084***	***-0.071***	***-0.069***	-0.063	-0.055	-0.077	-0.046	-0.027	-0.043
Algeria	-0.025	-0.004	-0.020	**-0.031**	-0.019	-0.021	-0.005	0.000	0.000	0.000	0.000
Ecuador	**0.037**	0.038	**0.044**	**0.064**	***0.057***	***0.030***	***0.036***	0.031	0.016	0.025	0.032
Venezuela	**-0.133**	-0.051	-0.067	**-0.100**	**-0.110**	**-0.136**	-0.062	-0.075	-0.060	-0.038	-0.059
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	-0.023	-0.003	-0.021	-0.010	-0.032	-0.016	-0.036	-0.034	-0.031	-0.016	0.013
Nigeria	-0.020	-0.126	-0.079	-0.119	-0.024	-0.117	-0.103	-0.072	-0.067	0.021	0.017
Saudi Arabia	-0.042	-0.037	-0.046	-0.027	-0.041	-0.055	-0.044	-0.087	**-0.168**	**-0.173**	-0.072
Iraq	**-0.415**	-0.129	-0.121	-0.131	**-0.154**	**-0.190**	**-0.238**	**-0.308**	**-0.356**	**-0.608**	**-0.731**
Qatar	**-0.093**	-0.030	-0.051	-0.047	-0.084	-0.092	-0.127	**-0.123**	**-0.136**	**-0.214**	**-0.161**
UAE	-0.011	-0.000	-0.060	-0.051	-0.019	0.006	0.008	0.044	-0.001	0.049	0.145
Kuwait	**-0.065**	-0.043	-0.048	-0.043	-0.059	-0.064	-0.067	-0.057	**-0.090**	*-0.109*	*-0.091*
Algeria	-0.025	0.000	0.000	-0.001	-0.018	-0.025	-0.045	-0.049	-0.038	-0.064	**-0.169**
Ecuador	**0.037**	0.032	0.021	0.028	0.038	0.033	0.041	0.037	0.001	0.011	0.067
Venezuela	**-0.133**	-0.059	-0.069	-0.092	-0.127	***-0.170***	***-0.208***	***-0.160***	-0.106	-0.092	**-0.295**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 15: Benchmark Lag 6 –Asia and Oceania

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Australia	-0.013	-0.040	0.037	**0.063**	0.017	0.007	-0.006	-0.026	0.003	-0.014	-0.013
Hong Kong	-0.050	**-0.098**	**-0.108**	-0.087	-0.076	-0.039	-0.036	-0.035	-0.005	-0.001	0.001
Malaysia	0.010	0.086	0.049	0.059	0.048	0.016	0.022	-0.007	-2E-05	0.008	0.002
New Zealand	**-0.043**	**-0.123**	**-0.091**	-0.044	**-0.047**	*-0.069*	*-0.073*	*-0.073*	*-0.070*	**-0.075**	**-0.059**
Thailand	-0.007	**0.227**	-0.001	0.006	0.009	-0.046	-0.033	-0.027	-0.044	-0.047	-0.033
Singapore	-0.057	-0.076	-0.114	-0.014	-0.051	**-0.081**	-0.045	-0.055	**-0.076**	**-0.065**	-0.052
Taiwan	-0.061	-0.148	**-0.129**	-0.074	-0.042	-0.064	-0.032	-0.073	-0.052	-0.054	-0.034
Bahrain	0.003	-0.105	-0.043	-0.028	-0.015	-0.013	-0.032	-0.026	-0.003	0.023	0.008
Jordan	-0.026	**-0.146**	-0.077	-0.041	**-0.062**	-0.028	**-0.052**	**-0.049**	-0.041	-0.035	-0.037
Lebanon	-0.056	***-0.151***	***-0.148***	***-0.082***	-0.060	**-0.071**	-0.048	**-0.051**	-0.043	-0.022	-0.025
Oman	0.000	-0.004	-0.079	-0.033	-0.038	-0.022	0.000	0.008	-0.006	-0.006	-0.014
Sri Lanka	-0.006	**-0.109**	0.016	0.044	0.043	0.016	0.029	0.005	0.006	0.008	0.021
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	-0.013	-0.013	-0.036	-0.038	**-0.041**	-0.028	-0.012	-0.029	-0.017	-0.014	0.006
Hong Kong	-0.050	0.001	-0.040	-0.005	0.012	-0.004	-0.007	0.032	0.021	-0.041	-0.055
Malaysia	0.010	0.002	0.011	0.003	-0.001	0.013	0.010	-0.012	-0.013	0.034	-0.003
New Zealand	**-0.043**	**-0.059**	**-0.048**	-0.036	-0.036	-0.029	-0.019	-0.011	-0.003	0.012	0.032
Thailand	-0.007	-0.033	-0.015	-0.007	0.010	-0.016	-0.049	-0.041	-0.016	0.020	-0.008
Singapore	-0.057	-0.052	-0.031	-0.012	-0.009	0.002	-0.006	-0.025	-0.054	-0.048	-0.078
Taiwan	-0.061	-0.034	-0.036	*-0.044*	**-0.050**	***-0.059***	***-0.069***	***-0.071***	**-0.096**	-0.072	-0.054
Bahrain	0.003	0.008	0.021	0.031	0.045	0.043	0.046	0.013	0.029	0.043	**0.091**
Jordan	-0.026	-0.037	-0.030	-0.018	-0.008	0.000	0.017	0.046	**0.072**	**0.102**	**0.102**
Lebanon	-0.056	-0.025	-0.034	-0.033	**-0.046**	**-0.063**	-0.045	-0.014	-0.033	-0.091	0.014
Oman	0.000	-0.014	-0.002	-0.004	0.008	-0.035	-0.017	-0.015	0.038	-0.030	0.000
Sri Lanka	-0.006	0.021	0.014	-0.004	0.013	0.013	-0.002	-0.011	-0.027	-0.072	**-0.130**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 16: Benchmark Lag 6 –Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	0.009	0.009	0.039	**0.044**	0.028	0.016	0.020	0.017	-0.002	-0.022	-0.032
Cote 'Ivoire	-0.033	-0.004	0.040	0.007	-0.008	-0.005	-0.016	-0.027	-0.019	-0.026	-0.016
Kenya	-0.021	-0.004	-0.006	-0.029	-0.023	-0.019	0.008	-0.011	-0.007	0.012	0.020
Mauritius	-0.015	0.033	0.014	0.009	0.019	0.014	0.021	0.026	**0.037**	0.031	0.027
Morocco	0.026	0.026	0.052	0.035	**0.078**	0.049	0.047	0.032	0.046	0.046	0.049
Namibia	0.001	0.024	-0.009	-0.003	-0.002	-0.003	-0.000	-0.001	-0.000	0.006	0.013
Tanzania	0.011	0.029	0.031	0.006	3E-05	0.000	0.000	-0.001	0.007	0.007	0.012
Tunisia	-0.004	0.004	0.005	0.004	0.022	0.010	0.025	0.018	0.007	0.021	0.016
Uganda	-0.034	-0.133	-0.032	-0.080	-0.046	-0.068	-0.047	-0.055	-0.034	-0.026	-0.044
Zambia	0.013	0.051	**0.074**	0.016	-0.016	-0.012	0.021	0.022	***0.062***	***0.066***	***0.071***
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	0.009	-0.032	-0.029	-0.030	-0.016	-0.006	0.007	0.011	0.022	0.029	**0.092**
Cote 'Ivoire	-0.033	-0.016	-0.025	-0.025	-0.021	-0.038	-0.028	-0.057	-0.068	**-0.188**	-0.101
Kenya	-0.021	0.020	0.014	-0.002	-0.008	0.002	-0.023	-0.019	-0.035	-0.062	**-0.117**
Mauritius	-0.015	0.027	0.030	0.010	0.027	0.016	0.007	-0.019	-0.055	-0.096	**-0.188**
Morocco	0.026	0.049	0.023	0.000	0.015	-0.001	-0.006	-0.032	-0.062	-0.019	0.066
Namibia	0.001	0.013	0.003	0.010	0.021	0.019	0.028	0.019	0.036	0.053	0.013
Tanzania	0.011	0.012	0.011	0.011	0.018	0.020	0.001	-0.027	-0.037	-0.024	**0.163**
Tunisia	-0.004	0.016	0.008	0.004	0.001	0.028	0.014	0.017	0.004	**-0.053**	-0.015
Uganda	-0.034	-0.044	0.004	0.024	0.019	0.038	0.048	0.027	0.055	-0.012	**-0.113**
Zambia	0.013	**0.071**	**0.070**	0.047	0.061	0.068	***0.088***	0.062	0.013	***-0.154***	***-0.242***

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 17: Benchmark Lag 6 –American countries

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Chile	-0.040	-0.091	-0.109	-0.065	-0.061	-0.056	-0.062	**-0.072**	-0.048	-0.042	-0.060
Argentina	0.022	0.271	0.098	0.059	0.095	0.079	0.038	0.037	-0.015	0.003	-0.013
Colombia	-0.039	-0.036	0.024	-0.050	0.029	-0.011	-0.001	-0.004	-0.031	-0.032	-0.064
Costa Rica	*0.073*	0.000	0.024	0.023	0.030	0.034	0.040	0.020	0.009	0.014	0.026
Peru	*-0.100*	-0.143	-0.096	-0.115	-0.072	-0.028	-0.012	-0.001	-0.008	-0.011	0.003
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	-0.040	-0.060	-0.026	-0.034	-0.036	-0.024	-0.017	-0.013	-0.016	-0.047	**0.112**
Argentina	0.022	-0.013	0.010	-0.113	-0.114	-0.100	-0.094	-0.073	-0.074	-0.014	-0.010
Colombia	-0.039	-0.064	-0.027	-0.001	-0.022	-0.061	-0.031	-0.043	-0.034	-0.051	-0.016
Costa Rica	**0.073**	0.026	0.038	0.052	0.032	0.055	0.065	0.080	**0.092**	***0.093***	***0.198***
Peru	**-0.100**	0.003	-0.014	-0.010	-0.021	-0.062	-0.071	-0.067	-0.096	**-0.229**	**-0.424**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 18: Benchmark Lag 6 – Global indices

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
MSCI ACWI	-0.008	-0.011	-0.016	0.022	0.017	0.013	-0.021	-0.012	-0.001	-0.004	0.011
MSCI World	**-0.033**	**-0.031**	**-0.048**	-0.005	-0.012	-0.024	**-0.043**	-0.040	-0.025	-0.033	-0.026
MSCI EAFE	**-0.041**	**-0.025**	-0.028	**-0.050**	-0.044	-0.047	-0.038	-0.048	-0.040	-0.020	-0.003
MSCI EM	0.007	0.050	-0.012	0.002	-0.004	0.019	0.035	0.048	0.048	0.033	0.013
MSCI EU	**-0.034**	***-0.027***	***-0.039***	***-0.049***	***-0.051***	-0.036	-0.010	-0.008	-0.009	-0.011	-0.012
MSCI USA	-0.019	**-0.022**	**-0.042**	-0.026	-0.000	0.003	0.023	0.004	-0.004	0.002	0.006
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	-0.008	0.011	0.018	0.002	-0.007	-0.014	-0.005	-0.018	-0.014	-0.018	-0.039
MSCI World	**-0.033**	-0.026	-0.026	-0.011	-0.009	-0.012	-0.019	-0.018	-0.039	**-0.057**	**-0.077**
MSCI EAFE	**-0.041**	-0.003	-0.014	-0.015	-0.020	-0.032	-0.031	**-0.043**	***-0.052***	***-0.073***	**-0.075**
MSCI EM	0.007	0.013	0.009	-0.002	0.012	-0.006	-0.007	-0.058	-0.071	-0.027	-0.039
MSCI EU	*-0.034*	-0.012	-0.024	-0.023	-0.010	-0.012	-0.023	-0.030	-0.049	-0.032	**-0.085**
MSCI USA	-0.019	0.006	-0.000	0.004	-0.002	-0.016	-0.009	0.001	-0.001	-0.030	-0.038

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 19: Benchmark Lag 9 – Europe

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Spain	0.012	-0.042	0.047	0.062	0.026	0.028	0.046	0.013	0.007	0.001	0.007
Netherlands	0.035	0.079	0.021	**0.060**	**0.048**	**0.044**	**0.047**	0.026	0.016	0.023	0.023
Sweden	**0.076**	-0.028	**0.092**	**0.116**	***0.122***	**0.091**	0.072	0.054	0.072	**0.080**	**0.071**
Poland	-0.024	**0.261**	**-0.109**	**-0.116**	**-0.081**	-0.060	-0.051	-0.009	-0.022	0.024	0.023
Belgium	0.015	0.037	0.012	0.047	0.030	0.021	0.033	0.030	**0.046**	**0.049**	**0.049**
Austria	-0.010	0.109	0.032	0.011	0.017	-0.002	0.010	0.001	-0.027	-0.057	-0.039
Denmark	**0.057**	0.077	**0.134**	**0.137**	**0.119**	**0.096**	**0.069**	**0.063**	0.051	0.042	0.024
Ireland	-0.002	**-0.098**	0.004	0.025	0.020	0.007	-0.011	0.011	0.019	0.016	0.032
Finland	0.053	**0.101**	0.046	0.084	0.015	0.032	0.038	0.014	0.012	0.013	-0.003
Portugal	-0.038	0.026	-0.008	-0.058	-0.058	-0.054	**-0.071**	**-0.066**	-0.052	-0.059	-0.047
Greece	-0.077	**0.128**	-0.142	**-0.148**	***-0.204***	***-0.184***	***-0.120***	***-0.105***	**-0.103**	**-0.114**	**-0.107**
Czech	-0.041	0.014	0.007	0.037	0.004	0.023	0.021	-0.005	-0.026	-0.025	-0.007
Romania	-0.085	-0.022	-0.083	**-0.090**	-0.072	-0.047	-0.026	-0.053	-0.071	-0.130	**-0.165**
Hungary	-0.014	0.048	0.028	0.065	**0.079**	0.063	**0.096**	0.072	0.056	0.046	0.050
Slovakia	-0.013	0.008	0.016	-0.005	0.001	-0.005	0.012	0.014	0.031	-0.008	-0.003
Luxembourg	0.003	-0.096	0.037	0.072	0.008	-0.004	-0.009	-0.016	-0.006	0.012	0.007
Bulgaria	**-0.152**	**-0.215**	**-0.155**	**-0.090**	**-0.121**	-0.104	-0.076	-0.056	-0.096	-0.067	-0.089
Croatia	0.021	**0.176**	0.015	-0.047	0.038	0.017	0.048	0.049	0.067	0.028	0.051
Slovenia	-0.031	-0.022	*-0.113*	*-0.063*	**-0.071**	-0.028	-0.017	-0.036	-0.017	-0.032	-0.014
Lithuania	**-0.132**	**-0.257**	**-0.191**	**-0.144**	**-0.087**	**-0.086**	-0.054	-0.067	-0.068	-0.060	-0.031
Latvia	-0.073	**-0.278**	-0.124	-0.090	**-0.105**	-0.102	**-0.139**	**-0.090**	-0.076	-0.065	**-0.105**
Estonia	**0.102**	-0.042	0.068	0.057	0.087	**0.086**	0.072	0.059	0.077	0.078	0.067
Cyprus	-0.127	-0.165	-0.073	-0.129	-0.040	-0.120	-0.137	-0.120	-0.150	-0.123	-0.067
Malta	**0.058**	-0.029	0.048	0.055	0.047	***0.056***	***0.053***	***0.060***	**0.067**	**0.048**	0.043
Iceland	-0.030	**-0.175**	**-0.093**	**-0.077**	**-0.054**	**-0.056**	-0.035	-0.041	-0.034	-0.043	-0.004
Norway	0.029	0.078	0.047	0.032	0.032	0.018	0.005	0.009	-0.009	0.003	-0.009
Swiss	-0.023	0.035	0.011	-0.013	-0.033	-0.052	-0.026	-0.028	-0.013	-0.021	-0.015
Serbia	**-0.193**	**-0.339**	**-0.243**	**-0.256**	***-0.147***	***-0.148***	-0.064	-0.050	-0.034	-0.069	-0.031
Ukraine	-0.031	-0.177	-0.090	0.033	0.027	0.046	0.077	0.080	0.070	0.057	0.013
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	0.012	0.007	-0.000	0.002	-0.006	0.016	-0.000	0.026	0.045	0.045	0.001
Netherlands	0.035	0.023	0.042	0.050	0.040	**0.060**	0.045	0.048	0.029	0.054	0.008
Sweden	**0.076**	**0.071**	**0.078**	**0.069**	**0.071**	**0.080**	**0.067**	**0.083**	**0.090**	0.066	**0.126**
Poland	-0.024	0.023	-0.035	-0.063	-0.033	-0.004	-0.018	-0.040	0.009	-0.010	-0.024
Belgium	0.015	**0.049**	0.046	0.031	0.019	0.041	0.019	0.003	-0.005	-0.031	-0.056
Austria	-0.010	-0.039	-0.049	-0.029	-0.024	-0.041	**-0.056**	-0.053	-0.024	0.014	-0.058
Denmark	**0.057**	0.024	0.023	0.025	0.029	0.026	0.012	0.027	0.027	-0.006	-0.025
Ireland	-0.002	0.032	0.012	0.016	-0.004	0.001	-0.004	-0.016	-0.010	-0.013	-0.019
Finland	0.053	-0.003	0.004	0.009	0.031	0.027	0.058	0.061	**0.108**	0.069	0.058
Portugal	-0.038	-0.047	-0.033	-0.038	-0.001	0.011	-0.021	-0.061	-0.075	-0.021	0.003
Greece	-0.077	**-0.107**	**-0.095**	**-0.104**	**-0.085**	-0.081	-0.077	-0.017	0.027	-0.017	-0.031
Czech	-0.041	-0.007	-0.036	-0.074	-0.080	-0.077	**-0.102**	-0.086	**-0.138**	-0.110	**-0.234**
Romania	-0.085	**-0.165**	**-0.172**	**-0.165**	**-0.143**	-0.115	***-0.161***	***-0.132***	-0.091	-0.063	-0.110
Hungary	-0.014	0.050	0.036	0.009	0.014	-0.030	-0.037	-0.060	-0.094	**-0.156**	**-0.172**
Slovakia	-0.013	-0.003	-0.016	0.001	0.001	-0.016	-0.015	-0.022	0.000	0.054	0.091
Luxembourg	0.003	0.007	0.011	0.016	0.031	0.035	0.028	0.047	0.034	0.042	0.032
Bulgaria	**-0.152**	-0.089	-0.103	-0.118	-0.120	-0.078	-0.103	**-0.253**	-0.177	-0.130	**-0.247**
Croatia	0.021	0.051	0.007	-0.030	-0.027	0.002	-0.003	-0.003	0.032	0.016	0.040
Slovenia	-0.031	-0.014	-0.016	-0.038	-0.040	-0.014	0.003	0.038	0.068	0.021	-0.046
Lithuania	**-0.132**	-0.031	-0.024	-0.045	-0.058	-0.075	-0.060	-0.038	-0.078	**-0.114**	-0.229
Latvia	-0.073	***-0.105***	***-0.110***	***-0.101***	***-0.086***	**-0.074**	-0.059	-0.050	-0.033	-0.085	-0.142
Estonia	**0.102**	0.067	0.067	**0.125**	**0.149**	**0.171**	*0.176*	*0.157*	**0.195**	0.141	0.043
Cyprus	-0.127	-0.067	-0.036	-0.064	-0.061	-0.076	-0.098	-0.129	-0.135	-0.129	**-0.558**
Malta	**0.058**	0.043	0.045	0.032	0.039	0.044	0.053	0.108	0.096	0.102	**0.218**
Iceland	-0.030	-0.004	0.018	0.015	-0.009	0.010	0.021	0.027	0.059	0.043	0.041
Norway	0.029	-0.009	-0.008	-0.013	-0.009	0.007	0.018	0.030	0.049	**0.060**	**0.090**
Swiss	-0.023	-0.015	-0.025	-0.029	-0.028	-0.028	-0.032	**-0.050**	-0.045	**-0.073**	**-0.050**
Serbia	**-0.193**	-0.031	-0.065	-0.122	-0.083	-0.105	-0.115	**-0.212**	**-0.256**	**-0.191**	**-0.337**
Ukraine	-0.031	0.013	0.035	-0.011	-0.029	-0.021	-0.021	-0.034	-0.090	-0.027	-0.026

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 20: Benchmark Lag 9 – G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	**-0.033**	**-0.085**	-0.064	-0.035	**-0.026**	**-0.029**	**-0.034**	**-0.040**	**-0.042**	-0.025	-0.022
Japan	-0.025	**0.035**	0.011	-0.001	-0.014	-0.024	**-0.033**	**-0.036**	**-0.041**	**-0.048**	**-0.052**
Canada	**-0.031**	-0.028	-0.032	-0.020	**-0.027**	***-0.032***	***-0.038***	***-0.042***	***-0.045***	***-0.046***	-0.021
Germany	-0.007	-0.026	-0.041	-0.018	-0.038	-0.041	-0.041	-0.038	-0.028	-0.016	-0.012
UK	-0.012	-0.026	0.000	-0.009	-0.015	-0.027	-0.032	-0.024	**-0.040**	-0.018	-0.009
France	0.019	0.051	**0.088**	*0.088*	*0.087*	**0.096**	0.076	0.054	0.046	0.032	0.017
Italy	-0.042	0.013	-0.059	-0.010	-0.042	-0.042	-0.063	-0.065	-0.095	**-0.122**	**-0.103**
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	**-0.033**	-0.022	-0.030	-0.032	-0.028	-0.033	-0.022	-0.012	-0.015	-0.018	-0.043
Japan	-0.025	**-0.052**	**-0.057**	**-0.063**	**-0.067**	**-0.072**	-0.057	-0.056	-0.049	-0.049	-0.003
Canada	**-0.031**	-0.021	-0.030	-0.039	-0.017	-0.022	-0.012	0.006	0.009	0.037	0.018
Germany	-0.007	-0.012	-0.002	0.015	0.011	0.006	0.007	0.016	-0.001	**-0.022**	**-0.033**
UK	-0.012	-0.009	5E-05	-0.005	-0.001	0.004	0.005	-0.010	-0.004	0.013	-0.018
France	0.019	0.017	0.016	0.025	-0.015	-0.047	-0.044	-0.049	-0.061	-0.060	-0.035
Italy	-0.042	**-0.103**	***-0.109***	***-0.090***	-0.058	-0.048	**-0.079**	-0.049	-0.049	-0.009	-0.074

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 21: Benchmark Lag 9 – BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	-0.015	0.160	-0.034	0.018	0.063	0.049	0.015	0.005	-0.007	-0.107	-0.085
Russia	-0.092	-0.104	-0.047	0.077	0.144	0.133	-0.027	0.047	0.104	0.060	0.057
India	-0.015	0.061	0.033	0.008	0.000	-0.006	-0.001	0.006	0.024	0.019	0.003
China	-0.022	**0.228**	0.099	0.121	0.036	0.009	-0.033	-0.033	-0.061	-0.064	**-0.120**
South Africa	0.006	0.075	0.003	-0.018	-0.012	-0.032	-0.033	-0.026	-0.008	-0.008	-0.009
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	-0.015	-0.085	-0.116	-0.127	-0.099	-0.093	-0.113	-0.182	-0.061	-0.196	0.164
Russia	-0.092	0.057	0.103	0.095	0.081	0.044	0.018	0.100	0.063	-0.010	**-0.313**
India	-0.015	0.003	-0.009	-0.000	0.004	0.013	-0.008	-0.018	-0.084	-0.066	*-0.119*
China	-0.022	**-0.120**	**-0.128**	***-0.108***	***-0.116***	-0.084	-0.050	-0.078	-0.047	-0.064	-0.039
South Africa	0.006	-0.009	0.022	0.027	0.000	0.025	-0.005	0.018	-0.012	0.034	-0.004

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 22: Benchmark Lag 9 – N11

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Panel A: Low-Medium Quantiles											
South Korea	-0.025	0.056	0.020	-0.012	-0.041	-0.014	-0.025	-0.009	-0.013	-0.020	-0.030
Mexico	0.048	-0.058	-0.002	-0.019	0.046	0.028	0.037	0.039	0.046	0.069	**0.078**
Indonesia	0.060	0.106	0.106	**0.116**	**0.079**	0.068	**0.069**	0.053	0.037	0.029	0.019
Turkey	-0.003	0.032	0.065	0.031	-0.028	-0.036	-0.043	**-0.110**	-0.083	-0.063	-0.041
Philippines	-0.028	**-0.104**	-0.048	0.021	0.016	-0.014	0.023	0.013	0.019	0.006	0.024
Pakistan	-0.049	-0.103	**-0.153**	-0.128	-0.071	-0.057	-0.016	-0.013	-0.001	-0.019	-0.046
Bangladesh	-0.047	-0.028	-0.071	-0.052	-0.040	-0.035	-0.021	-0.030	-0.025	-0.019	-0.038
Egypt	-0.019	**-0.134**	***-0.156***	***-0.157***	-0.147	-0.082	0.025	0.011	0.039	-0.000	0.018
Vietnam	-0.063	-0.032	0.016	0.032	-0.056	-0.094	-0.076	-0.059	-0.037	-0.064	-0.115
Iran	0.012	-0.021	0.024	0.033	0.055	0.052	0.036	**0.069**	0.047	0.057	0.042
Nigeria	-0.041	-0.289	-0.022	-0.110	-0.113	-0.073	-0.102	0.058	0.100	0.098	0.096
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	-0.025	-0.030	-0.023	-0.012	-0.028	0.001	-0.015	-0.043	**-0.083**	**-0.066**	**-0.132**
Mexico	0.048	**0.078**	**0.080**	***0.094***	***0.088***	***0.101***	**0.117**	0.078	0.063	0.050	0.094
Indonesia	0.060	0.019	0.005	-0.001	0.020	0.026	0.041	0.053	**0.087**	0.005	0.009
Turkey	-0.003	-0.041	-0.019	-0.058	-0.092	-0.104	***-0.263***	***-0.241***	-0.205	-0.020	0.061
Philippines	-0.028	0.024	-0.002	-0.031	-0.008	-0.028	-0.030	-0.024	0.001	-0.011	-0.040
Pakistan	-0.049	-0.046	-0.047	-0.049	-0.042	-0.040	-0.030	-0.049	-0.007	-2E-05	-0.051
Bangladesh	-0.047	-0.038	-0.034	-0.040	-0.017	-0.019	-0.005	0.019	0.006	-0.094	-0.126
Egypt	-0.019	0.018	0.039	0.035	-0.005	-0.020	-0.002	0.029	0.045	0.069	-0.022
Vietnam	-0.063	-0.115	-0.067	-0.076	-0.037	-0.079	-0.109	-0.130	-0.200	0.015	0.031
Iran	0.012	0.042	0.037	0.036	0.033	0.010	0.011	0.027	0.028	0.011	**-0.229**
Nigeria	-0.041	0.096	-0.017	-0.016	0.016	0.007	0.008	-0.039	0.006	0.069	0.018

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 23: Benchmark Lag 9 – OPEC

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Panel A: Low-Medium Quantiles											
Iran	0.012	-0.021	0.024	0.033	0.055	0.052	0.036	**0.069**	0.047	0.057	0.042
Nigeria	-0.041	-0.289	-0.022	-0.110	-0.113	-0.073	-0.102	0.058	0.100	0.098	0.096
Saudi Arabia	-0.017	**-0.250**	**-0.093**	0.005	0.006	0.003	-0.009	0.030	0.024	0.031	0.024
Iraq	0.112	-0.117	-0.136	-0.019	9E-05	-0.057	0.047	0.047	0.059	0.028	0.019
Qatar	**-0.083**	0.053	-0.071	-0.095	-0.007	-0.020	-0.040	-0.053	-0.043	-0.057	-0.056
UAE	-0.056	-0.116	-0.060	-0.068	-0.015	-0.045	-0.066	-0.063	-0.036	-0.056	**-0.083**
Kuwait	0.031	-0.045	0.004	0.030	0.007	0.014	0.015	0.042	**0.079**	**0.079**	**0.083**
Algeria	-0.031	-0.017	**-0.046**	**-0.030**	**-0.039**	-0.020	-0.008	0.000	0.000	0.000	0.000
Ecuador	**0.052**	0.034	**0.065**	0.052	**0.066**	**0.092**	**0.067**	***0.041***	***0.046***	**0.048**	**0.051**
Venezuela	0.067	0.088	0.123	0.082	***0.158***	***0.139***	**0.106**	0.074	0.073	0.077	0.089
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	0.012	0.042	0.037	0.036	0.033	0.010	0.011	0.027	0.028	0.011	**-0.229**
Nigeria	-0.041	0.096	-0.017	-0.016	0.016	0.007	0.008	-0.039	0.006	0.069	0.018
Saudi Arabia	-0.017	0.024	-0.002	-0.005	0.009	-0.029	-0.034	-0.008	0.017	-0.074	-0.179
Iraq	0.112	0.019	0.039	0.010	0.065	0.077	0.062	0.185	**0.398**	**0.511**	**0.963**
Qatar	**-0.083**	-0.056	-0.053	-0.053	-0.034	-0.047	-0.091	-0.052	-0.148	**-0.169**	-0.201
UAE	-0.056	**-0.083**	***-0.103***	***-0.092***	**-0.079**	-0.067	-0.049	-0.096	0.005	-0.001	-0.029
Kuwait	0.031	**0.083**	**0.093**	**0.079**	0.053	0.020	0.024	0.040	0.030	0.004	0.101
Algeria	-0.031	0.000	0.000	0.000	-0.006	-0.014	0.016	0.022	0.022	-0.049	**-0.092**
Ecuador	**0.052**	**0.051**	0.034	0.034	**0.045**	***0.051***	***0.057***	***0.068***	**0.070**	0.045	0.015
Venezuela	0.067	0.089	0.040	0.030	0.070	0.021	-0.075	-0.015	-0.019	-0.085	-0.177

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 24: Benchmark Lag 9 –Asia and Oceania

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Australia	-0.005	0.037	0.018	-0.011	0.017	0.019	0.019	-0.025	-0.017	-0.027	-0.039
Hong Kong	-0.060	**-0.088**	**-0.126**	**-0.148**	-0.127	-0.086	-0.054	-0.055	-0.016	-0.025	-0.016
Malaysia	0.048	-0.025	0.046	**0.086**	**0.102**	***0.107***	***0.076***	***0.070***	**0.076**	0.053	0.051
New Zealand	-0.004	-0.012	0.007	0.020	0.005	-0.006	-0.000	-0.009	-0.011	0.006	0.016
Thailand	-0.001	**0.129**	0.055	0.004	0.010	0.026	0.042	0.035	-0.005	-0.023	-0.011
Singapore	-0.028	-0.000	-0.087	-0.010	-0.055	**-0.085**	-0.022	-0.023	-0.027	-0.043	-0.031
Taiwan	**-0.075**	**-0.206**	**-0.152**	-0.055	-0.024	-0.049	-0.027	-0.020	-0.005	0.008	0.018
Bahrain	-0.005	**-0.047**	-0.026	-0.006	-0.005	0.004	0.011	0.010	-0.004	-0.021	-0.024
Jordan	0.016	0.044	0.043	0.018	0.028	0.015	-0.020	-0.012	0.014	0.023	0.016
Lebanon	0.029	0.114	0.054	0.017	-0.014	-0.008	-0.021	0.004	0.017	0.019	0.019
Oman	-0.009	0.004	0.018	-0.029	-0.033	0.001	0.000	0.010	9E-05	-0.004	-0.008
Sri Lanka	0.008	0.087	-0.010	-0.002	0.004	0.000	0.001	-0.003	-0.004	-0.009	0.016
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	-0.005	-0.039	-0.022	-0.026	-0.036	-0.029	-0.018	0.010	-0.006	-0.022	0.003
Hong Kong	-0.060	-0.016	-0.008	-0.016	-0.051	-0.041	**-0.077**	-0.049	-0.002	0.001	-0.066
Malaysia	0.048	0.051	0.047	0.052	0.021	0.023	0.031	0.037	0.024	0.040	-0.039
New Zealand	-0.004	0.016	0.014	0.004	-0.010	-0.016	-0.018	-0.007	-0.007	0.013	-0.028
Thailand	-0.001	-0.011	-0.018	-0.039	-0.038	-0.049	-0.046	-0.044	**-0.073**	-0.037	0.010
Singapore	-0.028	-0.031	-0.023	-0.038	-0.026	-0.016	0.004	0.007	-0.019	-0.069	**-0.116**
Taiwan	**-0.075**	0.018	-0.005	-0.000	-0.002	-0.003	0.015	-0.027	-0.010	-0.055	0.017
Bahrain	-0.005	-0.024	-0.026	-0.027	-0.017	-0.004	-0.006	0.003	0.039	0.054	**0.123**
Jordan	0.016	0.016	-0.009	0.001	-0.008	-0.012	0.004	-0.042	**-0.084**	-0.034	-0.022
Lebanon	0.029	0.019	0.012	0.012	0.037	0.023	0.024	-0.004	0.028	**0.108**	**0.110**
Oman	-0.009	-0.008	-0.023	-0.031	0.015	0.052	0.021	-0.012	-0.019	0.026	0.080
Sri Lanka	0.008	0.016	-0.011	-0.016	-0.026	-0.017	0.005	-0.010	0.053	0.004	-0.043

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 25: Benchmark Lag 9 –Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	0.003	-0.055	-0.024	-0.027	-0.016	-0.003	0.004	0.012	0.009	6E-05	0.011
Cote 'Ivoire	0.002	-0.033	-0.002	0.038	0.032	0.057	0.044	0.008	0.011	0.016	0.017
Kenya	0.009	-0.042	0.021	**0.049**	**0.053**	**0.066**	**0.059**	0.040	0.030	0.034	0.054
Mauritius	-0.010	-0.116	-0.025	0.010	-0.000	0.007	0.009	0.015	0.009	0.014	0.016
Morocco	0.044	0.022	**0.076**	0.023	0.053	0.029	-0.003	0.023	0.024	0.030	0.038
Namibia	**0.035**	**0.035**	**0.047**	**0.043**	**0.031**	0.018	0.015	0.016	0.016	0.019	0.015
Tanzania	0.039	**0.116**	0.020	0.006	0.017	0.008	0.013	0.006	-0.003	-0.002	-0.009
Tunisia	0.036	0.047	0.035	**0.055**	**0.061**	***0.040***	***0.043***	**0.045**	0.036	0.030	0.010
Uganda	-0.006	**-0.151**	-0.107	-0.049	-0.056	-0.024	0.004	0.008	0.025	0.061	0.032
Zambia	0.005	**0.144**	0.083	0.033	0.012	0.040	0.037	0.021	0.010	0.022	0.020
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	0.003	0.011	0.011	0.009	0.017	0.007	0.013	0.024	0.022	0.006	0.035
Cote 'Ivoire	0.002	0.017	0.017	0.027	0.038	0.032	0.042	0.030	0.031	-0.039	-0.118
Kenya	0.009	0.054	0.050	0.060	0.056	0.039	0.022	0.002	-0.012	0.033	-0.008
Mauritius	-0.010	0.016	0.009	0.011	-0.003	-0.005	0.010	0.027	0.045	-0.021	-0.052
Morocco	0.044	0.038	0.037	0.060	**0.088**	0.034	0.046	0.042	**0.056**	0.039	**0.121**
Namibia	**0.035**	0.015	0.007	0.021	0.011	-0.003	0.020	0.016	0.056	**0.091**	**0.121**
Tanzania	0.039	-0.009	-0.009	-0.007	-0.011	-0.007	-0.000	-0.022	0.024	0.056	**0.116**
Tunisia	0.036	0.010	0.012	0.008	0.000	0.018	0.022	0.023	0.007	0.014	0.012
Uganda	-0.006	0.032	0.061	0.098	0.097	***0.137***	***0.142***	0.068	0.007	0.005	-0.019
Zambia	0.005	0.020	-0.002	-0.027	-0.056	-0.054	**-0.066**	-0.049	-0.097	-0.132	-0.104

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 26: Benchmark Lag 9 –American countries

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Chile	-0.005	-0.073	0.008	-0.015	-0.006	-0.000	0.013	0.047	0.029	0.049	0.063
Argentina	-0.082	0.145	0.068	0.046	-0.030	-0.063	-0.109	-0.097	**-0.113**	**-0.137**	**-0.139**
Colombia	**-0.088**	-0.081	-0.119	-0.067	-0.055	**-0.101**	**-0.104**	-0.074	**-0.108**	**-0.113**	-0.104
Costa Rica	-0.021	-0.088	-0.034	-0.021	-0.015	-0.005	-0.026	-0.020	-0.010	-0.007	-0.010
Peru	0.009	-0.044	0.009	0.048	0.011	-0.036	-0.023	0.012	0.035	0.050	0.027
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	-0.005	0.063	0.026	0.041	0.003	0.004	-0.003	-0.022	-0.012	-0.031	**-0.126**
Argentina	-0.082	***-0.139***	***-0.113***	-0.075	-0.077	-0.095	-0.100	-0.104	-0.117	-0.174	-0.264
Colombia	**-0.088**	-0.104	-0.087	-0.061	-0.074	-0.070	**-0.137**	-0.111	**-0.113**	*-0.116*	-0.065
Costa Rica	-0.021	-0.010	-0.029	-0.020	-0.008	-0.010	-0.020	0.028	0.016	-0.001	-0.006
Peru	0.009	0.027	0.020	-0.018	0.006	-0.009	-0.036	-0.027	-0.067	-0.114	-0.150

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 27: Benchmark Lag 9 – Global indices

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
MSCI ACWI	-0.027	-0.063	-0.041	**-0.062**	-0.044	-0.042	-0.050	-0.034	-0.032	-0.022	-0.018
MSCI World	**-0.035**	**-0.107**	**-0.052**	**-0.066**	-0.032	-0.030	-0.036	-0.031	-0.022	-0.019	**-0.022**
MSCI EAFE	**-0.033**	-0.035	-0.054	-0.051	-0.043	-0.039	-0.026	-0.027	-0.013	-0.009	-0.005
MSCI EM	-0.009	0.069	-0.007	-0.067	-0.011	-0.028	-0.027	-0.017	0.015	-0.011	-0.029
MSCI EU	**-0.042**	**-0.137**	**-0.093**	-0.057	-0.040	-0.020	-0.033	-0.034	-0.022	-0.026	-0.013
MSCI USA	**-0.032**	-0.059	-0.065	-0.034	-0.043	**-0.026**	*-0.030*	*-0.035*	*-0.040*	-0.031	**-0.035**
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	-0.027	-0.018	-0.012	-0.003	0.001	-0.011	-0.006	-0.024	0.006	-0.030	-0.033
MSCI World	**-0.035**	**-0.022**	**-0.026**	-0.020	-0.020	-0.021	-0.018	**-0.037**	**-0.047**	**-0.045**	-0.023
MSCI EAFE	**-0.033**	-0.005	-0.015	-0.025	-0.018	-0.017	-0.013	-0.027	***-0.020***	***-0.029***	**-0.043**
MSCI EM	-0.009	-0.029	-0.057	-0.049	-0.043	-0.045	-0.031	-0.003	0.005	-0.024	0.007
MSCI EU	**-0.042**	-0.013	-0.013	-0.015	-0.018	**-0.024**	**-0.033**	**-0.037**	**-0.042**	**-0.054**	**-0.048**
MSCI USA	**-0.032**	**-0.035**	-0.033	**-0.041**	-0.035	-0.033	-0.016	-0.019	-0.020	-0.033	-0.015

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 28: Benchmark Lag 12 – Europe

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Spain	**-0.082**	***-0.160***	***-0.196***	***-0.136***	**-0.117**	**-0.102**	**-0.088**	**-0.078**	**-0.078**	**-0.108**	**-0.066**
Netherlands	-0.031	**-0.141**	-0.064	-0.048	-0.063	-0.008	-0.003	-0.022	-0.015	-0.012	-0.006
Sweden	-0.048	**-0.235**	-0.049	**-0.111**	-0.052	-0.039	-0.027	-0.035	**-0.051**	**-0.056**	-0.047
Poland	0.050	0.029	0.043	0.040	0.028	0.013	0.043	0.015	0.037	0.066	0.088
Belgium	-0.045	**-0.168**	**-0.125**	**-0.092**	-0.052	-0.014	-0.014	-0.005	-0.017	-0.028	-0.032
Austria	-0.020	*-0.292*	*-0.140*	-0.051	-0.036	-0.014	-0.008	-0.011	-0.012	-0.005	0.006
Denmark	0.001	-0.090	**-0.088**	-0.082	-0.009	-0.004	-0.015	-0.001	-0.006	-0.011	-0.000
Ireland	-0.033	-0.096	-0.108	-0.035	-0.044	-0.067	-0.055	-0.030	0.004	0.004	0.006
Finland	-0.021	-0.161	-0.071	-0.082	-0.058	-0.031	-0.049	-0.043	-0.023	-0.003	0.009
Portugal	-0.056	-0.055	-0.033	**-0.083**	**-0.069**	-0.048	**-0.070**	-0.028	-0.013	-0.020	-0.032
Greece	**-0.089**	-0.056	-0.106	-0.053	-0.071	-0.070	**-0.098**	-0.077	-0.062	-0.061	-0.015
Czech	-0.006	-0.182	-0.095	-0.031	-0.007	-0.014	-0.014	-0.023	-0.011	-0.004	0.002
Romania	-0.015	**-0.468**	-0.188	-0.075	-0.075	-0.059	-0.029	-0.035	-0.031	-0.015	-0.014
Hungary	-0.000	-0.004	-0.013	0.033	0.006	-0.009	-0.003	-0.013	***-0.077***	***-0.078***	-0.060
Slovakia	0.031	**-0.129**	-0.046	-0.032	0.002	0.009	0.032	**0.052**	0.040	0.021	0.030
Luxembourg	-0.008	-0.197	-0.030	-0.069	-0.034	-0.025	-0.009	-0.019	0.009	0.048	0.065
Bulgaria	**-0.123**	**-0.142**	***-0.113***	***-0.170***	**-0.144**	-0.084	-0.048	-0.044	-0.026	-0.036	-0.024
Croatia	-0.001	-0.020	0.099	-0.025	-0.044	-0.024	-0.048	-0.012	0.014	0.003	0.013
Slovenia	-0.052	**-0.197**	**-0.117**	**-0.103**	**-0.079**	-0.039	-0.044	-0.032	-0.016	-0.006	-0.002
Lithuania	-0.006	-0.013	0.031	-0.000	-0.025	-0.018	-0.006	0.022	0.012	0.024	0.034
Latvia	0.023	-0.020	-0.013	-0.004	0.041	0.046	0.033	0.051	0.036	0.036	0.076
Estonia	0.017	-0.249	-0.047	0.079	0.025	0.015	0.018	0.002	-0.006	0.003	-0.006
Cyprus	-0.027	**-0.572**	-0.283	-0.189	-0.141	-0.119	-0.057	0.040	-0.063	-0.069	-0.001
Malta	-0.049	-0.052	-0.017	-0.034	0.009	-0.014	0.004	-0.026	-0.018	-0.019	-0.019
Iceland	-0.061	**-0.200**	-0.075	-0.033	-0.025	0.001	0.007	-0.009	-0.012	-0.024	-0.002
Norway	-0.012	-0.022	-0.021	-0.025	-0.018	-0.002	-0.009	-0.038	**-0.056**	-0.031	-0.020
Swiss	-0.014	-0.024	0.015	-0.007	-0.027	-0.034	-0.020	-0.044	-0.013	-0.014	-0.008
Serbia	-0.033	**-0.292**	**-0.180**	**-0.145**	-0.065	-0.018	-0.007	0.012	0.025	0.039	0.047
Ukraine	0.012	**-0.447**	-0.165	-0.069	0.047	0.040	0.011	-0.012	-0.053	-0.062	-0.071
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	**-0.082**	**-0.066**	**-0.061**	-0.045	**-0.059**	***-0.071***	***-0.071***	***-0.063***	-0.024	-0.014	-0.016
Netherlands	-0.031	-0.006	-0.015	-0.000	-0.013	-0.018	0.007	-0.006	0.006	-0.015	-0.032
Sweden	-0.048	-0.047	-0.037	-0.036	-0.004	-0.028	-0.038	0.004	-0.019	-0.050	-0.030
Poland	0.050	0.088	0.070	0.068	0.092	0.054	0.044	0.104	0.061	**0.093**	**0.141**
Belgium	-0.045	-0.032	***-0.044***	-0.031	-0.037	**-0.054**	**-0.044**	-0.026	-0.008	0.008	-0.010
Austria	-0.020	0.006	0.030	-0.001	0.012	0.013	-0.001	0.020	-0.006	0.019	0.088
Denmark	0.001	-0.000	0.008	0.027	0.015	0.018	0.034	0.029	**0.054**	0.033	0.072
Ireland	-0.033	0.006	-0.000	-0.012	-0.019	-0.022	-0.027	-0.031	0.001	0.008	0.007
Finland	-0.021	0.009	0.005	-0.007	-0.019	-0.012	-0.031	-0.015	0.025	0.085	0.072
Portugal	-0.056	-0.032	-0.039	-0.048	-0.071	-0.069	-0.080	**-0.101**	-0.105	-0.060	-0.108
Greece	**-0.089**	-0.015	-0.035	-0.043	-0.070	-0.041	-0.034	-0.029	-0.118	**-0.157**	**-0.326**
Czech	-0.006	0.002	-0.015	0.017	0.031	0.036	0.045	0.034	0.059	0.038	**0.093**
Romania	-0.015	-0.014	0.022	0.025	0.046	0.080	0.059	0.058	**0.087**	**0.093**	**0.160**
Hungary	-0.000	-0.060	-0.044	-0.016	-0.004	-0.018	-0.009	0.049	0.016	0.039	0.092
Slovakia	0.031	0.030	0.036	0.042	**0.056**	0.051	**0.066**	0.066	0.018	0.030	0.088
Luxembourg	-0.008	0.065	0.045	0.024	0.058	0.019	0.031	0.037	0.035	0.060	0.013
Bulgaria	**-0.123**	-0.024	-0.026	-0.060	-0.058	-0.035	-0.010	-0.065	-0.094	-0.106	**-0.356**
Croatia	-0.001	0.013	0.036	0.033	0.035	0.027	-0.008	-0.040	-0.025	-0.109	0.067
Slovenia	-0.052	-0.002	-0.005	-0.043	-0.053	-0.026	-0.013	-0.002	-0.026	-0.051	0.120
Lithuania	-0.006	0.034	0.033	0.048	**0.072**	**0.081**	0.042	-0.025	0.006	0.051	0.004
Latvia	0.023	0.076	0.055	0.032	0.045	0.049	0.042	0.045	0.081	0.066	-0.018
Estonia	0.017	-0.006	0.034	0.035	0.049	0.041	0.031	0.030	-0.013	0.035	0.062
Cyprus	-0.027	-0.001	-0.004	0.029	0.061	0.139	0.130	0.140	0.158	0.103	0.162
Malta	-0.049	-0.019	-0.026	-0.034	**-0.046**	**-0.051**	**-0.050**	-0.054	-0.008	-0.036	**-0.101**
Iceland	-0.061	-0.002	-0.004	-0.006	-0.001	0.011	-0.010	0.022	0.029	0.056	**0.108**
Norway	-0.012	-0.020	-0.008	-0.026	-0.014	-0.008	0.004	0.006	0.012	0.020	-0.009
Swiss	-0.014	-0.008	-0.007	0.007	-0.009	-0.016	-0.000	-0.016	-0.011	0.008	-0.038
Serbia	-0.033	0.047	0.070	0.055	0.080	-0.011	0.010	0.039	0.108	-0.012	0.181
Ukraine	0.012	-0.071	-0.045	-0.033	-0.024	0.037	0.088	0.117	0.116	**0.151**	**0.275**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 29: Benchmark Lag 12 – G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	-0.004	-0.056	**-0.058**	-0.027	-0.011	0.003	0.016	0.011	0.019	0.019	0.001
Japan	-0.013	-0.057	**-0.084**	-0.055	-0.057	-0.014	-0.019	0.000	-0.005	-0.017	-0.018
Canada	0.003	-0.002	-0.010	-0.004	0.010	0.019	0.015	0.003	-0.001	-0.006	-0.017
Germany	0.000	0.025	-0.005	0.042	0.013	-0.006	-0.023	-0.030	-0.041	-0.034	-0.045
UK	-0.009	0.020	0.008	-0.039	-0.030	-0.016	-0.025	-0.018	-0.024	-0.031	-0.027
France	-0.039	-0.095	0.002	0.001	-0.012	-0.068	-0.045	-0.051	-0.045	-0.038	-0.032
Italy	-0.045	0.091	-0.047	-0.004	-0.064	***-0.077***	***-0.084***	**-0.093**	-0.077	**-0.092**	-0.069
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	-0.004	0.001	0.003	0.007	0.011	0.002	-0.001	-0.014	-0.011	0.002	-0.000
Japan	-0.013	-0.018	-0.014	0.008	0.012	0.007	0.001	-0.004	0.007	0.011	-0.004
Canada	0.003	-0.017	-0.014	-0.009	-0.006	-0.000	-0.005	-0.008	-0.000	0.017	0.023
Germany	0.000	-0.045	**-0.062**	**-0.059**	-0.028	-0.029	-0.020	-0.010	0.010	0.016	0.000
UK	-0.009	-0.027	*-0.050*	-0.029	-0.018	-0.021	-0.014	-0.007	0.006	0.043	**0.074**
France	-0.039	-0.032	-0.019	-0.019	-0.010	-0.025	-0.040	-0.028	-0.042	-0.024	-0.020
Italy	-0.045	-0.069	-0.080	-0.074	-0.038	-0.060	-0.065	-0.069	-0.069	-0.159	-0.131

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 30: Benchmark Lag 12 – BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	-0.078	-0.234	-0.066	-0.114	-0.083	-0.060	-0.080	-0.060	-0.019	-0.027	0.022
Russia	-0.011	-0.160	-0.048	-0.172	-0.171	**-0.205**	-0.110	-0.043	-0.026	0.086	0.086
India	-0.006	-0.025	-0.047	-0.005	0.026	0.006	0.016	0.004	0.014	0.008	0.003
China	-0.020	0.042	0.006	-0.063	-0.090	-0.072	-0.084	-0.026	0.016	-0.000	-0.004
South Africa	-0.011	-0.047	-0.002	0.000	-0.019	-0.021	0.003	-0.005	-0.006	-0.001	-0.017
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	-0.078	0.022	0.074	0.059	0.006	-0.035	0.003	-0.043	-0.134	-0.170	0.029
Russia	-0.011	0.086	0.115	0.030	0.067	0.056	0.095	0.134	0.075	0.091	0.091
India	-0.006	0.003	-0.003	-0.029	-0.036	-0.027	-0.036	-0.036	-0.044	-0.005	0.049
China	-0.020	-0.004	-0.006	0.009	0.009	0.013	-0.007	-0.043	-0.022	-0.038	0.026
South Africa	-0.011	-0.017	-0.020	-0.019	-0.002	0.018	-0.008	-0.010	-0.051	-0.042	-0.023

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 31: Benchmark Lag 12 – N11

Panel A: Low-Medium Quantiles

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
South Korea	-0.017	-0.018	0.058	0.034	0.016	0.007	0.002	0.010	0.031	0.018	0.014
Mexico	-0.001	-0.125	-0.045	0.082	0.058	0.029	0.049	0.023	0.048	0.030	0.017
Indonesia	**-0.106**	**-0.152**	**-0.164**	**-0.133**	-0.088	-0.041	-0.022	-0.040	-0.029	-0.045	-0.033
Turkey	0.018	-0.081	-0.011	0.016	-0.059	-0.037	0.009	-0.021	-0.028	-0.047	-0.059
Philippines	**-0.087**	**-0.199**	-0.106	-0.047	**-0.068**	***-0.064***	***-0.069***	-0.046	-0.056	-0.055	-0.068
Pakistan	0.036	-0.053	0.019	**0.090**	**0.080**	0.056	0.034	0.025	0.010	-0.009	0.002
Bangladesh	-0.052	-0.199	-0.140	-0.074	-0.092	-0.055	**-0.094**	**-0.088**	**-0.066**	-0.055	-0.040
Egypt	-0.023	0.086	-0.061	-0.096	-0.125	**-0.139**	-0.098	-0.051	-0.003	0.000	-0.026
Vietnam	0.038	**0.135**	-0.027	-0.087	-0.012	-0.015	0.038	0.001	0.024	0.018	0.001
Iran	-0.022	-0.033	-0.025	-0.041	-0.049	-0.027	-0.035	-0.003	-0.008	0.015	0.016
Nigeria	0.111	**0.427**	**0.286**	***0.195***	***0.186***	***0.175***	0.150	0.098	0.051	0.093	0.058

Panel B: Medium-High Quantiles

	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	-0.017	0.014	0.009	-0.016	0.005	-0.016	-0.011	0.004	-0.011	**-0.026**	**-0.054**
Mexico	-0.001	0.017	0.020	0.005	0.023	0.000	0.012	-0.025	-0.014	-0.034	-0.089
Indonesia	***-0.106***	-0.033	-0.019	-0.011	-0.027	-0.045	-0.048	-0.028	-0.029	-0.005	-0.093
Turkey	0.018	-0.059	-0.031	-0.055	-0.034	-0.071	-0.036	0.011	**0.193**	**0.227**	**0.390**
Philippines	**-0.087**	-0.068	-0.057	-0.057	-0.066	-0.025	-0.044	-0.024	-0.025	-0.030	-0.000
Pakistan	0.036	0.002	0.000	-0.001	0.013	0.018	0.028	0.069	0.060	0.066	0.246
Bangladesh	-0.052	-0.040	-0.023	-0.024	0.022	0.042	0.033	0.025	0.033	0.041	0.045
Egypt	-0.023	-0.026	-0.015	-0.023	-0.005	0.014	-0.082	-0.025	0.017	0.058	0.124
Vietnam	0.038	0.001	0.035	0.046	0.080	0.038	0.088	0.121	**0.157**	**0.264**	**0.363**
Iran	-0.022	0.016	-0.002	-0.018	-0.001	-0.012	-0.032	-0.012	0.006	0.006	-0.096
Nigeria	0.111	0.058	0.036	0.068	0.053	0.036	0.001	-0.028	0.027	0.005	-0.046

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 32: Benchmark Lag 12 – OPEC

Panel A: Low-Medium Quantiles

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Iran	-0.022	-0.033	-0.025	-0.041	-0.049	-0.027	-0.035	-0.003	-0.008	0.015	0.016
Nigeria	0.111	**0.427**	**0.286**	**0.195**	**0.186**	**0.175**	0.150	0.098	0.051	0.093	0.058
Saudi Arabia	0.031	0.265	0.035	0.006	-0.012	0.006	-0.009	0.044	0.056	0.055	0.051
Iraq	0.097	-0.086	-0.037	0.001	-0.017	0.048	0.063	0.078	0.073	0.074	0.071
Qatar	-0.014	**-0.279**	0.022	-0.058	-0.005	0.038	0.047	0.033	0.010	-0.000	0.011
UAE	0.018	-0.120	0.013	-0.006	0.003	0.014	0.031	0.046	0.062	0.076	**0.085**
Kuwait	**0.063**	0.009	*0.065*	*0.077*	0.056	0.068	0.075	**0.088**	**0.091**	0.078	**0.079**
Algeria	0.010	0.041	0.010	0.039	**0.054**	**0.042**	0.017	0.011	0.000	0.000	0.000
Ecuador	0.007	0.009	0.009	-0.004	-0.040	-0.002	0.016	0.010	0.019	0.010	0.011
Venezuela	0.036	0.064	0.108	0.033	0.035	0.065	0.042	0.036	0.037	0.060	0.053

Panel B: Medium-High Quantiles

	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	-0.022	0.016	-0.002	-0.018	-0.001	-0.012	-0.032	-0.012	0.006	0.006	-0.096
Nigeria	0.111	0.058	0.036	0.068	0.053	0.036	0.001	-0.028	0.027	0.005	-0.046
Saudi Arabia	0.031	0.051	**0.063**	0.056	0.040	0.017	0.012	0.002	0.001	-0.004	0.085
Iraq	0.097	0.071	0.045	0.078	0.073	0.035	0.067	0.135	0.173	**0.320**	**0.682**
Qatar	-0.014	0.011	-0.010	-0.021	-0.005	-0.008	-0.040	-0.017	0.012	0.002	0.051
UAE	0.018	**0.085**	**0.093**	**0.100**	0.054	0.087	0.047	0.083	0.023	0.012	0.052
Kuwait	**0.063**	*0.079*	*0.076*	**0.100**	**0.094**	***0.080***	***0.083***	***0.071***	0.053	**0.090**	0.018
Algeria	0.010	0.000	0.000	0.000	0.008	0.018	0.020	-0.009	-0.000	-0.040	-0.081
Ecuador	0.007	0.011	0.021	0.030	0.030	0.049	0.045	0.026	0.016	-0.002	-0.018
Venezuela	0.036	0.053	0.023	0.025	-0.036	-0.002	-0.127	-0.120	-0.008	0.166	0.036

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 33: Benchmark Lag 12 –Asia and Oceania

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Australia	-0.007	-0.052	0.024	0.049	0.006	0.013	-0.001	-0.013	-0.012	-0.007	-0.011
Hong Kong	0.013	-0.102	-0.025	0.003	0.031	0.017	0.033	0.034	0.034	0.027	0.005
Malaysia	-0.034	-0.153	0.015	-0.026	-0.068	*-0.082*	*-0.063*	-0.046	**-0.052**	-0.037	-0.030
New Zealand	-0.027	**-0.100**	-0.065	-0.015	0.020	0.001	-0.010	-0.004	0.009	-0.007	-0.006
Thailand	0.012	-0.041	0.003	0.024	0.042	0.057	0.021	0.019	-0.006	-0.009	0.001
Singapore	0.009	**0.121**	0.062	-0.007	0.026	0.031	0.018	0.003	0.011	-0.019	-0.006
Taiwan	0.050	-0.027	-0.092	-0.018	-0.026	0.005	-0.017	-0.034	-0.012	0.002	0.005
Bahrain	-0.001	-0.066	-0.007	-0.002	0.018	0.033	0.047	0.024	0.022	0.042	0.049
Jordan	-0.018	**-0.046**	-0.035	-0.035	-0.037	-0.024	0.013	0.031	0.023	0.037	0.007
Lebanon	0.027	0.067	0.024	-0.006	0.004	0.018	0.015	0.002	0.009	0.029	0.037
Oman	**0.107**	0.144	**0.115**	***0.082***	***0.075***	***0.079***	***0.110***	**0.112**	**0.095**	**0.088**	0.046
Sri Lanka	-0.050	-0.153	-0.084	-0.076	**-0.075**	**-0.076**	-0.060	-0.031	-0.023	-0.023	-0.028
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	-0.007	-0.011	-0.002	-0.007	-0.012	-0.000	-0.011	-0.032	-0.046	-0.028	-0.026
Hong Kong	0.013	0.005	-0.001	0.002	-0.001	-0.025	-0.027	0.018	0.028	0.019	-0.004
Malaysia	-0.034	-0.030	-0.028	-0.030	-0.025	-0.011	-0.006	0.020	0.022	0.012	-0.029
New Zealand	-0.027	-0.006	-0.014	-0.006	-0.025	-0.039	-0.025	-0.019	-0.018	-0.033	-0.079
Thailand	0.012	0.001	-0.002	0.018	0.005	-0.017	-0.029	0.021	0.028	**0.073**	**0.078**
Singapore	0.009	-0.006	0.008	-0.011	-0.034	-0.016	-0.057	-0.071	-0.049	-0.071	-0.066
Taiwan	0.050	0.005	0.009	-0.001	0.026	0.017	0.061	0.071	*0.113*	*0.128*	**0.098**
Bahrain	-0.001	0.049	0.048	0.034	0.027	0.038	0.011	-0.028	-0.017	-0.073	-0.080
Jordan	-0.018	0.007	0.018	0.011	0.006	-0.000	0.029	0.036	-0.025	-0.026	-0.034
Lebanon	0.027	0.037	0.027	0.034	**0.063**	**0.082**	0.070	0.067	0.056	0.065	0.036
Oman	**0.107**	0.046	0.056	**0.071**	**0.092**	***0.121***	***0.097***	***0.126***	**0.152**	**0.176**	**0.176**
Sri Lanka	-0.050	-0.028	-0.028	-0.038	-0.065	-0.060	-0.043	-0.049	-0.030	0.014	-0.013

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 34: Benchmark Lag 12 –Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	-0.001	-0.024	-0.009	-0.003	-0.015	-0.007	-0.009	-0.005	0.013	0.024	0.024
Cote 'Ivoire	-0.007	-0.044	**-0.114**	**-0.075**	-0.063	-0.048	-0.025	-0.008	0.001	0.014	0.021
Kenya	-0.033	**-0.118**	-0.044	-0.010	0.003	0.013	0.001	-0.014	-0.009	-0.035	-0.024
Mauritius	*-0.039*	*-0.162*	**-0.078**	**-0.061**	***-0.060***	***-0.046***	***-0.034***	**-0.031**	**-0.032**	-0.017	-0.006
Morocco	0.024	-0.020	-0.064	-0.033	0.033	-0.008	-0.002	0.004	0.019	0.028	0.037
Namibia	0.016	0.041	-0.001	-0.006	0.001	0.013	0.006	0.007	0.004	0.002	0.006
Tanzania	0.024	0.044	0.039	0.039	0.012	0.004	0.005	0.005	0.003	0.001	0.005
Tunisia	0.002	-0.013	0.007	0.007	0.040	0.012	0.025	0.028	0.029	0.012	0.016
Uganda	0.071	0.033	0.040	0.064	0.000	0.070	0.092	0.092	0.114	0.094	0.085
Zambia	0.052	-0.020	0.005	0.028	0.035	0.038	0.024	0.009	0.031	0.055	**0.080**
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	-0.001	0.024	0.012	-0.001	0.007	0.009	0.003	0.005	0.023	-0.001	0.001
Cote 'Ivoire	-0.007	0.021	0.029	0.038	0.034	0.032	0.030	0.024	0.070	0.062	-0.124
Kenya	-0.033	-0.024	-0.001	-0.010	0.008	0.029	0.032	0.050	0.046	0.005	-0.081
Mauritius	**-0.039**	-0.006	0.004	0.006	0.019	0.009	-0.032	-0.037	-0.044	-0.055	-0.009
Morocco	0.024	0.037	0.049	**0.055**	**0.065**	**0.080**	0.054	0.033	0.011	0.039	0.015
Namibia	0.016	0.006	0.015	0.012	0.015	0.022	**0.032**	0.027	**0.044**	0.044	0.016
Tanzania	0.024	0.005	0.008	0.007	-0.000	0.005	0.014	0.014	0.002	0.073	0.060
Tunisia	0.002	0.016	0.013	0.002	-0.004	0.006	0.006	-0.035	-0.038	-0.001	0.028
Uganda	0.071	0.085	**0.137**	**0.141**	**0.136**	**0.136**	**0.121**	0.074	0.114	0.064	-0.049
Zambia	0.052	**0.080**	***0.077***	***0.079***	***0.087***	0.074	0.075	0.051	0.070	**0.126**	**0.159**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 35: Benchmark Lag 12 –American countries

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Chile	0.026	0.043	0.014	0.005	0.028	0.052	**0.081**	0.071	0.071	0.037	-0.006
Argentina	0.036	0.137	0.064	-0.003	0.021	-0.036	-0.060	-0.087	-0.056	-0.032	-0.004
Colombia	0.010	-0.029	0.000	0.103	0.046	0.063	0.033	-0.002	0.022	0.004	-0.012
Costa Rica	-0.021	0.053	-0.016	-0.027	-0.029	***-0.034***	***-0.035***	-0.021	-0.009	-0.001	-0.002
Peru	-0.011	0.091	0.026	0.040	0.018	-0.003	0.003	-0.029	-0.018	-0.033	-0.020
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	0.026	-0.006	-0.001	0.007	-0.002	0.020	0.023	-0.021	0.009	**0.060**	0.042
Argentina	0.036	-0.004	0.016	-0.003	-0.015	-0.000	0.013	-0.005	-0.029	-0.110	-0.109
Colombia	0.010	-0.012	-0.035	-0.047	-0.041	-0.028	0.006	0.038	0.036	0.028	-0.021
Costa Rica	-0.021	-0.002	0.006	0.008	0.008	0.011	0.001	-0.068	-0.055	-0.032	*-0.181*
Peru	-0.011	-0.020	-0.003	-0.023	0.004	-0.018	0.003	-0.055	-0.093	-0.053	-0.293

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 36: Benchmark Lag 12 – Global indices

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
MSCI ACWI	-0.008	-0.042	-0.013	-0.037	-0.014	-0.007	0.007	0.003	-0.005	-0.012	0.018
MSCI World	0.008	-0.002	-0.005	-0.027	-0.004	0.007	0.013	0.012	0.011	0.023	0.021
MSCI EAFE	0.023	-0.049	0.028	0.008	0.015	-0.001	0.020	0.020	0.016	0.021	0.029
MSCI EM	-0.039	-0.001	-0.015	0.043	-0.013	-0.011	-0.007	-0.020	-0.010	-0.017	-0.028
MSCI EU	0.018	-0.052	-0.013	0.001	0.004	0.012	-0.003	0.012	0.018	0.017	0.008
MSCI USA	-0.005	-0.056	-0.057	-0.027	-0.007	-0.001	0.013	0.009	0.012	0.009	0.008
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	-0.008	0.018	0.016	0.013	0.004	-0.005	-0.013	-0.017	-0.013	-0.013	-0.016
MSCI World	0.008	0.021	0.022	0.015	0.019	**0.037**	0.025	0.013	**0.030**	**0.023**	0.010
MSCI EAFE	0.023	0.029	**0.048**	0.036	0.036	0.040	0.029	0.035	0.034	**0.048**	**0.032**
MSCI EM	-0.039	-0.028	-0.043	-0.063	-0.047	**-0.075**	**-0.103**	***-0.125***	***-0.091***	***-0.083***	-0.015
MSCI EU	0.018	0.008	-0.000	-0.008	-0.002	-0.004	0.016	**0.049**	0.036	**0.047**	**0.034**
MSCI USA	-0.005	0.008	-0.001	0.005	0.004	0.000	0.005	0.000	-0.007	0.002	0.000

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 37: Benchmark NBER Lag 3 – Europe

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Panel A: Low-Medium Quantiles											
Spain	0.015	**0.187**	**0.136**	**0.102**	0.088	0.060	0.042	0.042	0.015	-0.004	-0.005
Netherlands	0.006	**0.122**	***0.081***	***0.064***	***0.071***	0.036	0.024	0.005	-0.019	-0.025	-0.042
Sweden	-0.013	0.039	**0.077**	0.024	-0.016	-0.032	-0.051	-0.041	-0.039	-0.005	-0.021
Poland	**0.094**	**0.280**	**0.197**	0.091	0.099	0.048	0.049	0.025	-0.003	-0.001	0.086
Belgium	-0.013	-0.000	-0.027	-0.044	-0.025	-0.014	-0.007	0.012	0.020	0.019	0.009
Austria	0.038	**0.116**	0.037	0.066	0.053	0.055	0.029	0.025	0.053	0.020	0.008
Denmark	0.008	**0.131**	*0.093*	*0.063*	0.043	0.002	-0.001	-0.008	-0.050	-0.047	-0.044
Ireland	0.033	0.128	0.124	0.061	0.014	0.006	0.011	0.016	0.027	0.036	0.043
Finland	0.008	**0.154**	0.103	0.054	-0.003	-0.000	-0.011	-0.024	-0.033	-0.051	-0.027
Portugal	-0.003	0.085	0.033	0.030	0.006	-0.001	-0.031	-0.029	-0.052	-0.030	-0.031
Greece	-0.029	-0.055	0.109	**0.168**	**0.128**	**0.124**	0.055	0.052	0.065	0.038	-0.009
Czech	**0.091**	**0.185**	**0.152**	**0.108**	0.079	0.056	0.056	0.030	0.028	0.058	0.010
Romania	0.042	0.258	0.159	-0.032	0.020	-0.012	-0.022	-0.051	-0.041	-0.026	0.008
Hungary	0.024	0.267	**0.113**	0.067	0.025	-0.001	-0.025	-0.037	-0.037	-0.010	0.008
Slovakia	0.017	-0.061	0.006	-0.049	-0.034	-0.013	0.005	0.017	0.005	0.008	0.003
Luxembourg	0.051	**0.157**	0.067	0.069	0.048	0.006	0.015	-0.000	0.027	-0.024	-0.062
Bulgaria	0.068	**0.253**	0.133	0.059	0.075	-0.015	-0.036	-0.011	0.028	0.067	0.080
Croatia	0.074	0.210	0.050	0.040	0.013	0.011	-0.009	0.035	0.035	0.016	0.026
Slovenia	-0.006	-0.007	-0.117	0.004	-0.012	-0.002	-0.036	-0.026	-0.013	-0.024	-0.017
Lithuania	**0.085**	0.093	0.045	0.051	0.065	0.033	0.017	0.024	0.038	0.035	0.017
Latvia	**0.129**	0.142	0.010	-0.001	0.043	0.070	***0.093***	***0.079***	***0.061***	**0.063**	**0.065**
Estonia	0.014	0.093	0.094	0.102	0.066	0.033	0.013	0.029	0.007	0.009	0.025
Cyprus	**0.294**	**0.853**	**0.523**	**0.418**	0.211	0.263	0.145	0.040	0.068	0.095	0.039
Malta	0.045	**0.077**	0.023	0.001	0.007	0.009	-0.004	-0.006	0.000	0.006	0.000
Iceland	0.072	-0.080	-0.007	-0.000	-0.006	0.016	-0.018	-0.015	-0.020	-0.012	0.007
Norway	-0.018	-0.014	-0.010	0.032	0.030	0.024	0.015	-0.008	-0.018	-0.029	**-0.049**
Swiss	0.016	0.090	**0.073**	**0.074**	0.051	0.011	-0.017	0.010	0.014	0.019	0.014
Serbia	0.086	0.030	-0.017	-0.031	-0.012	0.014	0.000	0.000	0.018	0.028	0.047
Ukraine	**0.156**	0.193	0.185	0.149	**0.192**	**0.192**	0.105	0.051	0.043	0.031	-0.011
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	0.015	-0.005	-0.003	-0.027	-0.027	-0.049	-0.049	-0.065	**-0.102**	**-0.115**	-0.052
Netherlands	0.006	-0.042	**-0.060**	**-0.066**	***-0.060***	***-0.058***	***-0.049***	**-0.072**	**-0.111**	**-0.115**	-0.059
Sweden	-0.013	-0.021	-0.024	-0.044	-0.050	-0.051	**-0.063**	-0.044	-0.027	-0.020	0.004
Poland	**0.094**	0.086	0.089	**0.107**	0.074	0.068	0.034	0.044	0.052	0.063	**0.115**
Belgium	-0.013	0.009	0.008	0.000	-0.014	-0.057	*-0.064*	*-0.063*	*-0.051*	**-0.055**	-0.056
Austria	0.038	0.008	-0.014	-0.019	-0.027	-0.035	-0.014	-0.038	-0.033	-0.026	0.071
Denmark	0.008	-0.044	-0.031	-0.028	-0.015	-0.042	-0.040	-0.064	-0.044	**-0.082**	-0.038
Ireland	0.033	0.043	0.009	0.004	0.002	-0.003	-0.005	-0.020	-0.044	-0.030	**-0.072**
Finland	0.008	-0.027	-0.021	-0.001	-0.005	-0.009	-0.016	-0.038	-0.065	-0.005	-0.123
Portugal	-0.003	-0.031	-0.028	-0.040	-0.034	-0.019	-0.025	-0.026	0.036	-0.011	-0.018
Greece	-0.029	-0.009	-0.038	-0.045	-0.050	-0.070	-0.091	-0.074	**-0.099**	**-0.155**	**-0.253**
Czech	**0.091**	0.010	0.002	-0.013	-0.024	-0.020	-0.000	0.028	0.026	0.055	**0.148**
Romania	0.042	0.008	0.017	-0.004	0.013	-0.021	0.027	0.032	0.048	0.071	0.009
Hungary	0.024	0.008	-0.016	-0.018	-0.012	-0.029	-0.035	-0.031	-0.028	0.040	0.062
Slovakia	0.017	0.003	0.001	-0.006	-0.000	0.023	0.009	0.009	**0.087**	**0.104**	**0.197**
Luxembourg	0.051	-0.062	-0.048	-0.046	-0.007	0.005	2E-05	0.031	-0.010	-0.019	0.000
Bulgaria	0.068	0.080	0.035	0.001	-0.004	-0.024	-0.040	-0.014	-0.024	0.014	0.102
Croatia	0.074	0.026	0.019	-0.009	-0.023	-0.032	-0.009	-0.002	0.015	0.020	0.053
Slovenia	-0.006	-0.017	0.006	0.034	0.022	0.022	0.039	0.052	-0.002	0.006	0.136
Lithuania	**0.085**	0.017	0.004	0.006	0.034	0.058	0.052	0.067	0.102	0.037	0.064
Latvia	**0.129**	**0.065**	0.062	**0.066**	0.056	0.069	**0.108**	**0.131**	**0.175**	**0.176**	**0.253**
Estonia	0.014	0.025	0.027	-0.014	-0.053	-0.049	-0.043	-0.044	-0.082	0.036	0.099
Cyprus	**0.294**	0.039	0.046	0.106	0.126	0.123	**0.153**	**0.197**	0.171	0.025	0.280
Malta	0.045	0.000	-0.001	0.018	0.031	0.023	0.036	0.072	**0.135**	0.102	**0.101**
Iceland	0.072	0.007	0.021	0.027	0.025	0.041	0.046	0.040	-0.008	0.010	0.108
Norway	-0.018	**-0.049**	**-0.049**	-0.032	-0.039	-0.026	-0.029	0.010	0.007	0.002	0.004
Swiss	0.016	0.014	-0.006	-0.012	-0.024	-0.020	-0.020	-0.027	-0.013	-0.006	-0.007
Serbia	0.086	0.047	0.010	0.032	0.070	0.078	0.047	0.086	**0.211**	***0.222***	***0.326***
Ukraine	**0.156**	-0.011	0.074	0.029	0.068	0.107	0.066	0.134	0.162	**0.216**	**0.431**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 38: Benchmark NBER Lag 3 – G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	0.016	0.016	**0.038**	**0.033**	**0.023**	0.015	0.012	0.010	0.029	0.018	0.019
Japan	0.015	0.043	0.059	0.059	0.046	0.033	0.034	0.030	0.015	0.013	0.013
Canada	0.008	0.002	**0.034**	0.009	0.005	0.005	-0.004	0.013	0.023	0.014	0.021
Germany	0.001	-0.054	0.005	**0.040**	0.016	0.007	0.003	-0.004	-0.010	-0.014	-0.018
UK	0.027	-0.009	0.003	0.038	***0.049***	0.035	0.021	0.018	0.020	0.024	0.036
France	**0.066**	***0.184***	0.114	0.077	0.063	*0.093*	0.049	0.048	0.041	0.040	0.030
Italy	0.027	0.089	-0.033	-0.027	-0.009	0.034	0.009	0.017	-0.010	0.013	-0.029
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	0.016	0.019	0.022	0.014	0.019	0.030	0.011	-0.005	0.000	0.002	0.001
Japan	0.015	0.013	0.007	0.005	0.019	-0.002	0.011	0.005	0.003	**-0.034**	**-0.032**
Canada	0.008	0.021	0.021	0.020	0.012	0.012	0.001	-0.000	-0.010	0.012	0.002
Germany	0.001	-0.018	-0.014	-0.023	-0.015	-0.020	-0.023	-0.023	-0.000	-0.017	0.047
UK	0.027	0.036	**0.039**	0.023	0.027	0.027	0.024	***0.034***	**0.043**	0.052	-0.004
France	**0.066**	0.030	0.027	0.025	0.008	0.017	0.040	0.031	0.027	0.058	0.041
Italy	0.027	-0.029	0.004	0.015	0.015	0.026	0.030	0.009	0.039	0.040	0.092

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 39: Benchmark NBER Lag 3 – BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	0.013	**0.179**	**0.147**	0.075	0.049	0.023	0.011	0.019	0.028	0.025	0.000
Russia	0.140	**0.493**	***0.291***	***0.225***	***0.218***	0.180	0.121	0.103	0.099	0.058	0.052
India	-0.020	-0.071	**0.082**	0.007	-0.020	-0.043	-0.037	-0.036	-0.038	-0.043	-0.032
China	0.057	0.045	-0.023	-0.038	-0.030	-0.006	0.024	0.059	0.078	0.081	**0.098**
South Africa	-0.003	0.046	-0.002	-0.026	-0.022	0.001	-0.002	-0.007	-0.051	-0.071	-0.047
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	0.013	0.000	-0.022	-0.032	-0.061	-0.078	-0.077	-0.062	-0.067	-0.379	-0.320
Russia	0.140	0.052	0.057	-0.005	-0.036	0.008	0.076	0.094	0.118	0.192	0.241
India	-0.020	-0.032	-0.026	-0.047	-0.037	-0.044	-0.048	-0.018	-0.021	-0.017	-0.092
China	0.057	**0.098**	0.042	-0.035	-0.007	0.005	-0.009	0.011	0.099	0.046	0.140
South Africa	-0.003	-0.047	-0.037	-0.062	***-0.081***	**-0.076**	-0.055	-0.026	0.027	0.037	0.061

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 40: Benchmark NBER Lag 3 – N11

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
South Korea	0.046	0.097	0.030	0.030	0.049	0.040	0.026	0.036	0.027	0.011	0.020
Mexico	0.009	**0.157**	0.079	0.037	0.066	0.032	0.012	-0.004	-0.013	-0.019	-0.013
Indonesia	-0.003	0.089	-0.011	-0.002	0.006	-0.043	-0.036	-0.039	-0.026	-0.013	-0.026
Turkey	0.065	0.049	0.039	0.075	**0.110**	***0.109***	0.078	0.028	0.006	-0.009	-0.040
Philippines	-0.026	0.056	-0.042	-0.026	-0.006	-0.012	-0.035	-0.068	-0.028	-0.043	-0.058
Pakistan	-0.007	-0.081	-0.056	0.033	**0.079**	0.048	0.006	0.031	0.009	-0.012	-0.015
Bangladesh	-0.006	-0.072	-0.042	-0.001	0.015	0.030	0.036	0.043	0.020	0.029	0.026
Egypt	0.078	0.239	0.130	**0.134**	**0.127**	***0.135***	***0.149***	***0.140***	**0.110**	0.101	0.087
Vietnam	0.083	0.085	0.148	0.073	0.099	0.082	0.001	0.020	-0.010	0.015	0.043
Iran	0.022	0.078	0.025	0.022	0.008	-0.014	-0.023	-0.013	0.028	0.045	0.040
Nigeria	0.011	0.040	0.060	0.123	0.119	0.052	0.052	0.021	-0.011	-0.048	-0.091
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	0.046	0.020	-0.004	-0.006	-0.020	-0.030	-0.014	0.041	**0.082**	***0.091***	***0.141***
Mexico	0.009	-0.013	-0.025	-0.037	-0.025	-0.035	-0.088	-0.067	-0.062	-0.080	-0.038
Indonesia	-0.003	-0.026	-0.029	-0.008	-0.012	-0.012	0.017	0.010	0.023	0.005	0.018
Turkey	0.065	-0.040	-0.032	0.001	-0.004	-0.052	0.034	0.067	0.147	0.123	0.232
Philippines	-0.026	-0.058	-0.061	-0.039	-0.023	0.003	0.034	0.036	0.023	-0.095	-0.051
Pakistan	-0.007	-0.015	-0.020	-0.021	-0.014	-0.027	-0.059	-0.095	**-0.129**	-0.087	-0.095
Bangladesh	-0.006	0.026	0.029	0.026	0.024	0.018	0.035	0.042	0.012	0.078	0.114
Egypt	0.078	0.087	0.036	0.076	0.092	0.074	0.032	-0.022	-0.028	-0.120	-0.116
Vietnam	0.083	0.043	0.077	0.126	**0.138**	0.138	0.179	0.088	**0.174**	0.091	-0.094
Iran	0.022	0.040	***0.053***	***0.055***	0.045	0.040	0.036	0.013	0.021	-0.028	-0.013
Nigeria	0.011	-0.091	-0.061	-0.065	-0.058	-0.099	-0.075	-0.033	0.010	-0.033	-0.022

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 41: Benchmark NBER Lag 3 – OPEC

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Iran	0.022	0.078	0.025	0.022	0.008	-0.014	-0.023	-0.013	0.028	0.045	0.040
Nigeria	0.011	0.040	0.060	0.123	0.119	0.052	0.052	0.021	-0.011	-0.048	-0.091
Saudi Arabia	0.028	0.135	0.089	-0.032	-0.030	-0.016	0.008	0.023	0.013	0.017	0.022
Iraq	**-0.485**	0.299	-0.023	0.003	-0.002	0.062	0.121	0.056	0.085	0.035	0.009
Qatar	0.080	0.014	0.101	0.055	0.098	0.062	0.041	0.029	0.040	0.027	0.036
UAE	0.023	0.096	0.080	**0.114**	0.050	0.072	0.074	0.030	0.013	0.032	-0.005
Kuwait	**0.100**	0.041	0.047	0.056	**0.082**	***0.115***	***0.103***	**0.116**	0.074	0.034	0.031
Algeria	0.020	**-0.054**	-0.035	-0.029	0.020	0.013	0.007	0.009	0.009	0.000	0.000
Ecuador	-0.010	**-0.042**	**-0.063**	***-0.032***	***-0.030***	-0.023	-0.021	-0.020	-0.020	-0.011	-0.010
Venezuela	-0.048	0.006	-0.018	-0.014	-0.001	0.001	0.030	0.027	0.015	-0.037	0.006
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	0.022	0.040	**0.053**	**0.055**	0.045	0.040	0.036	0.013	0.021	-0.028	-0.013
Nigeria	0.011	-0.091	-0.061	-0.065	-0.058	-0.099	-0.075	-0.033	0.010	-0.033	-0.022
Saudi Arabia	0.028	0.022	0.036	0.030	0.014	-0.017	-0.028	0.012	-0.017	0.041	0.089
Iraq	*-0.485*	0.009	0.004	0.010	-0.030	-0.039	0.010	0.028	0.073	-0.130	-0.090
Qatar	0.080	0.036	0.056	0.072	**0.104**	**0.116**	0.085	0.056	0.083	0.070	-0.021
UAE	0.023	-0.005	0.010	-0.035	-0.059	-0.058	-0.060	-0.102	-0.090	-0.051	0.084
Kuwait	**0.100**	0.031	0.026	0.035	0.045	0.019	0.036	0.075	**0.118**	**0.115**	**0.116**
Algeria	0.020	0.000	0.004	0.014	0.019	**0.042**	***0.053***	***0.053***	0.044	0.044	0.049
Ecuador	-0.010	-0.010	-0.005	0.007	-0.006	0.003	0.008	0.031	0.031	0.015	0.065
Venezuela	-0.048	0.006	-0.035	-0.033	-0.037	-0.011	-0.091	-0.040	-0.174	**-0.387**	-0.134

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 42: Benchmark NBER Lag 3 –Asia and Oceania

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Australia	0.024	0.047	0.036	0.002	0.014	0.024	0.037	**0.048**	0.028	0.046	0.039
Hong Kong	**0.079**	**0.207**	**0.118**	-0.015	0.016	0.021	0.028	0.039	0.058	0.051	0.063
Malaysia	0.027	0.181	0.097	0.114	0.053	0.055	0.038	0.025	0.016	-0.016	0.003
New Zealand	-0.003	0.066	0.015	-0.001	0.024	0.013	-0.024	-0.038	0.002	-0.019	-0.010
Thailand	0.043	0.121	**0.124**	0.047	0.077	0.050	0.031	0.041	0.052	0.049	0.032
Singapore	-0.000	**0.206**	0.134	0.049	-0.034	-0.028	-0.010	-0.027	-0.030	-0.027	-0.012
Taiwan	0.045	***0.104***	***0.064***	0.037	0.008	0.029	0.025	0.009	-0.009	-0.029	-0.032
Bahrain	0.031	-0.049	-0.034	-0.018	0.019	0.031	0.052	**0.074**	0.044	**0.061**	0.044
Jordan	0.038	0.036	-0.018	-0.040	-0.018	-0.009	0.035	0.017	0.017	0.021	0.021
Lebanon	-0.001	-0.024	-0.044	-0.012	0.004	0.005	0.005	0.016	-0.013	-0.005	0.000
Oman	**0.072**	0.090	**0.126**	0.042	0.047	0.045	**0.071**	***0.094***	***0.075***	0.022	0.035
Sri Lanka	0.014	**0.103**	0.047	0.045	0.062	0.015	0.001	-0.012	-0.003	-0.000	-0.013
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	0.024	0.039	0.033	0.023	0.034	0.012	-0.001	0.019	0.013	0.000	-0.024
Hong Kong	**0.079**	0.063	0.062	0.056	0.030	0.033	0.090	0.076	**0.117**	**0.133**	**0.127**
Malaysia	0.027	0.003	-0.000	-0.008	0.008	-0.015	-0.037	0.017	0.025	0.030	-0.045
New Zealand	-0.003	-0.010	-0.034	-0.043	-0.027	-0.026	-0.012	-0.004	-0.016	-0.005	0.015
Thailand	0.043	0.032	0.028	0.030	**0.053**	***0.062***	***0.070***	0.059	0.059	0.028	-0.001
Singapore	-0.000	-0.012	-0.014	-0.051	-0.049	-0.061	**-0.092**	**-0.109**	**-0.091**	-0.075	**-0.165**
Taiwan	0.045	-0.032	-0.031	-0.029	-0.028	-0.047	-0.034	-0.042	0.040	0.050	-0.035
Bahrain	0.031	0.044	0.037	0.028	0.026	-0.004	-0.030	-0.044	-0.040	-0.048	-0.011
Jordan	0.038	0.021	0.004	0.012	0.026	0.036	0.051	**0.057**	0.063	0.053	0.031
Lebanon	-0.001	0.000	-0.002	0.004	0.012	-0.004	-0.028	-0.022	-0.049	-0.012	-0.121
Oman	**0.072**	0.035	0.056	0.034	0.056	0.007	0.007	-0.002	0.037	0.052	0.000
Sri Lanka	0.014	-0.013	0.000	-0.011	0.003	0.008	-0.005	-0.055	-0.086	0.008	-0.005

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 43: Benchmark NBER Lag 3 –Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	**0.062**	-0.006	0.005	0.001	-0.002	0.002	0.022	0.024	0.029	**0.043**	**0.054**
Cote 'Ivoire	0.045	0.012	0.061	0.018	-0.011	0.054	0.059	0.051	0.012	0.019	0.012
Kenya	0.056	**0.180**	0.096	0.067	**0.070**	0.061	**0.064**	0.041	0.043	0.032	0.032
Mauritius	**0.051**	**0.119**	**0.084**	**0.051**	**0.046**	0.034	**0.041**	**0.040**	**0.046**	**0.041**	0.028
Morocco	-0.014	-0.009	0.027	-0.010	-0.031	-0.017	-0.005	-0.020	-0.035	-0.023	-0.046
Namibia	-0.004	**-0.026**	-0.014	***-0.031***	***-0.021***	***-0.019***	-0.013	-0.015	-0.015	-0.019	-0.012
Tanzania	-0.005	0.063	0.020	0.014	-0.012	-0.007	-0.007	-0.005	-0.003	-0.004	-0.005
Tunisia	-0.008	0.062	0.021	0.052	0.019	-0.006	-0.020	-0.010	-0.016	-0.026	-0.022
Uganda	**0.124**	**0.193**	0.136	0.138	**0.145**	**0.145**	0.130	0.106	0.088	0.067	0.078
Zambia	***0.091***	***0.241***	0.092	0.043	0.033	**0.048**	**0.060**	***0.057***	***0.101***	***0.105***	**0.110**
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	**0.062**	**0.054**	**0.070**	**0.092**	**0.095**	**0.100**	***0.083***	***0.089***	***0.098***	**0.075**	**0.173**
Cote 'Ivoire	0.045	0.012	0.018	0.034	0.037	**0.045**	**0.056**	**0.068**	**0.082**	**0.120**	0.059
Kenya	0.056	0.032	0.020	0.014	0.013	0.009	0.012	0.006	-0.015	-0.043	0.011
Mauritius	**0.051**	0.028	0.028	0.026	0.027	0.024	0.007	0.000	0.020	0.047	-0.005
Morocco	-0.014	-0.046	-0.024	-0.018	-0.024	0.001	0.002	-0.020	0.013	-0.009	-0.037
Namibia	-0.004	-0.012	-0.011	-0.010	-0.013	0.003	0.011	0.016	0.025	0.032	-0.017
Tanzania	-0.005	-0.005	-0.010	-0.009	-0.021	-0.028	-0.044	-0.057	-0.064	-0.067	0.041
Tunisia	-0.008	-0.022	-0.018	-0.014	-0.021	-0.026	-0.005	-0.025	-0.005	0.016	0.060
Uganda	**0.124**	0.078	0.038	0.037	0.081	0.048	0.034	0.036	0.067	**0.121**	**0.148**
Zambia	**0.091**	**0.110**	**0.100**	**0.107**	**0.114**	**0.098**	0.068	0.068	0.126	**0.183**	0.004

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 44: Benchmark NBER Lag 3 –American countries

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Chile	0.026	**0.118**	**0.083**	0.046	0.010	0.013	0.039	0.031	0.057	0.000	0.009
Argentina	*-0.132*	0.061	0.060	-0.006	-0.103	-0.038	**-0.113**	**-0.102**	-0.089	***-0.104***	-0.073
Colombia	0.021	0.107	-0.034	-0.017	0.004	0.004	-0.027	-0.033	-0.008	-0.008	0.003
Costa Rica	**0.060**	-0.055	0.051	0.046	***0.049***	0.043	0.041	0.046	0.023	0.023	0.040
Peru	0.030	0.125	0.042	0.043	0.033	0.003	-0.015	0.002	0.015	0.005	-0.004
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	0.026	0.009	0.001	-0.015	-0.030	-0.030	0.001	0.005	-0.050	-0.028	0.020
Argentina	**-0.132**	-0.073	-0.075	-0.064	-0.061	-0.078	**-0.121**	-0.104	-0.052	-0.155	-0.392
Colombia	0.021	0.003	0.026	0.047	0.047	0.066	0.014	0.015	-0.011	-0.046	0.003
Costa Rica	**0.060**	0.040	0.030	**0.062**	0.049	0.054	0.043	0.029	0.055	-0.028	-0.084
Peru	0.030	-0.004	0.018	-0.005	-0.002	-0.001	0.006	-0.000	-0.015	0.009	0.194

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 45: Benchmark NBER Lag 3 – Global indices

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
MSCI ACWI	0.032	-0.027	-0.006	0.044	**0.062**	0.052	**0.060**	0.051	0.039	0.025	0.014
MSCI World	0.015	-0.017	**0.045**	**0.029**	**0.022**	0.032	0.032	0.022	0.013	0.007	0.018
MSCI EAFE	0.018	0.010	***0.048***	***0.036***	0.021	0.032	0.037	0.040	0.036	0.013	0.025
MSCI EM	-0.009	0.003	-0.042	**-0.101**	-0.042	-0.029	-0.028	-0.007	-0.025	-0.018	-0.038
MSCI EU	0.016	**0.036**	***0.018***	***0.022***	0.061	0.053	0.057	0.036	0.037	0.031	0.018
MSCI USA	0.016	0.020	**0.039**	**0.030**	**0.022**	0.012	0.011	0.014	0.029	0.029	0.024
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	0.032	0.014	0.033	0.026	0.024	0.030	0.038	0.030	-0.000	-0.007	0.019
MSCI World	0.015	0.018	0.014	0.011	0.006	0.023	0.016	0.008	0.012	-0.004	0.011
MSCI EAFE	0.018	0.025	0.032	0.027	0.021	0.019	0.002	-0.015	-0.028	-0.011	0.036
MSCI EM	-0.009	-0.038	-0.032	-0.029	-0.007	-0.003	-0.005	0.016	0.071	0.058	0.078
MSCI EU	0.016	0.018	0.013	0.016	0.005	0.017	0.001	0.002	-0.007	-0.030	0.058
MSCI USA	0.016	0.024	0.021	0.020	0.029	0.035	0.009	-0.006	0.009	-0.003	0.012

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 46: Benchmark NBER Lag 6 – Europe

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Spain	-0.001	-0.088	0.024	0.045	0.064	0.033	0.028	0.041	0.036	0.041	0.006
Netherlands	-0.013	-0.065	-0.041	-0.036	-0.052	-0.021	-0.003	0.023	0.034	0.026	0.011
Sweden	0.002	-0.047	-0.064	-0.000	-0.020	-0.029	-0.013	-0.009	-0.011	-0.003	-0.006
Poland	-0.006	0.174	0.014	0.048	0.006	-0.007	-0.040	-0.013	-0.022	-0.025	-0.034
Belgium	-0.012	**-0.180**	***-0.114***	***-0.074***	-0.032	-0.023	-0.003	-0.006	0.000	0.011	0.016
Austria	-0.027	-0.100	0.018	0.027	0.020	0.021	0.003	-0.028	-0.048	-0.043	-0.031
Denmark	-0.036	-0.001	-0.079	-0.039	-0.001	0.007	-0.002	0.001	0.002	-0.023	-0.038
Ireland	-0.033	-0.052	-0.029	0.041	0.015	0.002	0.001	-0.009	0.023	0.018	0.044
Finland	-0.016	**0.133**	0.083	0.073	0.031	-0.010	-0.032	-0.034	-0.021	-0.035	-0.041
Portugal	-0.003	-0.016	-0.009	0.048	0.055	0.065	0.051	0.022	0.024	0.017	0.010
Greece	0.042	-0.079	-0.014	0.043	0.069	0.035	0.068	0.051	0.086	0.064	0.041
Czech	-0.060	-0.045	-0.074	-0.064	-0.058	-0.010	0.028	0.027	0.011	0.026	0.000
Romania	-0.061	0.140	-0.041	0.093	0.033	0.037	0.031	-0.011	-0.052	-0.040	-0.039
Hungary	-0.027	-0.054	-0.075	-0.050	-0.002	-0.000	0.001	-0.003	0.032	0.009	0.002
Slovakia	-0.009	-0.065	-0.082	-0.019	-0.020	-0.005	-0.009	0.020	-0.004	-0.016	-0.028
Luxembourg	**-0.081**	-0.239	**-0.177**	-0.144	-0.071	**-0.086**	-0.068	-0.041	-0.031	-0.034	-0.048
Bulgaria	**-0.116**	**-0.318**	**-0.160**	-0.125	-0.064	-0.030	-0.035	-0.046	-0.016	0.001	-0.005
Croatia	**-0.109**	***-0.290***	***-0.192***	-0.117	-0.015	-0.050	-0.031	-0.035	-0.006	-0.012	-0.002
Slovenia	**-0.125**	-0.009	-0.024	-0.042	-0.001	-0.021	-0.039	-0.066	-0.078	-0.088	-0.091
Lithuania	-0.051	0.021	-0.011	-0.067	-0.066	*-0.073*	*-0.078*	-0.062	-0.044	-0.045	-0.018
Latvia	-0.000	-0.049	-0.016	-0.004	0.004	0.025	0.009	0.014	0.003	0.013	-0.014
Estonia	-0.017	0.121	0.034	-0.067	-0.060	-0.040	-0.065	-0.059	-0.065	-0.021	-0.029
Cyprus	**-0.388**	-0.136	**-0.495**	-0.296	-0.253	**-0.322**	**-0.337**	**-0.266**	-0.151	-0.122	-0.090
Malta	-0.028	0.121	0.024	-0.033	-0.034	-0.004	-0.020	-0.013	0.003	-0.004	-0.005
Iceland	-0.033	0.030	-0.000	-0.002	0.040	0.036	0.070	0.051	0.045	0.031	0.014
Norway	0.021	-0.017	0.034	0.055	0.036	0.042	0.027	**0.070**	**0.060**	0.045	0.049
Swiss	0.021	0.010	0.034	0.055	0.049	0.046	0.029	0.012	-0.006	0.015	-0.000
Serbia	**-0.219**	-0.191	**-0.327**	**-0.261**	-0.135	-0.042	-0.086	-0.083	-0.085	-0.099	-0.117
Ukraine	**-0.130**	0.270	0.077	0.042	-0.001	-0.054	-0.078	-0.084	-0.108	-0.073	-0.067
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	-0.001	0.006	-0.006	0.000	-0.008	0.013	0.012	0.039	0.024	-0.001	-0.046
Netherlands	-0.013	0.011	0.005	0.005	0.008	0.030	0.023	0.028	-0.003	-0.035	-0.026
Sweden	0.002	-0.006	-0.002	0.026	0.013	0.042	0.028	**0.062**	0.026	0.053	0.018
Poland	-0.006	-0.034	-0.006	0.002	0.008	-0.003	-0.019	-0.038	-0.050	0.008	-0.000
Belgium	-0.012	0.016	0.037	0.036	**0.046**	0.041	0.033	0.022	-0.006	-0.016	**0.091**
Austria	-0.027	-0.031	-0.016	-0.011	-0.006	0.007	0.008	0.030	0.001	0.013	-0.026
Denmark	-0.036	-0.038	-0.047	-0.040	-0.041	**-0.052**	-0.028	-0.029	-0.006	0.006	-0.032
Ireland	-0.033	0.044	0.009	-0.018	-0.025	-0.036	**-0.061**	-0.047	-0.054	-0.016	0.009
Finland	-0.016	-0.041	-0.042	-0.056	**-0.088**	-0.063	-0.054	-0.063	-0.058	-0.024	0.031
Portugal	-0.003	0.010	0.003	-0.022	-0.004	-0.004	-0.037	-0.039	-0.018	0.014	-0.055
Greece	0.042	0.041	0.044	0.047	0.051	0.072	0.053	-0.016	-0.016	-0.066	0.002
Czech	-0.060	0.000	-0.029	-0.047	-0.028	-0.025	-0.048	-0.090	-0.081	-0.091	**-0.168**
Romania	-0.061	-0.039	-0.035	-0.021	0.007	0.008	-0.074	-0.060	-0.129	**-0.255**	-0.161
Hungary	-0.027	0.002	0.010	-0.019	-0.007	-0.066	-0.070	**-0.070**	-0.050	**-0.081**	0.014
Slovakia	-0.009	-0.028	-0.041	-0.049	-0.056	-0.063	**-0.087**	-0.055	-0.068	-0.027	-0.051
Luxembourg	**-0.081**	-0.048	-0.038	-0.031	-0.013	-0.015	0.008	-0.028	-0.023	-0.083	**-0.096**
Bulgaria	**-0.116**	-0.005	0.017	0.045	0.058	0.043	0.017	0.083	0.001	-0.010	-0.090
Croatia	*-0.109*	-0.002	0.002	0.031	0.011	-0.006	-0.040	-0.098	**-0.118**	**-0.133**	-0.113
Slovenia	*-0.125*	-0.091	**-0.109**	-0.089	-0.096	***-0.098***	***-0.144***	***-0.147***	**-0.193**	-0.166	-0.246
Lithuania	-0.051	-0.018	-0.040	-0.020	-0.032	-0.025	0.038	0.024	0.017	-0.004	-0.048
Latvia	-0.000	-0.014	0.003	0.005	0.002	0.001	0.016	0.035	0.018	0.038	0.038
Estonia	-0.017	-0.029	-0.052	-0.069	**-0.079**	-0.058	-0.052	-0.053	0.022	-0.003	-0.027
Cyprus	**-0.388**	-0.090	-0.079	-0.088	-0.084	-0.145	**-0.317**	**-0.394**	**-0.522**	**-0.556**	**-0.731**
Malta	-0.028	-0.005	-0.014	-0.021	-0.044	-0.050	***-0.066***	***-0.086***	**-0.081**	**-0.076**	**-0.103**
Iceland	-0.033	0.014	-0.004	0.018	0.031	0.036	0.036	0.036	0.045	0.055	**0.080**
Norway	0.021	0.049	**0.057**	0.047	0.024	0.000	-0.004	-0.048	-0.047	-0.021	-0.012
Swiss	0.021	-0.000	-0.004	-0.000	0.007	0.008	0.012	0.005	-0.001	-0.008	0.018
Serbia	**-0.219**	-0.117	-0.129	**-0.157**	-0.157	-0.138	-0.105	**-0.164**	**-0.164**	-0.041	-0.290
Ukraine	**-0.130**	-0.067	-0.066	-0.116	-0.121	-0.141	-0.103	-0.108	-0.101	-0.224	-0.317

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 47: Benchmark NBER Lag 6 – G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	-0.016	0.004	-0.004	-0.008	-0.019	-0.019	-0.010	0.006	-0.001	-0.008	-0.003
Japan	-0.027	0.029	0.019	**0.027**	0.019	0.004	0.000	-0.010	-0.010	-0.016	-0.022
Canada	-0.009	-0.029	-0.016	**-0.030**	-0.000	0.005	0.019	0.028	0.041	0.042	0.032
Germany	-0.008	-0.037	0.040	***0.053***	***0.039***	**0.028**	0.024	0.017	0.005	0.007	0.002
UK	0.012	-0.005	0.010	0.026	0.037	0.045	0.036	0.016	0.032	0.035	0.024
France	0.014	-0.058	-0.002	0.007	0.043	**0.086**	0.045	0.059	0.056	0.021	0.014
Italy	-0.043	0.001	-0.092	-0.053	-0.092	-0.012	0.003	0.031	-0.021	-0.021	-0.026
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	-0.016	-0.003	0.007	0.020	0.001	-0.026	-0.006	-0.007	-0.001	-0.028	-0.043
Japan	-0.027	-0.022	-0.027	**-0.039**	**-0.042**	***-0.047***	***-0.058***	-0.044	-0.029	-0.040	-0.043
Canada	-0.009	0.032	0.018	0.013	0.001	0.023	0.030	0.019	-0.000	0.000	-0.003
Germany	-0.008	0.002	-0.004	-0.012	-0.016	-0.018	-0.023	**-0.027**	**-0.039**	0.000	**-0.060**
UK	0.012	0.024	0.011	-0.001	-0.002	0.002	-0.006	0.001	0.010	-0.016	0.019
France	0.014	0.014	0.032	0.029	0.033	0.048	0.035	-0.005	0.020	0.025	0.017
Italy	-0.043	-0.026	-0.023	-0.046	-0.030	-0.053	-0.052	-0.009	-0.013	-0.081	-0.077

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 48: Benchmark NBER Lag 6 – BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	-0.099	**-0.328**	-0.182	-0.053	-0.033	-0.009	-0.059	-0.018	-0.036	-0.026	-0.036
Russia	**-0.449**	**-0.485**	-0.286	-0.252	-0.136	-0.151	-0.145	-0.114	-0.138	-0.147	-0.186
India	-0.017	-0.010	-0.000	0.016	0.016	0.036	0.039	0.025	0.020	0.017	0.031
China	-0.094	-0.031	0.154	-0.001	-0.018	0.018	0.022	-0.036	-0.044	-0.045	-0.050
South Africa	0.038	**0.132**	0.004	0.039	0.042	0.045	0.041	0.016	-0.014	0.009	0.032
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	-0.099	-0.036	-0.063	-0.110	**-0.161**	**-0.175**	**-0.191**	**-0.197**	-0.131	**0.154**	-0.155
Russia	**-0.449**	-0.186	-0.186	**-0.268**	***-0.268***	***-0.257***	***-0.340***	**-0.254**	*-0.226*	*-0.188*	**-0.179**
India	-0.017	0.031	0.040	0.018	0.009	-0.014	-0.019	-0.002	-0.045	0.017	-0.030
China	-0.094	-0.050	-0.061	-0.080	-0.050	-0.055	-0.083	-0.041	-0.003	-0.110	-0.099
South Africa	0.038	0.032	0.016	0.016	0.038	0.053	0.047	0.028	0.028	-0.000	-0.038

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 49: Benchmark NBER Lag 6 – N11

Panel A: Low-Medium Quantiles

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
South Korea	**-0.056**	-0.060	-0.073	-0.040	-0.042	-0.030	-0.010	-0.036	-0.023	-0.024	-0.035
Mexico	-0.052	0.082	-0.063	0.074	0.037	0.014	0.017	-0.014	-0.017	0.011	0.004
Indonesia	-0.033	-0.122	-0.047	-0.010	-0.015	0.001	-0.010	0.011	0.005	0.008	0.014
Turkey	-0.004	-0.004	0.031	-0.038	-0.027	-0.029	-0.037	-0.007	0.027	0.006	0.032
Philippines	-0.025	-0.122	-0.112	-0.067	-0.045	-0.059	-0.055	-0.058	-0.049	-0.055	-0.073
Pakistan	-0.003	0.133	***0.121***	0.081	0.064	0.015	0.002	-0.027	-0.007	-0.002	0.006
Bangladesh	0.001	-0.133	0.001	0.017	0.040	0.017	0.008	-0.013	-0.013	-0.011	0.009
Egypt	0.011	0.027	-0.039	-0.012	0.123	0.107	0.104	0.048	0.051	0.046	0.087
Vietnam	**-0.123**	-0.216	-0.066	-0.036	-0.044	-0.085	-0.083	-0.074	-0.087	-0.108	-0.083
Iran	-0.027	-0.010	-0.029	-0.049	-0.043	-0.056	-0.058	-0.048	0.003	0.003	-0.003
Nigeria	0.004	0.257	-0.005	-0.080	-0.038	-0.084	-0.080	-0.034	-0.098	-0.091	-0.126

Panel B: Medium-High Quantiles

	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	**-0.056**	-0.035	-0.038	-0.050	-0.028	-0.035	-0.043	-0.082	**-0.100**	**-0.078**	**-0.128**
Mexico	-0.052	0.004	-0.007	-0.034	-0.057	-0.066	**-0.075**	-0.070	-0.080	***-0.098***	**-0.098**
Indonesia	-0.033	0.014	0.018	0.001	-0.019	-0.035	-0.059	-0.070	**-0.115**	***-0.115***	**-0.116**
Turkey	-0.004	0.032	0.055	0.041	0.022	-0.050	-0.087	0.024	0.113	0.051	0.239
Philippines	-0.025	-0.073	**-0.084**	**-0.078**	-0.058	-0.045	-0.039	-0.011	0.023	**0.088**	-0.002
Pakistan	-0.003	0.006	0.001	-0.011	-0.001	0.005	0.010	0.034	0.076	0.038	-0.071
Bangladesh	0.001	0.009	0.027	0.031	0.018	0.018	0.010	-0.009	-0.014	0.008	0.045
Egypt	0.011	0.087	0.066	0.036	0.058	0.015	-0.065	-0.030	-0.020	-0.080	-0.069
Vietnam	**-0.123**	-0.083	-0.080	-0.091	-0.037	0.015	0.033	-0.025	-0.011	-0.021	-0.092
Iran	-0.027	-0.003	-0.009	-0.010	-0.032	0.001	-0.019	-0.039	-0.030	-0.027	0.003
Nigeria	0.004	-0.126	-0.079	-0.119	-0.024	-0.117	-0.103	-0.072	-0.067	0.021	0.017

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 50: Benchmark NBER Lag 6 – OPEC

Panel A: Low-Medium Quantiles

	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Iran	-0.027	-0.010	-0.029	-0.049	-0.043	-0.056	-0.058	-0.048	0.003	0.003	-0.003
Nigeria	0.004	0.257	-0.005	-0.080	-0.038	-0.084	-0.080	-0.034	-0.098	-0.091	-0.126
Saudi Arabia	-0.054	-0.115	-0.021	-0.032	-0.034	-0.049	-0.008	-0.016	-0.065	-0.061	-0.038
Iraq	**-0.375**	-0.145	0.056	-0.001	-0.022	-0.124	-0.022	-0.022	-0.071	-0.090	-0.142
Qatar	**-0.097**	-0.050	-0.087	-0.052	-0.039	-0.057	-0.028	-0.029	-0.039	-0.038	-0.013
UAE	-0.020	-0.028	-0.069	**-0.102**	-0.073	-0.067	-0.035	-0.026	-0.014	0.018	0.009
Kuwait	**-0.073**	-0.045	-0.064	-0.050	-0.069	-0.062	**-0.090**	-0.072	-0.046	-0.052	-0.058
Algeria	-0.027	**-0.049**	-0.020	-0.024	-0.014	-0.009	-0.001	0.000	0.000	0.000	0.000
Ecuador	0.030	0.035	**0.058**	**0.063**	0.015	0.018	0.027	0.014	0.016	0.020	0.036
Venezuela	**-0.145**	-0.029	-0.086	-0.086	**-0.109**	**-0.127**	-0.058	-0.046	-0.053	-0.077	-0.086

Panel B: Medium-High Quantiles

	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	-0.027	-0.003	-0.009	-0.010	-0.032	0.001	-0.019	-0.039	-0.030	-0.027	0.003
Nigeria	0.004	-0.126	-0.079	-0.119	-0.024	-0.117	-0.103	-0.072	-0.067	0.021	0.017
Saudi Arabia	-0.054	-0.038	-0.027	-0.041	-0.049	-0.037	-0.050	-0.127	**-0.176**	**-0.232**	-0.083
Iraq	**-0.375**	-0.142	-0.137	-0.127	**-0.142**	***-0.190***	***-0.204***	***-0.271***	**-0.301**	**-0.222**	**-0.487**
Qatar	**-0.097**	-0.013	-0.062	-0.041	-0.078	**-0.127**	**-0.148**	**-0.135**	-0.120	**-0.190**	-0.106
UAE	-0.020	0.009	-0.044	-0.047	-0.019	0.006	0.028	0.044	-0.008	0.034	0.113
Kuwait	**-0.073**	-0.058	-0.043	-0.060	-0.042	-0.059	-0.055	-0.048	-0.047	**-0.108**	**-0.091**
Algeria	-0.027	0.000	0.000	-0.001	-0.017	-0.025	-0.037	-0.050	-0.035	-0.026	-0.026
Ecuador	0.030	0.036	0.031	**0.043**	**0.048**	0.042	0.049	0.043	0.043	0.012	0.061
Venezuela	**-0.145**	-0.086	-0.090	-0.106	***-0.121***	***-0.167***	**-0.186**	-0.166	-0.160	**-0.209**	**-0.242**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 51: Benchmark NBER Lag 6 –Asia and Oceania

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Australia	-0.019	0.009	**0.067**	0.038	0.015	0.000	-0.005	-0.004	0.008	-0.009	-0.017
Hong Kong	-0.046	-0.052	**-0.080**	**-0.092**	-0.066	-0.043	-0.059	-0.023	-0.026	-0.016	-0.027
Malaysia	0.009	0.057	0.056	**0.104**	0.036	0.014	0.013	-0.005	0.003	0.014	0.006
New Zealand	**-0.052**	**-0.087**	-0.039	-0.032	-0.057	-0.061	**-0.090**	***-0.095***	***-0.071***	**-0.072**	-0.051
Thailand	-0.008	0.001	0.072	0.034	0.014	-0.047	-0.033	-0.029	-0.044	-0.047	-0.030
Singapore	**-0.067**	**-0.156**	-0.023	-0.038	-0.023	-0.027	-0.060	**-0.085**	**-0.084**	**-0.074**	-0.051
Taiwan	-0.058	-0.069	-0.070	-0.061	-0.059	-0.074	-0.057	-0.069	-0.038	-0.041	-0.019
Bahrain	-0.010	**-0.089**	**-0.047**	-0.032	-0.006	-0.034	-0.034	-0.027	0.007	-0.006	0.002
Jordan	-0.029	-0.126	-0.061	-0.068	-0.064	-0.040	**-0.051**	-0.049	-0.019	-0.026	-0.018
Lebanon	**-0.061**	***-0.185***	***-0.090***	***-0.074***	**-0.091**	**-0.073**	-0.053	-0.059	-0.041	-0.024	-0.027
Oman	-0.008	0.120	0.000	-0.001	-0.014	-0.020	-0.017	-0.023	-0.023	-0.015	-0.014
Sri Lanka	-0.006	-0.042	0.004	0.049	0.032	0.026	0.011	-0.014	-0.009	0.002	0.012
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	-0.019	-0.017	-0.040	**-0.054**	-0.042	**-0.050**	-0.021	-0.028	-0.020	-0.006	0.000
Hong Kong	-0.046	-0.027	-0.039	-0.001	0.030	-0.003	-0.001	0.035	0.015	-0.025	-0.002
Malaysia	0.009	0.006	0.024	-0.005	-0.005	0.012	0.022	-0.000	0.003	0.034	0.009
New Zealand	**-0.052**	-0.051	-0.041	**-0.056**	-0.048	-0.033	-0.016	-0.000	0.022	0.005	0.035
Thailand	-0.008	-0.030	-0.010	-0.000	0.006	-0.036	-0.045	-0.041	-0.023	-0.002	0.000
Singapore	**-0.067**	-0.051	-0.019	-0.015	-0.018	-0.010	-0.020	-0.036	-0.057	-0.045	-0.008
Taiwan	-0.058	-0.019	-0.018	-0.029	-0.037	**-0.046**	***-0.064***	***-0.080***	***-0.100***	-0.072	-0.082
Bahrain	-0.010	0.002	0.015	0.028	0.045	0.047	0.046	0.015	0.016	0.007	0.069
Jordan	-0.029	-0.018	-0.025	-0.004	-0.000	0.021	**0.053**	0.050	**0.079**	**0.084**	**0.084**
Lebanon	**-0.061**	-0.027	-0.034	-0.033	-0.043	-0.056	-0.045	0.003	-0.033	-0.066	0.096
Oman	-0.008	-0.014	-0.002	0.000	0.008	-0.035	-0.010	0.009	0.029	-0.001	0.000
Sri Lanka	-0.006	0.012	0.030	0.000	0.008	0.015	-0.005	-0.015	-0.049	-0.077	**-0.106**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 52: Benchmark NBER Lag 6 –Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	0.004	-0.071	-0.029	0.008	0.009	0.016	0.012	-0.018	-0.019	-0.028	-0.031
Cote 'Ivoire	-0.041	0.017	**-0.061**	-0.033	-0.039	-0.034	-0.019	-0.022	-0.022	-0.012	-0.021
Kenya	-0.022	-0.022	-0.031	-0.041	-0.038	0.006	-0.005	-0.010	0.005	0.018	0.029
Mauritius	-0.016	0.008	0.045	0.035	0.029	0.023	0.035	0.027	***0.033***	***0.036***	**0.037**
Morocco	0.021	**-0.090**	-0.040	0.023	0.050	0.040	0.038	0.030	0.055	0.049	0.044
Namibia	0.000	-0.007	0.003	0.010	0.003	-0.003	0.000	-0.001	0.002	0.009	0.006
Tanzania	0.013	-0.009	-0.003	0.003	-0.001	-0.002	-0.000	-0.001	0.002	0.012	0.012
Tunisia	-0.002	-0.049	0.011	0.040	0.022	0.014	0.027	0.013	0.000	0.012	0.012
Uganda	-0.052	-0.086	-0.127	-0.078	-0.052	0.015	-0.033	0.004	-0.048	-0.086	-0.064
Zambia	0.003	0.088	0.001	0.004	-0.003	0.021	0.021	0.030	0.059	**0.064**	**0.063**
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	0.004	-0.031	-0.029	-0.018	-0.004	0.007	0.013	0.029	0.037	0.021	0.043
Cote 'Ivoire	-0.041	-0.021	-0.027	-0.026	-0.042	-0.017	-0.028	-0.060	-0.068	**-0.174**	-0.060
Kenya	-0.022	0.029	0.011	0.004	-0.019	-0.024	-0.034	-0.005	-0.043	-0.089	**-0.141**
Mauritius	-0.016	**0.037**	***0.035***	0.019	0.025	0.017	-0.003	-0.019	-0.066	-0.097	**-0.219**
Morocco	0.021	0.044	0.015	0.024	0.015	-0.001	-0.016	-0.051	-0.060	-0.019	0.066
Namibia	0.000	0.006	0.013	0.011	0.011	0.018	**0.037**	0.035	0.023	**0.071**	0.013
Tanzania	0.013	0.012	0.012	0.015	0.019	0.015	-0.015	-0.022	-0.032	0.014	0.163
Tunisia	-0.002	0.012	0.010	0.005	0.000	0.016	0.017	0.014	0.009	-0.003	0.008
Uganda	-0.052	-0.064	0.004	0.021	-0.021	0.038	0.044	0.020	0.044	-0.033	**-0.124**
Zambia	0.003	**0.063**	**0.085**	**0.097**	0.034	0.056	0.058	0.026	0.013	**-0.161**	**-0.230**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 53: Benchmark NBER Lag 6 –American countries

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Chile	-0.040	-0.114	**-0.105**	-0.063	-0.061	-0.056	-0.061	**-0.070**	-0.058	-0.042	-0.057
Argentina	0.021	0.270	0.067	0.061	0.096	0.024	0.001	0.031	-0.005	-0.034	-0.022
Colombia	-0.034	-0.013	0.024	-0.040	-0.040	-0.020	-0.001	-0.004	-0.012	-0.021	-0.022
Costa Rica	**0.066**	0.020	0.061	0.026	0.014	0.037	0.034	0.027	0.010	0.018	0.032
Peru	*-0.100*	-0.028	-0.056	-0.073	-0.065	0.004	-0.016	-0.009	0.005	-0.005	-0.001
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	-0.040	-0.057	-0.029	-0.023	-0.011	-0.020	-0.004	-0.013	0.050	-0.040	-0.025
Argentina	0.021	-0.022	-0.040	-0.099	-0.107	-0.107	***-0.163***	-0.115	-0.077	-0.001	0.061
Colombia	-0.034	-0.022	-0.045	0.007	0.003	-0.027	-0.010	-0.010	0.009	-0.051	0.005
Costa Rica	**0.066**	0.032	0.040	0.049	0.032	0.053	0.073	**0.107**	0.102	0.056	**0.201**
Peru	**-0.100**	-0.001	-0.000	0.006	-0.003	-0.014	-0.041	-0.038	-0.090	-0.229	**-0.373**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 54: Benchmark NBER Lag 6 – Global indices

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
MSCI ACWI	-0.009	-0.033	-0.010	0.038	0.015	0.017	-0.010	0.002	0.011	-0.004	0.006
MSCI World	**-0.032**	-0.032	-0.008	-0.004	-0.020	-0.031	-0.042	-0.023	-0.026	-0.032	-0.018
MSCI EAFE	**-0.040**	-0.011	-0.005	-0.022	**-0.038**	-0.026	***-0.045***	***-0.060***	-0.050	-0.023	-0.029
MSCI EM	0.006	0.043	0.014	0.013	0.009	0.037	0.034	0.016	0.002	-0.004	-0.003
MSCI EU	**-0.033**	-0.023	-0.001	-0.007	-0.034	**-0.035**	-0.010	-0.011	-0.002	-0.014	-0.022
MSCI USA	-0.018	0.000	-0.008	-0.011	-0.025	-0.018	-0.002	-0.000	-0.006	0.001	0.003
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	-0.009	0.006	-0.012	-0.003	-0.007	-0.011	-0.019	-0.023	-0.004	-0.016	-0.006
MSCI World	**-0.032**	-0.018	-0.015	-0.006	-0.007	-0.011	-0.031	-0.023	**-0.039**	**-0.048**	-0.044
MSCI EAFE	**-0.040**	-0.029	-0.036	-0.034	-0.033	-0.035	-0.029	***-0.043***	***-0.054***	**-0.069**	-0.027
MSCI EM	0.006	-0.003	0.017	-0.011	0.006	-0.017	-0.014	-0.046	**-0.084**	-0.039	-0.017
MSCI EU	**-0.033**	-0.022	-0.031	-0.032	-0.007	-0.012	-0.017	-0.029	-0.048	-0.039	-0.052
MSCI USA	-0.018	0.003	0.005	0.011	0.000	-0.032	-0.009	-0.016	0.000	-0.031	-0.033

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 55: Benchmark NBER Lag 9 – Europe

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Spain	0.011	**0.141**	0.107	0.048	0.026	-0.002	-0.007	-0.012	-0.001	-0.000	-0.004
Netherlands	0.034	0.070	0.041	0.049	**0.047**	0.043	0.039	0.018	0.032	0.023	0.026
Sweden	**0.075**	**0.124**	**0.097**	**0.101**	**0.080**	0.071	0.044	0.055	0.072	**0.071**	**0.083**
Poland	-0.023	**0.299**	-0.084	**-0.089**	-0.038	-0.052	-0.027	-0.007	-0.019	-0.008	-0.052
Belgium	0.014	**0.122**	**0.066**	**0.064**	**0.051**	0.032	0.027	0.030	0.044	0.037	0.019
Austria	-0.011	**0.127**	0.060	0.005	0.022	-0.003	0.000	-0.016	-0.048	-0.057	-0.030
Denmark	**0.055**	*0.149*	**0.118**	***0.122***	***0.075***	***0.067***	**0.054**	0.054	0.050	0.044	0.021
Ireland	-0.003	0.018	0.025	0.033	0.011	-0.012	-0.018	-0.001	0.012	0.023	0.016
Finland	0.051	0.104	0.084	-0.018	0.040	0.038	0.019	0.036	0.015	-0.000	-0.016
Portugal	-0.038	-0.019	-0.013	-0.039	-0.031	**-0.060**	**-0.080**	**-0.060**	**-0.070**	**-0.056**	-0.041
Greece	-0.078	0.050	-0.153	**-0.190**	**-0.186**	**-0.138**	**-0.111**	**-0.095**	**-0.092**	**-0.099**	**-0.091**
Czech	-0.041	0.061	0.021	0.028	0.005	0.029	0.026	-0.016	0.004	-0.009	-0.004
Romania	-0.084	0.089	**-0.123**	**-0.111**	-0.055	-0.032	-0.015	-0.058	-0.041	-0.128	**-0.146**
Hungary	-0.014	0.073	0.015	0.038	0.089	**0.089**	0.074	0.061	0.059	0.066	0.062
Slovakia	-0.013	-0.002	0.016	-0.013	0.007	-0.008	0.020	0.013	0.031	-0.007	-0.005
Luxembourg	0.003	0.010	0.069	0.014	-0.023	-0.017	0.006	0.011	0.006	0.017	0.030
Bulgaria	**-0.150**	**-0.137**	-0.048	-0.049	-0.108	-0.074	-0.085	-0.100	**-0.127**	**-0.102**	-0.097
Croatia	0.021	**0.261**	0.044	0.118	0.049	0.030	0.044	0.053	0.053	0.027	0.038
Slovenia	-0.021	-0.011	-0.039	-0.050	-0.036	-0.018	-0.010	0.008	-0.004	0.004	-0.011
Lithuania	**-0.133**	**-0.216**	**-0.187**	**-0.161**	**-0.097**	**-0.112**	**-0.125**	**-0.082**	**-0.081**	**-0.092**	-0.049
Latvia	**-0.073**	-0.069	-0.074	-0.081	-0.116	**-0.148**	***-0.157***	***-0.091***	***-0.088***	**-0.086**	**-0.100**
Estonia	**0.102**	-0.070	-0.052	0.011	0.050	0.068	*0.082*	*0.095*	**0.094**	**0.101**	**0.091**
Cyprus	-0.118	-0.111	0.033	-0.006	0.066	-0.107	-0.086	-0.052	-0.113	-0.070	-0.025
Malta	**0.058**	-0.030	-0.011	0.039	0.026	0.041	**0.054**	**0.058**	**0.054**	**0.049**	**0.055**
Iceland	-0.029	**-0.116**	**-0.071**	-0.065	**-0.080**	**-0.075**	**-0.077**	-0.062	-0.058	**-0.064**	-0.020
Norway	0.027	0.046	0.036	0.031	0.017	0.000	-0.009	-0.009	-0.011	0.005	0.008
Swiss	-0.024	0.040	-0.015	-0.001	-0.023	-0.048	-0.033	-0.026	-0.027	-0.020	-0.025
Serbia	**-0.171**	-0.051	**-0.193**	-0.123	-0.079	-0.059	-0.049	-0.032	-0.069	-0.089	-0.084
Ukraine	-0.032	-0.017	0.052	0.026	0.047	-0.020	0.012	0.020	0.027	-0.021	-0.015
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	0.011	-0.004	0.001	0.012	0.005	0.004	-0.003	0.026	0.045	0.040	0.001
Netherlands	0.034	0.026	0.041	0.052	0.057	**0.062**	0.045	0.048	0.026	0.047	0.008
Sweden	**0.075**	**0.083**	0.058	**0.068**	**0.070**	**0.082**	**0.065**	**0.093**	**0.092**	**0.072**	0.086
Poland	-0.023	-0.052	-0.035	-0.047	-0.029	-0.039	-0.011	-0.015	0.009	-0.010	-0.024
Belgium	0.014	0.019	0.015	0.027	0.034	0.045	0.013	0.006	-0.005	-0.004	-0.069
Austria	-0.011	-0.030	-0.030	-0.027	-0.026	-0.051	**-0.056**	-0.053	-0.026	-0.016	**-0.125**
Denmark	**0.055**	0.021	0.018	0.030	0.013	0.024	0.022	0.018	0.029	0.006	-0.025
Ireland	-0.003	0.016	0.012	0.011	0.001	-0.009	-0.019	-0.016	-0.014	-0.003	0.000
Finland	0.051	-0.016	0.008	0.013	0.040	0.037	0.065	0.049	**0.108**	0.086	0.090
Portugal	-0.038	-0.041	-0.031	-0.021	0.000	0.016	-0.011	-0.046	-0.074	-0.013	-0.017
Greece	-0.078	**-0.091**	**-0.094**	**-0.101**	-0.082	-0.057	-0.077	-0.017	0.027	-0.017	0.009
Czech	-0.041	-0.004	-0.024	-0.065	-0.065	-0.082	**-0.105**	-0.082	**-0.138**	-0.110	-0.129
Romania	-0.084	**-0.146**	**-0.166**	**-0.165**	**-0.138**	-0.111	**-0.161**	**-0.122**	-0.081	-0.086	-0.131
Hungary	-0.014	0.062	0.025	0.004	0.000	-0.040	-0.037	-0.054	-0.094	**-0.145**	**-0.172**
Slovakia	-0.013	-0.005	-0.016	-0.012	-0.022	-0.035	0.006	0.008	0.043	0.034	0.083
Luxembourg	0.003	0.030	0.033	0.019	0.032	0.035	0.029	0.050	0.034	0.058	0.044
Bulgaria	**-0.150**	-0.097	-0.081	-0.101	-0.083	-0.114	-0.119	**-0.253**	-0.178	-0.130	-0.247
Croatia	0.021	0.038	0.006	-0.031	-0.031	0.000	-0.006	-0.004	0.058	0.033	-0.000
Slovenia	-0.021	-0.011	-0.006	-0.024	-0.029	-0.012	0.003	0.038	0.074	0.015	-0.046
Lithuania	**-0.133**	-0.049	-0.055	-0.042	**-0.082**	**-0.077**	-0.057	-0.038	-0.078	**-0.114**	-0.161
Latvia	**-0.073**	**-0.100**	**-0.101**	**-0.099**	**-0.086**	**-0.071**	**-0.065**	**-0.067**	-0.013	-0.082	-0.057
Estonia	**0.102**	**0.091**	0.081	**0.125**	**0.180**	**0.185**	***0.178***	***0.189***	**0.205**	0.140	0.063
Cyprus	-0.118	-0.025	-0.036	-0.051	-0.061	-0.074	-0.087	-0.129	-0.135	-0.129	-0.200
Malta	**0.058**	***0.055***	***0.043***	**0.047**	0.050	**0.061**	**0.089**	**0.110**	0.096	0.141	0.164
Iceland	-0.029	-0.020	-0.015	-0.015	-0.005	0.002	0.012	0.026	0.047	**0.067**	0.042
Norway	0.027	0.008	-0.000	0.003	-0.003	0.002	0.026	0.030	**0.064**	**0.064**	**0.105**
Swiss	-0.024	-0.025	-0.026	-0.040	-0.029	-0.020	-0.029	*-0.049*	-0.041	**-0.081**	-0.046
Serbia	**-0.171**	-0.084	-0.090	-0.134	-0.097	-0.112	-0.071	*-0.212*	**-0.231**	**-0.208**	**-0.337**
Ukraine	-0.032	-0.015	0.039	0.002	-0.006	0.023	-0.033	-0.027	-0.069	-0.004	-0.021

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 56: Benchmark NBER Lag 9 – G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	**-0.031**	-0.016	-0.023	-0.004	-0.016	-0.021	-0.017	**-0.026**	**-0.029**	**-0.033**	**-0.032**
Japan	-0.022	**0.066**	0.036	0.019	0.004	-0.008	-0.017	**-0.029**	-0.022	**-0.029**	**-0.035**
Canada	-0.029	-0.093	-0.032	0.009	-0.013	-0.017	**-0.026**	**-0.027**	**-0.029**	**-0.036**	-0.026
Germany	-0.003	-0.022	0.011	-0.030	-0.041	-0.053	-0.039	-0.024	-0.021	-0.012	-0.012
UK	-0.012	0.026	-0.004	-0.002	-0.022	-0.008	-0.020	-0.026	**-0.040**	-0.018	-0.008
France	0.017	0.054	**0.102**	**0.086**	***0.102***	***0.113***	***0.075***	0.069	0.039	0.021	0.014
Italy	-0.042	0.000	0.014	0.002	-0.023	-0.018	-0.059	-0.073	-0.064	-0.057	**-0.091**
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	**-0.031**	**-0.032**	-0.023	-0.026	-0.028	-0.033	-0.018	-0.008	-0.005	-0.002	-0.019
Japan	-0.022	*-0.035*	*-0.042*	**-0.056**	***-0.062***	***-0.064***	***-0.057***	***-0.064***	-0.050	-0.048	-0.052
Canada	-0.029	-0.026	-0.027	-0.031	-0.019	-0.021	-0.012	0.000	0.010	0.029	**0.053**
Germany	-0.003	-0.012	-0.007	0.007	0.014	0.015	0.011	0.018	-0.001	-0.021	**-0.035**
UK	-0.012	-0.008	0.001	-0.008	-0.004	0.005	-0.003	0.000	-0.007	0.008	0.001
France	0.017	0.014	0.009	-0.000	-0.019	-0.049	-0.044	-0.049	-0.059	-0.060	-0.023
Italy	-0.042	**-0.091**	***-0.082***	***-0.083***	-0.061	-0.046	**-0.079**	-0.067	-0.052	0.000	-0.074

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 57: Benchmark NBER Lag 9 – BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	-0.016	0.088	0.027	0.024	0.058	0.000	0.018	0.000	-0.032	-0.071	-0.077
Russia	-0.092	-0.033	0.119	0.114	0.165	0.149	-0.008	0.050	0.104	0.061	0.057
India	-0.014	0.028	0.026	0.022	0.032	-0.015	-0.015	-0.000	-0.000	0.015	0.002
China	-0.022	**0.197**	0.148	0.098	0.000	-0.002	-0.034	-0.025	-0.062	-0.089	**-0.120**
South Africa	0.006	-0.020	-0.005	-0.006	-0.018	-0.029	-0.030	-0.040	-0.011	-0.009	0.007
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	-0.016	-0.077	-0.092	-0.124	-0.134	-0.108	-0.150	-0.182	-0.043	-0.196	0.193
Russia	-0.092	0.057	0.079	0.071	0.069	0.046	0.021	0.089	0.079	-0.002	**-0.313**
India	-0.014	0.002	-0.012	0.005	0.028	0.017	-0.008	-0.009	-0.019	-0.065	**-0.136**
China	-0.022	**-0.120**	**-0.136**	***-0.108***	***-0.116***	-0.084	-0.050	-0.072	-0.046	-0.002	-0.156
South Africa	0.006	0.007	0.013	0.025	0.001	0.017	-0.005	0.015	-0.000	0.024	0.014

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 58: Benchmark NBER Lag 9 – N11

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
South Korea	-0.025	0.057	0.008	-0.014	-0.040	-0.020	-0.022	-0.007	0.002	-0.026	-0.028
Mexico	0.047	-0.067	-0.042	-0.029	-0.003	0.037	0.040	0.048	0.061	**0.089**	**0.079**
Indonesia	0.059	**0.164**	0.074	**0.108**	**0.084**	***0.083***	***0.078***	0.051	0.039	0.029	0.033
Turkey	-0.004	0.074	0.057	0.024	-0.041	-0.065	-0.070	-0.084	-0.071	-0.044	-0.020
Philippines	-0.029	-0.093	0.030	-0.009	0.005	-0.019	0.026	0.016	0.018	0.036	0.014
Pakistan	-0.050	-0.133	**-0.165**	-0.106	-0.079	-0.057	-0.016	-0.008	-0.013	-0.024	-0.035
Bangladesh	-0.047	**-0.208**	-0.108	-0.055	-0.041	-0.027	-0.023	-0.033	-0.025	-0.019	-0.035
Egypt	-0.019	**-0.169**	***-0.169***	***-0.167***	-0.090	-0.032	0.000	0.041	0.045	0.016	0.036
Vietnam	-0.062	-0.010	-0.095	-0.001	**-0.097**	-0.089	-0.059	-0.040	-0.030	-0.068	-0.107
Iran	0.012	-0.042	0.012	0.051	0.046	0.047	0.036	*0.068*	0.047	0.054	0.042
Nigeria	0.001	-0.289	-0.022	-0.110	-0.113	-0.073	-0.102	0.058	0.100	0.098	0.096
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	-0.025	-0.028	-0.019	-0.016	-0.011	0.004	-0.015	-0.045	**-0.088**	-0.066	-0.131
Mexico	0.047	**0.079**	***0.090***	***0.083***	***0.088***	**0.101**	**0.107**	0.066	0.063	0.050	0.029
Indonesia	0.059	0.033	-0.006	0.002	0.020	0.014	0.026	0.054	**0.077**	0.001	0.009
Turkey	-0.004	-0.020	-0.011	-0.073	-0.124	-0.133	***-0.279***	***-0.241***	-0.169	-0.040	-0.143
Philippines	-0.029	0.014	0.007	-0.000	0.009	-0.028	-0.034	-0.033	-0.000	-2E-05	-0.027
Pakistan	-0.050	-0.035	-0.039	-0.036	-0.037	-0.045	-0.051	-0.051	-0.013	0.009	-0.051
Bangladesh	-0.047	-0.035	-0.035	-0.045	-0.009	-0.026	-0.008	0.032	0.019	-0.102	-0.137
Egypt	-0.019	0.036	0.053	0.023	0.004	-0.033	-0.030	0.029	0.045	0.066	-0.026
Vietnam	-0.062	-0.107	-0.067	-0.085	-0.101	-0.034	-0.090	-0.109	-0.097	-0.064	-0.129
Iran	0.012	0.042	0.046	0.038	0.033	0.018	0.007	-0.006	0.030	0.005	-0.072
Nigeria	0.001	0.096	-0.017	-0.016	0.016	0.007	0.008	-0.039	0.006	0.069	0.018

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 59: Benchmark NBER Lag 9 – OPEC

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Iran	0.012	-0.042	0.012	0.051	0.046	0.047	0.036	**0.068**	0.047	0.054	0.042
Nigeria	0.001	-0.289	-0.022	-0.110	-0.113	-0.073	-0.102	0.058	0.100	0.098	0.096
Saudi Arabia	-0.017	-0.176	-0.093	0.016	0.006	-0.007	0.026	0.024	0.026	0.009	0.007
Iraq	0.098	-0.098	-0.170	-0.019	0.009	-0.043	0.005	0.022	0.050	0.043	0.038
Qatar	**-0.083**	0.011	-0.013	0.002	-7E-5	-0.012	-0.023	-0.053	-0.046	-0.045	-0.041
UAE	-0.053	0.046	-0.082	-0.029	-0.018	-0.042	-0.070	-0.046	-0.034	-0.043	**-0.104**
Kuwait	0.031	-0.043	0.020	0.002	-0.004	0.037	0.015	0.042	**0.079**	**0.075**	**0.078**
Algeria	-0.030	**-0.068**	**-0.049**	**-0.030**	**-0.037**	**-0.021**	-0.006	-0.005	0.000	0.000	0.000
Ecuador	**0.057**	0.041	**0.058**	**0.067**	**0.092**	**0.067**	0.046	**0.047**	**0.050**	**0.056**	**0.065**
Venezuela	0.067	0.065	0.123	0.075	**0.168**	**0.132**	**0.111**	0.068	0.064	0.064	0.067
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	0.012	0.042	0.046	0.038	0.033	0.018	0.007	-0.006	0.030	0.005	-0.072
Nigeria	0.001	0.096	-0.017	-0.016	0.016	0.007	0.008	-0.039	0.006	0.069	0.018
Saudi Arabia	-0.017	0.007	-0.020	-0.003	-0.017	-0.017	-0.006	-0.001	0.022	-0.074	-0.169
Iraq	0.098	0.038	0.057	0.057	0.036	0.075	0.039	0.057	0.094	0.094	0.345
Qatar	**-0.083**	-0.041	-0.048	-0.048	-0.045	-0.049	-0.095	**-0.135**	-0.041	-0.166	-0.111
UAE	-0.053	**-0.104**	**-0.100**	***-0.099***	***-0.088***	-0.067	-0.049	-0.095	0.016	-0.001	0.065
Kuwait	0.031	***0.078***	***0.089***	**0.070**	0.053	0.019	0.026	0.024	0.002	0.031	0.110
Algeria	-0.030	0.000	0.000	0.000	-0.007	-0.014	-0.000	0.019	0.032	-0.046	-0.088
Ecuador	**0.057**	**0.065**	**0.050**	**0.053**	**0.049**	***0.056***	***0.061***	***0.072***	**0.073**	0.063	0.008
Venezuela	0.067	0.067	0.075	0.050	0.068	0.034	-0.000	0.007	-0.078	-0.141	-0.271

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 60: Benchmark NBER Lag 9 –Asia and Oceania

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Australia	-0.005	0.081	0.037	0.002	0.024	0.029	0.030	-0.017	-0.012	-0.024	-0.039
Hong Kong	-0.054	0.003	**-0.064**	***-0.088***	***-0.084***	-0.040	-0.045	-0.009	0.004	-0.017	-0.016
Malaysia	0.049	0.161	0.077	**0.133**	**0.107**	**0.070**	**0.070**	**0.086**	**0.076**	0.059	0.044
New Zealand	-0.004	0.012	**0.042**	0.025	0.019	0.012	-0.001	-0.011	-0.014	0.009	0.010
Thailand	-0.000	0.059	0.039	-0.000	0.014	0.033	0.042	0.041	-0.005	-0.037	-0.005
Singapore	-0.028	-0.106	0.007	-0.039	-0.031	0.000	-0.002	-0.018	-0.039	-0.049	-0.032
Taiwan	**-0.070**	***-0.150***	***-0.143***	-0.053	-0.037	-0.054	-0.049	-0.026	-0.004	0.002	0.025
Bahrain	0.000	-0.007	-0.005	0.004	0.008	0.020	0.020	0.014	-0.015	0.007	-0.011
Jordan	0.016	0.051	0.049	0.017	0.029	0.015	-0.019	-0.012	0.008	0.008	0.026
Lebanon	0.029	0.052	0.023	0.009	-0.008	0.010	0.021	0.034	0.032	0.021	0.012
Oman	-0.009	0.041	0.001	-0.001	0.025	0.022	0.003	0.018	-0.002	-0.015	-0.030
Sri Lanka	0.007	0.101	0.020	-0.028	-0.003	0.004	0.012	0.006	0.001	0.005	0.019
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	-0.005	-0.039	-0.019	-0.026	-0.036	-0.033	-0.016	0.010	-0.005	-0.010	-0.025
Hong Kong	-0.054	-0.016	-0.015	-0.001	-0.051	-0.048	**-0.077**	-0.049	0.013	-0.008	-0.066
Malaysia	0.049	0.044	0.049	0.049	0.019	0.021	0.044	0.046	0.019	0.041	-0.039
New Zealand	-0.004	0.010	0.002	0.002	-0.007	-0.012	-0.018	-0.004	0.006	-0.010	-0.037
Thailand	-0.000	-0.005	-0.015	-0.032	-0.036	-0.044	-0.041	-0.054	-0.070	-0.022	0.005
Singapore	-0.028	-0.032	-0.044	-0.044	-0.024	-0.010	-0.000	0.007	-0.021	-0.073	**-0.130**
Taiwan	**-0.070**	0.025	-0.009	0.006	0.009	0.003	0.015	-0.015	-0.037	-0.051	0.017
Bahrain	0.000	-0.011	-0.022	-0.026	-0.022	-0.005	-0.005	0.001	0.022	0.054	-0.012
Jordan	0.016	0.026	0.032	0.004	-0.002	-0.023	-0.049	-0.023	-0.084	-0.026	-0.019
Lebanon	0.029	0.012	0.019	0.027	0.037	0.021	0.049	0.012	0.029	**0.108**	**0.111**
Oman	-0.009	-0.030	-0.026	-0.022	0.015	0.053	0.023	0.029	-0.013	0.026	0.052
Sri Lanka	0.007	0.019	-0.013	-0.010	-0.005	0.005	0.006	-0.010	0.053	0.002	0.043

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 61: Benchmark NBER Lag 9 –Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	0.005	-0.025	-0.001	-0.041	-0.014	-0.011	0.003	-0.012	-0.015	-0.010	-0.002
Cote 'Ivoire	0.002	0.019	0.024	0.015	0.033	0.048	0.045	0.028	0.027	-0.003	0.006
Kenya	0.007	-0.060	**0.063**	**0.061**	***0.066***	***0.054***	***0.042***	**0.043**	0.030	0.036	0.056
Mauritius	-0.011	0.010	0.014	0.005	0.004	0.009	0.008	0.016	-0.003	0.009	0.002
Morocco	0.046	0.037	**0.079**	**0.075**	0.056	0.037	0.002	0.023	0.050	0.036	0.039
Namibia	**0.036**	**0.034**	***0.044***	***0.041***	***0.027***	0.020	0.015	0.016	0.014	0.016	0.010
Tanzania	0.039	**0.126**	0.036	0.010	0.017	0.009	0.010	0.008	-0.000	-0.000	-0.013
Tunisia	0.036	0.047	0.030	**0.051**	**0.057**	**0.037**	**0.042**	**0.036**	**0.040**	0.029	0.009
Uganda	-0.000	**-0.121**	-0.069	-0.058	-0.029	-0.013	-0.016	0.015	0.031	0.062	0.029
Zambia	0.005	**0.150**	0.038	0.062	0.055	0.047	0.036	0.018	0.018	0.019	-0.015
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	0.005	-0.002	0.009	0.008	0.018	0.007	0.002	0.016	0.022	0.004	-0.070
Cote 'Ivoire	0.002	0.006	0.015	0.026	0.025	0.029	0.033	0.047	0.031	-0.039	-0.098
Kenya	0.007	0.056	0.057	0.050	0.036	0.009	0.025	0.003	-0.002	0.033	0.010
Mauritius	-0.011	0.002	0.008	0.010	-0.004	-0.005	0.010	0.022	0.045	-0.021	-0.012
Morocco	0.046	0.039	0.047	0.061	**0.088**	0.034	0.046	0.037	0.056	0.039	**0.121**
Namibia	**0.036**	0.010	0.024	0.031	0.014	0.004	0.020	0.034	**0.068**	***0.091***	***0.129***
Tanzania	0.039	-0.013	-0.007	-0.005	-0.004	-0.005	0.002	0.006	0.029	**0.091**	*0.116*
Tunisia	0.036	0.009	0.011	0.009	-0.002	0.001	0.020	0.023	0.007	0.019	*0.091*
Uganda	-0.000	0.029	0.026	0.076	0.101	**0.133**	**0.142**	0.097	0.025	-0.002	-0.019
Zambia	0.005	-0.015	0.002	-0.027	-0.032	-0.048	-0.056	-0.053	-0.123	-0.138	-0.105

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 62: Benchmark NBER Lag 9 –American countries

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Chile	-0.005	-0.055	0.017	-0.009	-0.003	0.010	0.003	0.045	0.029	0.046	0.046
Argentina	-0.084	0.111	0.066	0.024	-0.064	-0.052	-0.101	-0.096	**-0.110**	**-0.111**	**-0.117**
Colombia	**-0.092**	-0.081	-0.104	-0.067	**-0.118**	***-0.120***	***-0.122***	***-0.139***	**-0.127**	**-0.116**	**-0.109**
Costa Rica	-0.022	-0.076	-0.043	-0.012	-0.013	0.003	-0.023	-0.026	-0.021	-0.012	-0.010
Peru	0.009	0.032	0.026	0.059	0.038	0.018	0.017	0.003	0.045	0.032	0.014
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	-0.005	0.046	0.024	0.031	0.034	0.005	-0.005	-0.024	0.022	-0.017	-0.042
Argentina	-0.084	**-0.117**	-0.072	-0.069	-0.069	-0.089	-0.097	-0.110	-0.108	-0.174	-0.241
Colombia	**-0.092**	***-0.109***	***-0.173***	**-0.148**	-0.096	-0.081	-0.053	-0.081	-0.105	**-0.129**	-0.094
Costa Rica	-0.022	-0.010	-0.030	-0.017	-0.011	-0.010	-0.022	0.021	0.016	-0.001	-0.006
Peru	0.009	0.014	0.004	-0.002	-0.000	0.031	-0.038	-0.027	-0.104	-0.114	-0.136

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 63: Benchmark NBER Lag 9 – Global indices

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
MSCI ACWI	-0.028	-0.047	-0.032	-0.046	-0.030	-0.043	-0.050	-0.039	-0.024	-0.005	-0.013
MSCI World	**-0.033**	**-0.051**	-0.036	-0.027	-0.026	-0.035	-0.027	-0.016	-0.013	-0.002	-0.015
MSCI EAFE	-0.029	-0.018	-0.019	-0.040	-0.032	-0.028	-0.006	0.001	-0.006	-0.021	-0.010
MSCI EM	-0.011	-0.025	0.022	0.007	-0.004	-0.030	-0.040	-0.009	0.000	-0.022	-0.034
MSCI EU	**-0.038**	***-0.077***	***-0.072***	-0.040	-0.038	-0.018	-0.040	-0.037	-0.034	-0.016	-0.010
MSCI USA	**-0.030**	0.002	-0.023	-0.023	-0.009	-0.014	-0.018	-0.020	**-0.027**	**-0.027**	**-0.035**
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	-0.028	-0.013	-0.012	-0.002	-0.000	-0.011	-0.007	-0.029	0.003	-0.003	-0.036
MSCI World	**-0.033**	-0.015	-0.009	-0.019	-0.020	-0.022	-0.021	-0.036	-0.036	-0.036	-0.033
MSCI EAFE	-0.029	-0.010	-0.027	-0.013	-0.012	-0.015	-0.013	***-0.028***	***-0.027***	**-0.056**	-0.035
MSCI EM	-0.011	-0.034	-0.060	-0.043	-0.041	-0.044	-0.053	-0.043	-0.003	-0.014	0.004
MSCI EU	**-0.038**	-0.010	-0.004	-0.010	-0.013	-0.014	**-0.026**	**-0.034**	**-0.049**	**-0.065**	-0.053
MSCI USA	**-0.030**	**-0.035**	-0.033	-0.034	-0.040	-0.031	-0.019	-0.011	-0.017	-0.014	-0.008

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 64: Benchmark NBER Lag 12 – Europe

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Spain	**-0.074**	-0.133	**-0.153**	**-0.136**	**-0.117**	**-0.111**	**-0.107**	-0.057	**-0.075**	**-0.074**	-0.043
Netherlands	-0.021	-0.061	-0.030	-0.046	-0.010	0.004	0.001	-0.015	-0.019	-0.017	-0.006
Sweden	-0.040	-0.027	-0.046	-0.036	-0.048	-0.042	-0.026	-0.026	**-0.050**	-0.037	-0.048
Poland	0.062	0.123	0.079	0.043	0.039	0.036	0.068	0.026	0.041	0.057	0.085
Belgium	-0.034	-0.053	**-0.092**	-0.062	-0.044	0.001	-0.006	-0.013	-0.013	-0.025	-0.023
Austria	-0.010	**-0.222**	-0.056	0.002	-0.018	0.003	-0.015	-0.023	-0.001	0.000	0.020
Denmark	0.011	-0.086	**-0.089**	0.001	-0.010	0.011	-0.013	0.000	-0.003	0.001	0.002
Ireland	-0.021	-0.068	-0.015	-0.030	-0.017	-0.050	-0.024	0.002	-0.006	0.005	0.004
Finland	-0.009	-0.112	**-0.103**	-0.052	-0.051	-0.037	-0.035	-0.032	-0.016	0.005	0.014
Portugal	-0.043	-0.062	-0.021	-0.033	-0.045	-0.051	**-0.069**	-0.030	-0.028	-0.029	-0.015
Greece	-0.078	-0.078	-0.059	0.007	-0.056	-0.062	-0.053	-0.061	-0.051	-0.055	-0.028
Czech	0.007	-0.027	0.000	0.038	-9E-5	-0.008	0.016	-0.010	-0.005	0.004	0.004
Romania	0.004	-0.299	-0.119	-0.109	-0.081	-0.048	-0.050	-0.040	-0.052	-0.013	-0.021
Hungary	0.007	0.028	0.084	0.028	-0.026	-0.014	-0.006	-0.012	**-0.072**	**-0.066**	-0.050
Slovakia	0.031	-0.105	-0.049	-0.032	0.002	0.031	0.036	0.052	0.040	0.019	0.030
Luxembourg	0.012	-0.044	-0.078	-0.030	-0.034	-0.005	0.001	-0.003	0.028	0.045	0.062
Bulgaria	-0.083	-0.077	-0.015	0.016	-0.001	-0.013	-0.003	-0.021	-0.007	-0.012	0.022
Croatia	0.013	0.222	0.064	-0.003	-0.010	0.016	0.032	0.051	0.038	0.026	0.022
Slovenia	-0.023	**-0.079**	***-0.083***	***-0.064***	-0.040	-0.027	-0.040	-0.018	-0.007	0.000	0.007
Lithuania	0.019	0.015	0.073	0.008	0.018	0.017	0.026	0.031	0.051	0.033	0.025
Latvia	0.039	0.017	0.015	0.042	0.057	0.021	0.048	0.051	0.040	0.060	0.083
Estonia	0.037	0.052	-0.038	0.044	0.016	0.029	0.024	-0.005	-0.004	-0.004	0.061
Cyprus	0.001	**-0.344**	-0.163	0.008	-0.070	-0.045	0.051	-0.071	-0.037	-0.072	-0.010
Malta	-0.033	0.051	-0.045	0.000	-0.007	0.003	-0.021	-0.018	-0.016	-0.009	-0.014
Iceland	-0.019	**-0.114**	-0.048	-0.034	0.013	0.019	-0.000	-0.008	-0.030	0.009	0.002
Norway	-0.001	-0.024	0.017	0.041	0.014	0.018	-0.011	-0.044	**-0.049**	-0.030	-0.018
Swiss	-0.006	0.026	-0.013	-0.000	-0.016	-0.020	-0.023	0.008	-0.007	-0.002	-0.004
Serbia	0.024	-0.026	**-0.123**	-0.051	-0.016	-0.002	0.012	0.025	0.036	0.047	0.063
Ukraine	0.040	-0.264	-0.065	0.088	0.054	0.006	-0.029	-0.032	-0.073	-0.076	-0.058

Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Spain	**-0.074**	-0.043	-0.046	-0.047	**-0.059**	***-0.073***	***-0.071***	***-0.065***	-0.014	-0.014	-0.020
Netherlands	-0.021	-0.006	-0.017	-0.001	-0.007	-0.015	0.002	-0.006	0.004	-0.018	-0.032
Sweden	-0.040	-0.048	-0.027	-0.034	-0.003	-0.028	-0.030	-0.019	-0.023	-0.049	-0.051
Poland	0.062	0.085	0.070	0.068	0.092	0.054	0.044	0.062	0.061	0.084	0.104
Belgium	-0.034	-0.023	-0.030	-0.029	-0.034	**-0.053**	**-0.046**	-0.026	-0.010	-0.033	0.020
Austria	-0.010	0.020	0.033	0.016	0.022	0.013	-0.005	0.020	0.001	-0.013	0.084
Denmark	0.011	0.002	0.012	0.025	0.009	0.020	0.034	0.033	**0.054**	0.045	0.072
Ireland	-0.021	0.004	-0.006	-0.016	-0.026	-0.024	-0.022	-0.029	-0.015	-0.000	0.002
Finland	-0.009	0.014	0.005	-0.008	-0.007	-0.005	-0.022	0.003	0.025	0.079	0.034
Portugal	-0.043	-0.015	-0.041	-0.063	-0.072	-0.059	-0.072	-0.088	-0.109	-0.043	-0.108
Greece	-0.078	-0.028	-0.056	-0.058	-0.053	-0.024	-0.059	-0.029	-0.118	**-0.157**	**-0.297**
Czech	0.007	0.004	-0.001	0.027	0.057	0.036	0.049	0.032	0.054	0.056	0.001
Romania	0.004	-0.021	0.007	0.044	0.013	0.064	0.058	0.037	0.067	0.099	0.127
Hungary	0.007	-0.050	-0.029	-0.007	-0.001	-0.012	-0.009	0.045	0.022	0.041	0.092
Slovakia	0.031	0.030	0.038	0.033	0.054	**0.058**	**0.071**	0.060	0.069	-0.006	0.096
Luxembourg	0.012	0.062	0.043	0.076	0.058	0.049	0.031	0.034	0.035	0.059	0.021
Bulgaria	-0.083	0.022	-0.048	-0.073	-0.054	0.007	-0.006	-0.065	-0.099	**-0.172**	**-0.332**
Croatia	0.013	0.022	0.035	0.033	0.034	0.027	-0.022	-0.039	-0.025	-0.100	-0.035
Slovenia	-0.023	0.007	-0.015	-0.014	-0.020	-0.007	-0.010	-0.002	-0.026	-0.013	0.125
Lithuania	0.019	0.025	0.035	0.059	**0.085**	0.068	0.042	-0.025	0.026	0.051	0.107
Latvia	0.039	0.083	0.066	0.086	0.070	0.049	0.053	0.053	0.050	0.066	-0.018
Estonia	0.037	0.061	0.059	0.039	0.049	0.041	0.030	0.036	0.054	0.046	**0.104**
Cyprus	0.001	-0.010	0.022	0.049	0.068	0.139	0.130	0.173	0.003	-0.020	0.098
Malta	-0.033	-0.014	-0.020	-0.034	**-0.042**	-0.030	**-0.043**	-0.028	-0.006	-0.032	**-0.097**
Iceland	-0.019	0.002	0.004	0.015	0.010	0.019	0.024	0.026	0.029	0.042	**0.111**
Norway	-0.001	-0.018	-0.005	-0.013	-0.011	-0.007	0.005	0.007	0.015	-0.000	-0.017
Swiss	-0.006	-0.004	0.005	0.009	-0.007	-0.001	0.005	-0.015	-0.008	0.010	-0.033
Serbia	0.024	0.063	0.078	0.084	**0.115**	0.045	0.038	0.039	0.108	0.013	0.181
Ukraine	0.040	-0.058	-0.020	-0.001	0.033	0.073	0.095	0.108	0.113	**0.146**	0.127

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of European countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 65: Benchmark NBER Lag 12 – G7

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
US	0.002	-0.043	-0.034	-0.018	-0.002	0.004	0.021	0.033	0.033	0.023	0.015
Japan	-0.003	**-0.085**	-0.066	-0.033	-0.047	-0.002	-0.013	-0.013	-0.005	-0.010	-0.003
Canada	0.007	0.009	0.007	0.025	0.033	0.017	0.015	0.001	-0.009	-0.014	-0.014
Germany	0.009	***0.084***	0.021	0.037	0.011	-0.005	-0.025	-0.019	-0.038	-0.030	-0.049
UK	-0.005	-0.004	0.001	-0.035	-0.010	0.005	-0.021	-0.022	-0.023	-0.031	-0.027
France	-0.031	-0.002	-0.021	0.003	-0.028	-0.043	-0.019	-0.016	-0.011	-0.002	0.002
Italy	-0.031	**0.128**	-0.019	-0.001	-0.060	-0.043	-0.012	-0.062	-0.053	-0.059	-0.067
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
US	0.002	0.015	0.016	0.003	0.010	0.002	-0.004	-0.011	-0.017	-0.012	0.000
Japan	-0.003	-0.003	0.006	0.011	0.024	0.019	0.011	-0.000	0.007	0.004	**-0.037**
Canada	0.007	-0.014	-0.009	-0.017	-0.007	-0.004	-0.009	-0.010	-0.019	0.010	-0.001
Germany	0.009	-0.049	**-0.065**	-0.053	-0.029	-0.021	-0.006	0.003	0.010	0.015	-0.000
UK	-0.005	-0.027	**-0.051**	-0.038	-0.022	-0.017	-0.009	-0.011	0.006	0.040	**0.061**
France	-0.031	0.002	-0.016	-0.015	-0.014	-0.033	-0.040	-0.028	-0.040	**-0.073**	-0.009
Italy	-0.031	-0.067	-0.058	-0.066	-0.048	-0.060	-0.065	-0.070	-0.080	-0.164	-0.131

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of G7 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 66: Benchmark NBER Lag 12 – BRICS

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Brazil	-0.069	0.042	-0.056	-0.107	**-0.110**	-0.059	-0.079	-0.024	-0.019	-0.007	0.057
Russia	-0.001	0.143	0.087	-0.113	-0.138	-0.091	-0.091	-0.036	-0.026	0.086	0.086
India	-0.000	0.011	0.037	-0.000	0.026	0.008	0.025	0.006	0.005	0.006	0.004
China	-0.006	0.255	0.086	-0.022	-0.065	-0.074	-0.077	-0.018	0.007	0.013	-0.001
South Africa	-0.005	-0.054	-0.024	-0.014	-0.022	-0.013	0.015	0.010	-0.002	-0.011	-0.017
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Brazil	-0.069	0.057	0.072	0.085	0.021	-0.035	0.003	-0.040	-0.134	-0.170	-5E-17
Russia	-0.001	0.086	0.120	0.037	0.069	0.079	0.083	0.117	0.059	0.067	0.091
India	-0.000	0.004	-0.000	-0.020	-0.045	-0.025	-0.036	-0.036	-0.053	-0.016	0.043
China	-0.006	-0.001	-0.006	0.009	0.009	0.013	-0.007	-0.013	-0.008	0.002	0.006
South Africa	-0.005	-0.017	-0.017	-0.017	-0.002	0.009	-0.028	-0.011	-0.056	-0.052	-0.044

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of BRICS countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 67: Benchmark NBER Lag 12 – N11

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
South Korea	-0.013	-0.016	0.020	0.007	0.030	0.016	0.016	0.026	0.039	0.034	0.041
Mexico	0.005	-0.119	0.034	0.060	0.060	0.078	0.079	0.070	0.060	0.027	0.020
Indonesia	**-0.096**	**-0.130**	***-0.106***	***-0.106***	-0.046	-0.032	-0.012	-0.018	-0.023	-0.038	-0.028
Turkey	0.028	0.023	0.034	0.097	0.054	0.018	-0.007	-0.039	-0.067	-0.049	-0.053
Philippines	**-0.078**	**-0.159**	-0.083	-0.035	-0.060	-0.051	-0.063	-0.040	-0.026	-0.063	-0.041
Pakistan	0.048	-0.007	-0.036	0.035	0.077	0.050	0.034	0.026	0.000	0.020	0.017
Bangladesh	-0.053	-0.214	-0.161	-0.067	-0.092	-0.058	**-0.094**	**-0.088**	**-0.066**	-0.056	-0.043
Egypt	-0.003	0.102	-0.047	**-0.145**	-0.102	-0.054	-0.074	-0.027	0.015	-0.002	-0.023
Vietnam	0.057	-0.004	**-0.148**	-0.082	-0.019	0.006	0.032	0.036	0.029	-0.009	0.009
Iran	-0.016	-0.037	-0.046	-0.053	-0.036	-0.025	-0.032	-0.003	0.002	0.015	0.020
Nigeria	0.012	0.427	0.286	0.195	0.186	0.175	0.150	0.098	0.051	0.093	0.058
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
South Korea	-0.013	0.041	0.008	-0.003	0.004	-0.018	-0.007	-0.036	-0.026	**-0.045**	**-0.057**
Mexico	0.005	0.020	0.025	0.018	0.006	0.001	0.007	-0.025	-0.005	-0.023	-0.089
Indonesia	**-0.096**	-0.028	-0.017	-0.002	-0.023	-0.025	-0.043	-0.028	0.009	-0.005	-0.038
Turkey	0.028	-0.053	-0.050	-0.048	-0.038	-0.065	-0.036	0.011	0.137	0.209	**0.376**
Philippines	**-0.078**	-0.041	-0.053	-0.054	-0.065	-0.025	-0.049	-0.032	-0.031	-0.030	0.022
Pakistan	0.048	0.017	0.024	0.033	0.040	0.038	0.047	0.080	0.083	0.126	0.246
Bangladesh	-0.053	-0.043	-0.026	-0.027	0.020	0.033	0.030	0.046	0.047	0.048	0.045
Egypt	-0.003	-0.023	-0.009	-0.007	0.000	0.000	-0.074	-0.025	0.016	0.047	0.124
Vietnam	0.057	0.009	0.035	0.046	0.082	0.026	0.061	0.088	0.140	**0.248**	***0.345***
Iran	-0.016	0.020	0.003	-0.017	-0.001	-0.014	-0.028	-0.020	0.002	0.010	-0.082
Nigeria	0.012	0.058	0.036	0.068	0.053	0.036	0.001	-0.028	0.027	0.005	-0.046

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of N11 countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 68: Benchmark NBER Lag 12 – OPEC

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Iran	-0.016	-0.037	-0.046	-0.053	-0.036	-0.025	-0.032	-0.003	0.002	0.015	0.020
Nigeria	0.012	0.427	0.286	0.195	0.186	0.175	0.150	0.098	0.051	0.093	0.058
Saudi Arabia	0.046	0.182	0.016	0.028	0.018	0.018	0.028	0.060	0.035	0.051	0.045
Iraq	0.041	-0.145	-0.100	0.001	-0.002	0.026	0.061	0.058	0.082	0.074	0.070
Qatar	-0.011	-0.007	0.038	-0.038	-0.003	0.035	0.047	0.033	0.010	-0.005	-0.011
UAE	0.031	-0.044	0.019	-0.009	0.006	0.020	0.033	0.051	0.063	0.079	**0.084**
Kuwait	**0.073**	**0.129**	***0.077***	***0.069***	0.056	0.068	**0.077**	**0.098**	**0.091**	**0.083**	**0.081**
Algeria	0.013	0.041	0.010	0.030	**0.054**	0.042	0.017	0.014	0.000	0.000	0.000
Ecuador	0.018	0.009	0.028	0.012	0.001	0.021	0.028	0.014	0.020	0.014	0.021
Venezuela	0.052	0.079	0.103	0.035	0.038	0.076	0.059	0.059	0.044	0.057	0.053
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Iran	-0.016	0.020	0.003	-0.017	-0.001	-0.014	-0.028	-0.020	0.002	0.010	-0.082
Nigeria	0.012	0.058	0.036	0.068	0.053	0.036	0.001	-0.028	0.027	0.005	-0.046
Saudi Arabia	0.046	0.045	0.055	0.049	0.030	0.038	0.056	0.038	0.073	-0.002	0.025
Iraq	0.041	0.070	0.062	0.045	0.027	0.049	0.035	0.073	0.156	**0.245**	0.164
Qatar	-0.011	-0.011	-0.007	-0.034	-0.044	-0.029	-0.049	-0.043	-0.009	-0.040	0.010
UAE	0.031	**0.084**	**0.095**	**0.094**	**0.088**	0.087	0.047	0.083	0.031	0.016	0.068
Kuwait	**0.073**	**0.081**	**0.075**	**0.077**	**0.089**	**0.071**	**0.080**	0.032	0.053	**0.082**	0.042
Algeria	0.013	0.000	0.000	0.000	0.007	0.018	**0.039**	0.011	0.000	-0.040	-0.055
Ecuador	0.018	0.021	0.025	0.030	0.050	0.051	**0.055**	0.046	0.018	0.009	0.040
Venezuela	0.052	0.053	0.050	0.040	0.005	0.015	-0.002	-0.034	0.017	0.109	0.126

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of OPEC countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 69: Benchmark NBER Lag 12 –Asia and Oceania

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Australia	0.001	-0.021	0.034	-0.005	0.017	0.007	0.013	0.014	0.004	-0.000	-0.003
Hong Kong	0.031	0.088	0.051	0.012	0.040	0.017	0.036	0.052	0.020	0.031	0.010
Malaysia	-0.025	-0.012	0.003	-0.013	-0.010	-0.044	-0.045	-0.045	**-0.045**	-0.025	-0.035
New Zealand	-0.016	-0.042	0.025	0.030	0.030	0.037	-0.002	0.004	-0.003	0.007	-0.000
Thailand	0.019	-0.039	0.014	0.009	0.041	0.055	0.018	0.017	-0.007	-0.009	-0.006
Singapore	0.019	**0.126**	0.019	0.062	0.060	0.027	0.020	0.008	0.012	-0.008	0.002
Taiwan	**0.066**	-0.070	-0.070	-0.013	-0.017	-0.004	-0.044	-0.019	-0.000	-0.001	0.019
Bahrain	0.012	0.013	0.033	0.014	0.031	0.045	0.036	0.011	0.029	0.045	0.054
Jordan	-0.015	**-0.044**	-0.028	-0.033	-0.036	-0.023	-0.002	0.031	0.022	0.032	0.014
Lebanon	0.033	-0.029	0.018	0.002	0.010	0.024	0.029	0.028	0.030	0.044	0.039
Oman	**0.121**	**0.208**	**0.140**	**0.107**	***0.082***	***0.120***	***0.123***	***0.115***	**0.091**	**0.096**	0.051
Sri Lanka	-0.047	-0.103	-0.061	**-0.092**	**-0.072**	-0.064	-0.037	-0.039	-0.015	-0.007	-0.023
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Australia	0.001	-0.003	-0.000	0.000	-0.012	-0.000	-0.011	-0.040	-0.027	-0.026	-0.028
Hong Kong	0.031	0.010	0.030	0.012	-0.000	-0.026	-0.027	0.015	0.029	0.013	-0.018
Malaysia	-0.025	-0.035	-0.033	-0.030	-0.030	-0.010	-0.006	0.019	0.025	0.034	-0.019
New Zealand	-0.016	-0.000	-0.005	-0.006	-0.025	-0.034	-0.027	-0.031	-0.022	-0.033	**-0.089**
Thailand	0.019	-0.006	0.000	0.020	0.029	0.023	-0.007	0.023	0.020	0.008	0.076
Singapore	0.019	0.002	0.004	0.006	-0.029	-0.016	-0.057	**-0.072**	-0.049	**-0.085**	-0.080
Taiwan	**0.066**	0.019	0.013	0.026	0.027	0.022	0.062	0.072	***0.115***	***0.129***	**0.115**
Bahrain	0.012	0.054	0.047	0.034	0.027	0.019	0.011	-0.017	-0.014	-0.111	-0.094
Jordan	-0.015	0.014	-0.003	0.009	-0.001	-0.002	0.020	0.042	-0.025	-0.010	-0.032
Lebanon	0.033	0.039	0.024	0.038	**0.063**	0.073	0.059	0.047	0.047	0.065	-0.009
Oman	**0.121**	0.051	**0.074**	0.064	**0.092**	**0.121**	**0.092**	**0.126**	**0.159**	**0.165**	**0.176**
Sri Lanka	-0.047	-0.023	-0.034	-0.045	-0.057	-0.058	-0.037	-0.072	-0.030	-0.003	-0.027

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of Asia and Oceania countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 70: Benchmark NBER Lag 12 –Africa

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Botswana	0.005	0.009	0.012	-0.001	0.004	-0.001	0.005	0.010	0.019	0.025	0.023
Cote 'Ivoire	0.001	-0.050	**-0.099**	-0.056	-0.049	-0.042	-0.023	-0.005	0.005	0.017	0.024
Kenya	-0.023	**-0.099**	-0.037	-0.013	0.020	0.021	0.004	-0.019	-0.005	-0.037	-0.016
Mauritius	-0.033	**-0.101**	***-0.057***	***-0.044***	-0.032	-0.022	**-0.038**	**-0.031**	-0.025	-0.020	-0.005
Morocco	0.031	0.008	-0.056	0.010	0.028	-0.007	0.008	0.006	0.019	0.030	0.039
Namibia	0.018	0.036	0.003	**-0.022**	-0.004	0.013	0.010	0.008	0.008	0.019	0.011
Tanzania	0.023	0.106	-0.005	0.020	0.009	0.010	0.007	0.007	0.000	0.004	0.013
Tunisia	0.001	-0.042	0.001	0.035	0.040	0.021	0.021	0.027	0.024	0.009	0.016
Uganda	0.093	0.068	0.103	0.101	0.062	0.095	0.082	0.054	**0.129**	**0.122**	0.105
Zambia	0.066	0.015	0.038	0.072	0.068	0.080	0.060	0.059	0.060	**0.080**	**0.072**
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Botswana	0.005	0.023	0.009	-0.002	-0.022	-0.015	-0.006	0.000	0.022	-0.042	-0.044
Cote 'Ivoire	0.001	0.024	0.031	0.035	0.034	0.032	0.030	0.059	0.070	0.090	-0.136
Kenya	-0.023	-0.016	-0.004	-0.006	0.014	0.030	0.033	0.050	0.046	0.008	-0.050
Mauritius	-0.033	-0.005	0.004	0.007	0.020	0.015	-0.024	-0.046	-0.044	-0.055	-0.010
Morocco	0.031	0.039	0.048	**0.056**	**0.065**	**0.079**	0.054	**0.066**	0.030	0.039	0.015
Namibia	0.018	0.011	0.015	0.016	0.015	0.023	**0.032**	**0.041**	**0.042**	0.029	0.061
Tanzania	0.023	0.013	0.011	0.014	0.008	0.006	0.018	0.024	0.044	**0.091**	0.060
Tunisia	0.001	0.016	0.012	0.006	0.000	-0.001	-0.005	-0.029	-0.045	-0.025	0.014
Uganda	0.093	0.105	**0.148**	**0.141**	***0.132***	***0.142***	***0.124***	0.076	0.101	0.090	-0.049
Zambia	0.066	**0.072**	*0.071*	*0.068*	**0.094**	0.069	0.065	0.046	0.070	**0.113**	0.075

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of African countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and italic and bold respectively.

Table B. 71: Benchmark NBER Lag 12 –American countries

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
Chile	0.023	0.043	0.012	0.016	0.032	0.052	**0.078**	0.071	0.071	0.026	0.004
Argentina	0.046	0.120	0.058	0.042	-0.031	-0.038	-0.096	-0.050	-0.041	-0.020	0.022
Colombia	0.003	0.111	0.129	0.034	0.044	0.062	0.049	-0.002	-0.006	-0.012	0.004
Costa Rica	-0.011	0.049	-0.050	-0.006	-0.030	-0.023	-0.028	-0.017	-0.006	-0.006	7E-05
Peru	-0.001	0.074	0.065	0.071	0.048	0.008	0.020	-0.010	-0.025	-0.027	-0.015
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
Chile	0.023	0.004	-0.008	0.002	0.002	-0.006	0.014	-0.021	0.008	**0.057**	0.053
Argentina	0.046	0.022	0.036	0.038	0.022	0.003	0.021	-0.015	-0.029	-0.120	-0.161
Colombia	0.003	0.004	-0.023	-0.014	-0.055	-0.032	0.000	0.016	0.026	-0.011	-0.011
Costa Rica	-0.011	7E-05	0.003	0.008	0.008	0.011	0.012	-0.068	-0.060	-0.075	**-0.181**
Peru	-0.001	-0.015	0.010	0.001	-0.005	0.003	0.009	-0.053	0.065	-0.053	-0.291

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of American countries. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and and italic and bold respectively.

Table B. 72: Benchmark NBER Lag 12 – Global indices

Panel A: Low-Medium Quantiles											
	OLS	$Q_{0.05}$	$Q_{0.10}$	$Q_{0.15}$	$Q_{0.20}$	$Q_{0.25}$	$Q_{0.30}$	$Q_{0.35}$	$Q_{0.40}$	$Q_{0.45}$	$Q_{0.50}$
MSCI ACWI	-0.001	-0.017	-0.046	-0.031	0.003	-0.001	0.015	0.016	-0.004	0.008	0.014
MSCI World	0.017	-0.052	-0.042	-0.012	0.012	0.016	0.017	0.025	0.032	0.035	0.030
MSCI EAFE	**0.034**	-0.015	-0.000	0.020	0.008	0.020	0.037	0.032	0.030	0.022	0.036
MSCI EM	-0.031	-0.030	0.039	0.000	-0.021	-0.015	0.018	0.010	0.003	-0.009	-0.020
MSCI EU	0.028	-0.004	-0.024	0.011	0.015	0.033	0.018	0.023	0.021	0.008	0.013
MSCI USA	0.000	**-0.062**	-0.042	-0.017	-9E-5	0.008	0.023	0.027	0.018	0.020	0.012
Panel B: Medium-High Quantiles											
	OLS	$Q_{0.50}$	$Q_{0.55}$	$Q_{0.60}$	$Q_{0.65}$	$Q_{0.70}$	$Q_{0.75}$	$Q_{0.80}$	$Q_{0.85}$	$Q_{0.90}$	$Q_{0.95}$
MSCI ACWI	-0.001	0.014	0.017	0.012	0.004	-0.006	-0.004	-0.023	-0.019	-0.016	-0.009
MSCI World	0.017	0.030	0.022	0.020	0.020	**0.036**	0.017	0.019	0.014	0.009	-0.004
MSCI EAFE	**0.034**	0.036	**0.054**	0.039	0.042	0.037	0.025	0.029	0.026	0.028	0.014
MSCI EM	-0.031	-0.020	-0.044	-0.062	-0.048	**-0.074**	**-0.102**	***-0.124***	***-0.105***	***-0.085***	-0.040
MSCI EU	0.028	0.013	0.004	-0.007	-0.004	-0.009	0.021	**0.050**	0.041	**0.036**	0.014
MSCI USA	0.000	0.012	0.019	0.004	0.006	0.007	0.001	-0.002	-0.003	-0.013	**-0.029**

Notes: This Table presents the results from regressing stock returns against oil price changes using two estimation techniques, namely Ordinary Least Squares (OLS) and Quantile Regression (QR). The Table reports the estimated slope coefficients. Panel A presents the results for the OLS approach and for the Low-Medium Quantiles (0.05 to 0.50) of the QR approach. Panel B presents the results for the OLS approach and for the Medium-High Quantiles (0.50 to 0.95) of the QR approach. The regression model has been estimated across a sample of global equity indices. Statistical significance at the 10%, 5% and 1% levels are indicated in italic, bold, and and italic and bold respectively.

Table B. 73: Sample period start date

Country name	Name of index	Data from	Country name	Name of index	Data from	Country name	Name of index	Data from
U.S.	S&P 500	12/1963	Norway	OSEAX	01/1983	Thailand	S.E.T	04/1975
Japan	Nikkei 225	04/1950	Swiss	SMI	06/1988	Singapore	STI	08/1999
Canada	S&P/TSX	01/1950	Serbia	BELEX15	11/2005	Taiwan	TWSE	01/1971
Germany	DAX30	12/1964	Ukraine	UX Index	11/1997	Bahrain	BAX	01/2003
UK	FTSE 100	01/1978	Brazil	IBOVESPA	01/1990	Jordan	AMGNRLX	01/2000
France	CAC 40	07/1978	Russia	RTS Index	09/1995	Lebanon	BLSI	01/1996
Italy	FTSE MIB	12/1997	India	S&P BSE30	04/1979	Oman	MSI	10/1996
Spain	IBEX 35	01/1987	China	SSE	01/1992	Sri Lanka	CSE	01/1985
Netherlands	AEX	01/1983	South Africa	FTSE/JSE	06/1995	Botswana	BSE DCI	04/2001
Sweden	OMXS30	01/1986	South Korea	KOSPI	12/1974	Cote 'Ivoire	BRVM 10	09/1998
Poland	WIG20	04/1994	Mexico	IPC Index	01/1988	Kenya	NSE20	01/1990
Belgium	BEL-20	01/1990	Indonesia	The IDX	04/1983	Mauritius	SEMDEX	07/1989
Austria	WBI (ATX)	01/1986	Turkey	BIST N100	01/1988	Morocco	MASI	01/2002
Denmark	OMXC20	12/1989	Philippines	PSEi	01/1986	Namibia	NSX	01/2002
Ireland	ISEQ	01/1983	Pakistan	KSE100	12/1988	Tanzania	DSEI	12/2006
Finland	OMXH25	05/1988	Bangladesh	DSE	01/1990	Tunisia	TUNINDEX	12/1997
Portugal	PSI20	12/1992	Egypt	EGX30	01/1998	Zambia	LASI	01/1997
Greece	ATHEX	09/1988	Vietnam	VN	07/2000	Chile	IPSA	01/1990
Czech	SE PX	04/1994	Iran	TSE	09/1997	Argentina	MRV	10/1989
Romania	BET	09/1997	Nigeria	NSE 30	12/2009	Colombia	COLCAP	02/2008
Hungary	BUX	01/1991	Saudi Arabia	TASI	10/1998	Costa Rica	IACR	02/1995
Slovakia	SAX16	09/1993	Iraq	ISX	11/2004	Peru	S&P/BVL	01/1991
Luxembourg	LUXXC	01/1999	Qatar	QE	09/1998	MXWD	MSCI ACWI	12/1987
Bulgaria	BSE SOFIX	10/2000	UAE	ADX	06/2001	MXWO	MSCI World	12/1969
Croatia	CROBEX	01/1997	Kuwait	KSE	12/1999	MSCI EAFE	MSCI EAFE	12/1969
Slovenia	SBI TOP	04/2003	Algeria	SGBV	01/2008	MSCI EM	MSCI EM	12/1987
Lithuania	OMX Vilnius	12/1999	Ecuador	BVQA	01/2006	MSCI EU	MSCI EU	12/1969
Latvia	OMX Riga	12/1999	Venezuela	IBC	04/1993	MSCI USA	MSCI USA	12/1969
Estonia	OMX Tallinn	06/1996	Australia	S&PASX 300	05/1992			
Cyprus	CSE General	09/2004	Hong Kong	HANG SENG	07/1964			
Malta	MALTEX	12/1995	Malaysia	FTSE KLCI	01/1980			
Iceland	OMX ICEX	12/1992	New Zealand	S&P/NZX 50	12/2000			

Note: This table reports country name, name of index, and sample period start date.

Appendix C

Table C. 1: The relationship between illiquidity or liquidity and securities

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Chan et al. (2013)	Consider the relationship between the stock price synchronicity (amount of systematic volatility relative to total volatility) and liquidity of individual stocks.	Three measures of liquidity: the price-impact measure (l) introduced in Kyle (1985), the effective bid-ask spread. Stoll (1978), Glosten and Harris (1988) and Amihud (2002) illiquidity measure)	1.All illiquidity measures (effective proportional bid-ask spread, price impact measure, and Amihud's illiquidity measure) have negatively linked to stock market return co-movement and systematic volatility. 2.Larger industry-wide component in returns improves liquidity. 3.Improvement in liquidity following additions to the S&P 500 Index is associated to the rise of stock in return co-movement	The Center for Research in Security Prices (CRSP) share codes 10 and 11, the New York Stock Exchange Trade and Quote (TAQ) and the Institute for the Study of Security Markets (ISSM)	All NYSE listed common stocks	Jan. 1989–Dec. 2008
Belke et al. (2013)	Examine the relationship between global liquidity and commodity and food prices	Global coin-tegrated vector-autoregressive approach	1. There exist a positive long-run linkage between global liquidity and food and commodity prices development, and that food and commodity prices adopt significantly to this cointegrating linkage. 2. Global liquidity does not adopt but it drives the linkage	The Commodity Research Bureau (CRB), Thomson Reuters/Jeffries, , IMF' International Financial Statistics, the Bank for International Settlements, Thomson Financial Datastream, and the EABCN	Quarterly data for United States, the Euro Area, the United Kingdom, Japan, Canada, Australia, New Zealand, Denmark, Norway, Sweden, Switzerland, and the BRIC countries (Bra-zil, Russia, India, and China)	Q1. 1980–Q1. 2011
Brennan et al. (2012)	Analyse buy and sell order measures of price effect (''lambdas'') for a large cross-section of stocks	Time-series regressions and the cross-sectional regression, asset pricing regressions, and Fama-MacBeth regression	1. Sell-order liquidity is priced more strongly than buy-order liquidity in the cross-section of equity market returns 2. The liquidity premium in equities emerges predominantly from the sell-order side 3. The average difference between sell and buy lambdas is generally positive 4. Both buy and sell lambdas have significant positive relation with measures of funding liquidity such as the TED spread as well option implied volatility	Center for Research in Securities Prices (CRSP), the Compustat tapes, the Institute for the Study of Security Markets (ISSM) (1983–1992) and the Trade and Quote (TAQ) data sets (1993–2008)	Common stocks listed on the NYSE	Jan. 1983–Dec. 2008

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Table C. 1: The relationship between illiquidity or liquidity and securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Næs et al. (2011)	Consider the linkage between stock market liquidity and the business cycle	Relative spread from Lesmond et al. (1999) measure , the Amihud (2002) illiquidity ratio, and Roll (1984) liquidity measure and regression analysis	1.There exist a strong relationship between stock market liquidity and the business cycle 2. Market liquidity impacts on the investor participation and change in the business cycle has impact on investors' portfolio compositions 3. Systematic liquidity changes are associated to a "flight to quality" during economic crisis	CRSP and the CRSP data from the Oslo Stock Exchange data service	The United States and Norway	Q1 1947–Q4 2008 for the US and Q1 1980–Q3 2008 for Norway
Bao et al. (2011)	Explore the linkage between illiquidity and corporate bond valuation	The OLS regression, Fama–MacBeth cross-sectional regressions, Newey–West t-statistics, Roll (1984) liquidity measure	1. Illiquidity measure has strong economic impact on corporate bonds 2. Bid–ask bounce is not enough to explain the magnitude of the reversals 3. Price reversals are stronger after a decrease in price than a rise in price 4. illiquidity has positive relationship with a bond's age and maturity, but a negative one with its issuance size 5. Price reversals are inversely associated to trade size and the illiquidity of individual bonds fluctuates substantially over time	Financial Industry Regulatory Authority's (FINRA) TRACE, CRSP, the Fixed Investment Securities Database (FISD), CBOE, the Federal Reserve, Bloomberg, and Datastream	1,035 bonds	14 Apr. 2003–30 Jun. 2009
Jankowitsch et al. (2011)	Investigate deviations between transaction prices and the expected market valuation of securities	Cross-sectional linear regressions and new liquidity measure that is based on the transaction prices and volumes, and on the respective market's expectation of the price, volume-weighted difference measure, Amihud (2002) measure, and Roll (1984)	1. Significant price dispersion impacts cannot be explained by bid–ask spreads 2. New proposed measure is associated to liquidity by regressing it on commonly-used liquidity proxies and find a strong relationship between this new liquidity measure and bond characteristics, as well as trading activity variables 3. The price deviations from expected market valuations are larger and more volatile than what previously thought.	The Trade Reporting and Compliance Engine (TRACE database), and Markit data or valuation data from Bloomberg	1800 bonds with 3,889,017 observed transaction prices	1 Oct. 2004–31 Oct. 2006.

(Continued on next page)

Table C. 1: The relationship between illiquidity or liquidity and securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Allaudeen et al. (2010)	Explore the relationship between stock market returns and liquidity	Time-series regression, cross-sectional analysis, ordinary least squares and a two-stage least squares regression	1.Negative market returns lead to stock liquidity decline, especially during times of capital tightness in the funding market 2. Interindustry spillover impacts in liquidity has a chance to rise from capital constraints in the market making sector 3. There are significant economic returns to supplying liquidity following periods of large market valuations decline	The New York Stock Exchange (NYSE) Trades and Automated Quotations and the Institute for the Study of Securities Markets, and the Center for Research in Security Prices (CRSP)	800 million trades across about 1,800 stocks	Jan. 1988–Dec. 2003
Sadka (2010)	Investigate the relationship between liquidity risk and the cross-section of hedge-fund returns	Cross-sectional regressions, Time-series regressions, Factor-beta analysis and style analysis, and liquidity Factors following Pastor and Stambaugh (2003), Acharya and Pedersen (2005) and Sadka (2006)	1. Funds that significantly load on liquidity risk earn more than low-loading funds by around 6% annually between 1994 and 2008, while negative performance is revealed during liquidity crises, that means performance of many funds over this time frame could be due to beta (systematic liquidity risk) not alpha (risk-adjusted returns; management skill) 2. The returns are not dependent on the liquidity that a fund can provide for its investors that is calculated by lockup and redemption notice periods	TASS database	12,929 monthly hedge-fund, varying from 1,095 in 1994 to 8,542 in 2008	Jan. 1994–Dec. 2008
Amihud and Mendelson (1986b)	Examine the relationship between liquidity and stock market returns	Market model regression, the CAPM model,the Fama and MacBeth (1973) approch, poded cross-section and time-series estimation	1. Spread has a significant positive impact on stock market return 2. The monthly excess return of a stock which has a 1.5% spread is 0.45% higher than that of a stock which has a 0.5% spread, but the monthly excess return of a stock which has a 5% spread is only 0.09% higher than that of a stock which has a 4% spread 3. The returns on high-spread stocks are greater, but has less spread-sensitivity to the returns on low-spread stocks.	Data were furnished by Stoll and Whaley (1983), Fitch's Stock Quotations on the New York Stock Exchange,and the University of Chicago CRSP tape	Seven portfolios ranked by their beta coefficient (49 portfolios from NYSE listed stocks)	1961–1980

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Table C. 1: The relationship between illiquidity or liquidity and securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Amihud and Mendelson (1986a)	Try to quantify the linkage between the liquidity and price of a financial asset	Black et al. (1972), Fama and MacBeth (1973), and Black and Scholes (1974)	1.The expected, or required return on a stock (or any financial asset) is an increasing function of its liquidity costs as all investors no matter of their time horizon, need reward for bearing these costs. 2. This positive linkage between liquidity costs and expected market returns will be "concave" not "linear" which means that the additional return needed for a given rise in liquidity costs should become smaller for those less liquid assets	Data were furnished by Stoll and Whaley (1983), the Center for Research in Security Prices, NYSE Stocks from Fitch's Stock Quotations on the NYSE	Monthly securities returns in NYSE	1961–1980
Watanabe and Watanabe (2008)	Investigate whether stock market returns' sensitivities to aggregate liquidity shocks and the pricing of liquidity risk change over time.	Markov regime-switching model, a bivariate Gaussian Process, Amihud (2002) price-impact proxy as a measure of illiquidity, Pastor and Stambaugh (2003) liquidity measure, Fama and MacBeth (1973) two-pass procedure, Fama and French (1993), and a cross-sectional regression	1. Liquidity betas vary in large liquidity betas and low betas states 2. The large liquidity-beta lives short and influences by heavy trade, high volatility, and a wide cross-sectional dispersion in liquidity betas. 3. The large liquidity-beta state also leads to a disproportionately high liquidity risk premium, and more than twice the value premium	The Center for Research in Security Prices (CRSP)	25 value-weighted size-sorted portfolios of stocks listed on the New York Stock Exchange (NYSE) and the American Stock Exchange (AMEX)	Jan. 1965–Dec. 2004

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Table C. 1: The relationship between illiquidity or liquidity and securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Amihud and Mendelson (2008)	Consider linkage between liquidity and stock market returns	The CAPM-based measure of risk, Amihud and Mendelson (1986a), and other liquidity measures	1. The required returns and values of financial assets depend on their liquidity (or marketability) as well as the business and financial risks of the associated companies t 2. For both stocks and bonds, the lower the liquidity, the higher the required expected return (all other things equal) and the lower the value (or P/E ratio) 3. that corporate managers can increase the market value of their companies by adopting liquidity-increasing corporate financial policies, including lower leverage ratios, substitution of dividends for stock repurchases, more effective disclosure, and increases in the investor base.	NA	Review of other articles	1984–2008
Amihud (2002)	Examine the linkage between illiquidity and stock market returns	Fama and MacBeth (1973), and a cross-section model	1. Expected market illiquidity positively influences ex ante stock excess return, that means expected stock excess return partly indicates an illiquidity premium 2. Stock market returns are negatively associated to concurrent unexpected illiquidity	Daily and monthly databases of CRSP (Center for Research of Securities Prices of the University of Chicago)	408 monthly data for stocks traded in the New York Stock Exchange (NYSE)	1963–1997
Coppejans et al. (2001)	Examine data from an automated futures market to look into the dynamic linkage between market liquidity, returns, and volatility	Structural vector autoregressive models	1. Indicate wide intertemporal innovation in aggregate market liquidity, measured by the depth of the limit order book at a point in time 2. While Rise in liquidity leads to decline in volatility, volatility changes leads to liquidity decline over the short-run, impairing price efficiency	The electronic market for Swedish stock index futures (henceforth OMX)	Intraday order-level data for Swedish stock index	31 Jul. 1995–23 Feb. 1996

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Table C. 1: The relationship between illiquidity or liquidity and securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Muscarella and Piwowar (2001)	Investigate a sample of Paris Bourse stocks that were shifted between call trading and continuous trading	Amihud et al. (1997), Kalay et al. (2002)	1. Frequently-traded stocks that are shifted from call trading to continuous trading have liquidity improvements that are positively related to price appreciation 2. Infrequently-traded stocks that are shifted from continuous trading to call trading have decline in price and liquidity. 3. Continuous markets provide better liquidity for frequently-traded stocks, but call markets do not provide better liquidity for infrequently-traded stocks. 4. Direct relationship between market microstructure and compnay	The Base de Donnees de Marche (BDM) database	134 companies that were shifted from one trading category to another just for trading activity. Panel A contains the list of the 86 companies that were shifted from “Fixing” to “Continuous”. Panel B which has the list of the 48 companies that were shifted from “Continuous” to “Fixing”	1995–1999
Amihud et al. (1997)	Test the value impacts of improvements in the trading mechanism	The market model regressions, the event-study model, Variable Price Method (V-Method), and Call Method or the (C-Method).	1. Psitive liquidity externalities (spillovers) across associated stocks, and improvements in the value discovery process beause of improvement in trading method 2. There exist a positive linkage between liquidity profits and price appreciation.	'This Month in the TASE', an official TASE publication, the Israeli financial data services firm Tochna Lainyan and from the database of the Faculty of Management at Tel Aviv University	The 120 stocks on the Tel Aviv Stock Exchange	6 Dec. 1987–end of 1994

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Table C. 2: The impact of illiquidity or liquidity on securities

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Zhang and Ding (2018)	Examine the co-ovement of return and volatility measures across different commodity futures markets and how these measures are influenced by liquidity risk	Apply the proxy mentioned in Amihud (2002)	First, commodity returns display co-movement and that liquidity risk has a key impact on asset return patterns. Second, these commodity markets share a common volatility factor that shapes their joint volatility co-movement. Finally, the liquidity spillovers can significantly drive cross-sectional correlation dynamics.	Thomson Datastream	Daily data for the CRB Index that has 19 commodities, including energy, agriculture and metal	1 Jan. 2005–31 Dec. 2013
Frijns et al. (2018)	Examine the interactions between price discovery, liquidity and algorithmic trading activity	Follow the method of Chaboud et al. (2014) by evaluating a reduced-form vector autoregression (VAR), as well as a structural VAR applying the identification through heteroskedasticity approach constructed by Rigobon (2003)	1. Over time, the U.S. market has key role in terms of price discovery for Canadian cross-listed stocks 2. More market's contribution to price discovery, and vice versa will go up by more improvements in liquidity (a rise in trading volume and a decline in effective spread in one market relative to another) 3. Algorithmic trading activity is negatively associated to price discovery, showing negative externalities of high-frequency trading	The Thomson Reuters Tick History (TRTH) database maintained by Securities Industry Research Centre of Asia-Pacific and the intraday Canadian-U.S. Dollar exchange rate quotes from TRTH	Daily data for a sample of Canadian stocks that are traded on the TSX and NYSE	Jan. 2004– Aug. 2017
Batten et al. (2018)	Analyse oil market price dynamics in the context of the Mixture of Distributions Hypothesis (MDH) (The relationship between liquidity, surprise volume and conditional oil price returns)	Asymmetric GARCH-in-Mean model specifications	1.Oil return heterosedasticity is partly described by surprise volume. 2.Both oil market liquidity as well as surprise volume changess are priced in the oil market. As such, lower levels of lagged market liquidity associated to above average conditional returns. 3. Surprise volume changes are associated with lower conditional oil market returns jointly with higher contemporaneous conditional return volatility and finanly lagged market liquidity dominates conditional volatility in anticipating conditional oil price returns.	NA	Two types of oil contracts: ICE-Brent and NYMEX (WTI) West Texas Intermediate (Light Sweet Crude) near month futures contracts trading daily (N = 6,778)	2 Jan. 1990–31 Dec. 2016

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Kariv et al. (2018)	Investigate a model of intermediated exchange with liquidity-constrained traders	Work on a tractable class of networks, multipartite networks Choi et al. (2017), which employed at first by Gale and Kariv (2009) and LOESS Curve Fitting (Local Polynomial Regression)	1.Average transaction prices go up with successive transactions and intermediaries positioned closer to the buyer have greater expected profits 2. A moderate negative relation between expected profits and subjects' trading budgets, conditional on budgets being relatively high (liquidity-rich traders look after overbiding) but rigid budget constraints lead to relieve this behavioral orientation. Hence, budgets can be considered as disciplinary function in markets, prohibiting excessively costly "trembles" or "errors."	NA	Subjects were recruited and participated once in each session from the undergraduate and graduate student bodies at the Experimental Social Science Laboratory (Xlab) at the the University of California, Berkeley.	NA
Saad and Samet (2017)	Explore the effect of involved liquidity level and risks on the implied cost of equity capital	Liquidity measure introduced by Amihud (2002)	The implied cost of equity goes up in the illiquidity level and in the co-variance between firm-level illiquidity and market illiquidity, but it goes down both in the covariance between firm-level returns and market illiquidity and in the co-variance between firm-level illiquidity and market returns.	DataStream	108,322 firm–year observations (14,808 stocks from 52 countries)	Jan. 1985– Oct. 2012
Moshirian et al. (2017)	Investigate the determinants and pricing of liquidity commonality	Panel regressions both with and without control variables	1. Both market-level and firm-level factors have impact on liquidity commonality 2. Weaker and more-volatile economic and financial conditions, in areas with poor investor protection, and in unclear information conditions has higher liquidity commonality 3. Cultural and behavioral aspects, considting of individualism and uncertainty avoidance have impact on liquidity commonality 4. Liquidity commonality is priced in the global stock markets with more impact in developed markets.	Return data from Datastream and other firm-level and country-level variables are created by I/B/E/S, the International Country Risk Guide (ICRG), TRTH, World Development Indicators (WDI), and Worldscope. Moreover, country-level governance and culture indices captured from the literature (i.e. Porta et al. (1998), Hofstede (2003) and Djankov et al. (2008))	Intraday financial information on 29,694 firms across 39 markets in different regions—Asia, Europe, Latin America, the Middle East, Africa, and North America	2 Jan. 1996–31 Dec. 2010

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Chong et al. (2017)	Consider the pricing factors such as liquidity and their associated risk premiums of commodity futures	Multifactor models with a two-stage regression Cochrane (2005)	The risk premiums of two momentum factors and speculators ' hedging pressure is between 2% and 3% per month and are larger than the risk premiums of roll yield (0.8%) and liquidity (0.5%)	Thomson Reuters Datastream (Datastream), the United States Commodity Futures Trading Commission (CFTC)	335 monthly observations in th US.	Feb.1986–Dec. 2013
Banti (2016)	Explore the illiquidity channel connecting stocks and currencies and show key role of illiquidity dynamics, especially during crisis times	VAR model of stock and FX illiquidity and to measure transaction costs by the percentage bid – ask spreads, that is, the difference of ask and bid prices scaled by the mid.	1. Stocks of small firms are more influenced from fuding limitations and also indicate higher relationship with foreign exchange illiquidity but illiquidity changes to stocks of large firms trigger higher portfolio rebalancing and liquidity demand 2. Those currencies that are usual targets of carry trades are more intertwined with stock illiquidity	Datastream, the Reuters Matching platform, EBS and Center for Research in Security Prices (CRSP) share code 10 or 11	The bid and ask quotes of NASDAQ ordinary common shares (The ask and bid are the closing inside quotes (largest bid and lowest ask) for each trading day, where closing time is 16:00 EST	1999– 2014
Amihud et al. (2015)	Evaluate the illiquidity premium in stock markets in 45 countries	The premium is calculated by monthly return series on illiquid-minus-liquid stocks or by the coefficient of stock illiquidity captured from cross section Fama-MacBeth regressions	First, the average illiquidity return premium in these countries is positive and significant, after controlling for other pricing factors. Second, a commonality exists across countries in the illiquidity return premium, controlling for common global return factors and variation in global illiquidity	Datastream and the Center for Research in Security Prices (CRSP)	Monthly data in 45 markets with data (19 emerging and 26 developed markets)	Jan. 1990–Dec. 2011.
Roggi and Giannozzi (2015)	Examine the effect of company liquidity risk on the prices of financial and non-financial firms by considering investors' response to 106 crisis events over the period from 2008 to 2010	The fixed effects model and Partial Least Squares regressions	1.Investors' responses to the crises are influenced by the liquidity risk caused by the levels of fair value hierarchy in both financial and non-financial companies. 2.When having liquidity limitation, investors have stronger negative responses to firms with more level 3, mark to model fair value information, illiquid assets and liabilities on their balance sheets. 3. When having more liquidity, investors respond more positively to firms with more illiquid assets	Eurostoxx database	313 European financial and non-financial companies ((59 financial companies and 254 non-financials) under the IAS 39 and IFRS 7, listed in the Eurostoxx index	17 Feb. 2008–22 Jun. 2010

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Huang et al. (2015)	Analyse the effect of individual stock liquidity on corporate bond yield spreads in the U.S. market	Extending the corporate bond pricing model of He and Xiong (2012) to have equity market liquidity into the bond pricing model	1.A decline in stock liquidity will rise the company's credit risk by increasing the company's default boundary, causing a rise in the credit spread 2. Equity market liquidity changes have a nonlinear impact on the above factors through the rollover loop and small changes are not likely to have much impact, but high changes, during financial crisis.	Datastream, the Center for Research in Security Prices (CRSP) database, and the Compustat database	Straight corporate bonds with fixed coupon payment, zero-coupon bonds and those that are collateralized by firm assets and exclude any financial- or government-associated firms & bonds that are guaranteed by the government, are secured, or have special clauses	Before the financial crisis (Jan. 2001–Jun. 2007) and after the subprime crisis (Jul. 2007–Dec. 2010)
Nneji (2015)	Analyse a simple framework that tests the impacts of market liquidity (the ease with which stocks are traded) and funding liquidity (the ease with which market participants can get funding) on stock market bubbles	Amihud (2002) market liquidity measure	1. Negative market and funding liquidity changes enhance the probability of stock market bubbles collapsing. 2. Market liquidity has a more common impact on stock bubbles than funding liquidity. 3. Liquidity changes prepare warning signals of preventing bubble collapses.	Datastream	Industry indices consisting of publicly listed US stocks (Industries such as Basic Materials, Consumer Goods, Consumer Services, Financials, Healthcare, Industrials, Oil & Gas, Technology, Telecommunications and Utilities)	Jan. 1986–May 2013
Cao and Petrasek (2014)	Explore in an event-study context what issues has influence on the relative performance of stocks during liquidity crises	The event-study technique suggested by Dennis and Strickland (2002) to examine what factors affect abnormal stock returns on days with large shocks to market liquidity	Market risk, calculated by the market beta, is not a proper benchmark for expected abnormal stock market returns on days with liquidity crises but abnormal stock market returns during liquidity crises are strongly negatively associated to liquidity risk, calculated by the co-movement of stock market returns with market liquidity	Intraday data from TAQ, data on control variables, including momentum, leverage, book-to-market equity, and market capitalization, are from CRSP and Compustat	Sample of 207,790 quarterly observations on risk measures and firm characteristics in the U.S. that are listed on NYSE, AMEX, or NASDAQ	1993–2011

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Bradrania and Peat (2014)	Examine whether the impact of liquidity on equity market returns can be connected to the liquidity level, as a stock characteristic, or a market wide systematic liquidity risk	Expand a CAPM liquidity-augmented risk model where the liquidity factor is constructed emplying portfolios that are neutral with respect to loadings of the market factor	Two-factor systematic risk model shows that the liquidity premium and the null hypothesis that the liquidity characteristic is rewarded regardless of liquidity risk loadings is rejected.	The CRSP, French's website: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html	All the stocks listed in NYSE	1 Jan. 1926–31 Dec. 2008
Hendershott and Seasholes (2014)	Explore the trading behavior of two groups of liquidity providers (designated market makers (NYSE specialists) and competing market makers) and their role and impact on short run stock returns	For NYSE specialist this study follows Hendershott and Seasholes (2007) and for the net trades of competing market makers, it follows Kaniel et al. (2008) and Fama–Macbeth regression	1.Cross-sectional approach reveals that smaller, more volatile, less actively traded, and less liquid stocks more often locate in the extreme quintiles. 2.Time series approach reveals the long-short portfolio returns have positive association with a market-wide measure of liquidity	Internal NYSE data file called the Specialist Summary File (SPETS) and second internal file called the Consolidated Equity Audit Trail Data (CAUD) that contains details of all executed orders on the NYSE (both electronic and manual orders), the Center for Research in Security Prices (CRSP), the Trades and Quote database (TAQ) and master file	Daily/weekly trading and returns of common stocks on the New York Stock Exchange (a sample of 2,156 permnos (stocks) and more than 2.1 million stock-day observations)	Jan. 1999–Dec. 2004.

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Baradarannia and Peat (2013)	Re-explore the liquidity impact on stock expected market returns in the NYSE	The approach suggested by Fama and MacBeth (1973) and employ portfolios to analyse whether EFFT has incremental explanatory power for returns relative to common risk factors and after controlling for other stock characteristics.	1.The findings from the total sample of 1926–2008 reveal that rise of expected returns as the stock level illiquidity increases 2. Moreover, evidence from the total sample and the pre-1963 sample indicates that the systematic liquidity risk has a key role in the cross-sectional variation of stock expected returns	the CRSP daily file, the CRSP monthly file, and data for Fama and French (1993), three factors (market, size and value) obtained from French's website http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html	All non-financial companies listed on the NYSE	1 Jan.1926–31 Dec. 2008
Florackis et al. (2014a)	Explore whether stock market illiquidity predicts real UK GDP growth	Two measures of stock market illiquidity suggested by Amihud (2002) and Florackis et al. (2011)	1.There is a significant negative relationship between market illiquidity and future UK GDP growth over and above the common control variables (i.e. real money, term spread and global economic activity) 2. This relationship is stronger during periods of highly illiquid market environments and weak economic growth 3. Suggested out-of-sample forecasting analysis shows that using a regime-switching model of illiquid versus liquid market environments forecasts UK growth better than any other model	Thomson Reuters Datastream, the Bank of England (BoE) database, the Office for National Statistics (ONS) database and the website of the Federal Reserve Bank of Philadelphia	Both RtoV (the average ratio of daily absolute returns to daily trading Volume) and RtoTR (the average ratio of daily absolute stock returns to daily turnover ratio) are calculated for the FTSE 100 index	Q1 1989–Q2 2012

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Smimou (2014)	Consider the effect of equity market liquidity on Canadian economic growth and explores how consumer attitudes/sentiments has influence on the dynamic macro-liquidity linkage	Using seven liquidity measures: relative quoted bid-ask spreads (Market Relative Spread (MRS)), the Amihud illiquidity ratios (ILLIQ , ILLIQ2, ILLIQ3, and ILLIQ4), and the change of Open Interest (dOI3, dOI4)) and method of regression quantiles as described in Koenker and Bassett (1978) and Generalized Method of Methods (GMM), principal component regression (PCR), to check the robustness of the results, this study follows Næs et al. (2011) and incorporate currency movement in the Vector Auto Regression (VAR)	1.Times of having high exchange-rate volatility between the Canadian and US dollars, stock-market liquidity movements has more impact on growth 2. stock market liquidity has more information for calculating the future state of the economy but is depends on the periods of higher positive consumer attitudes 3. A positive change in general consumer sentiment indicates a direct and significant effect on some macro-economic variables such as personal consumption, consumer credit, and economic growth	Thomson Reuters Datastream, the Montréal Exchange and World Federation of Exchanges (WFE)	311 monthly observations and quarterly data from Q2 1986 to Q4 2011) for the S&P Canada 60 index futures.	20 Feb. 1986–20 Dec. 2011 . For majority of economic series are recorded quarterly data cover the second quarter Q2 1986 to Q4 2011, except for the retail sales variable, that is from Q2 1991–Q4 2011)
Boudt and Petitjean (2014)	Investigate the effect of jumps on liquidity by identifying their intraday timing	Lee and Mykland (2008) jump test (they developed an alternative non-parametric way that provides both the direction and size of detected jumps at the intraday level, allowing characterization of jump size distribution, as well as stochastic jump intensity)	1. Jumps appear due to significant rise in trading costs and demand for immediacy, reinforced by the release of news and liquidity supply will be high and there exist powerful record of resilience 2. Liquidity changes in the effective spread and the number of trades are the key determinants to create a jump 3. Order imbalance is the most informative liquidity variable related to price discovery, especially after the arrival of news	The Trades and Quotes (TAQ) database	Tick-by-tick records of transactions and quotations on the 30 Dow Jones Industrial Average index constituents	Jul. 2007–Dec. 2009

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Kim and Lee (2014)	Investigate the pricing implication of liquidity risks in the liquidity-adjusted capital asset pricing model of Acharya and Pedersen (2005)	Eight liquidity measures and their principal component (measure of Amihud (2002), reversal measure of illiquidity from Pastor and Stambaugh (2003), the zero-return measure from Lesmond et al. (1999), turnover-adjusted zero-return measure proposed by Liu (2006), proxy for effective spread based on bid–ask bounce from Roll (1984), the spread estimates of Corwin and Schultz (2012) and effective tick from Goyenko et al. (2009))	1.The empirical oucomes are sensitive to the liquidity measure employed in the test, and shows strong evidence of pricing of liquidity risks when estimating liquidity risks based on the first principal component across eight measures of liquidity, both in the cross-sectional and factor-model regressions 2. Systematic component measured by each liquidity proxy is associated across measures and the changes to the systematic and common component of liquidity are an undiversifiable source of risk.	CRSP daily stock files and CRSP monthly stock files	The return, price, and trading volume data of common shares for non-financial companies in the New York Stock Exchange and the American Stock Exchange (total of 4940 stocks in the sample)	1 Jul. 1962–31 Dec. 2011
Mazouz et al. (2014)	Explore the effect of FTSE 100 index revisions on companies' systematic liquidity risk and the cost of equity capital	A modified version of Liu (2006) LCAPM	1. Index membership increases all facets of liquidity, whereas stocks that leave the index show no significant liquidity innovation 2.The liquidity risk premium and the cost of equity capital come down significantly after additions, but do not show any significant innovation after deletions 3.Index revisions is the only factor that lead to decline in liquidity premium and the cost of equity capital 4. The asymmetric impact of additions and deletions on stock liquidity and cost of capital is in line with this issue that the gains of index membership are permanent	DataStream, Xfi Centre for Finance Investment website, University of Exeter	FTSE 100 index, that have 100 UK firms with the biggest market capitalization and considering 367 FTSE 100 index revision events. final sample include 432 stocks, 212 additions and 210 deletions, consisiting of both surviving and dead stocks	Jan. 1984–Jun. 2009

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Lin et al. (2014)	Examine the impact of the delay with which stock price responds to information	Asset pricing model suggested by Liu (2006)	1.Companies with higher price delay have more difficulty to attract traders (higher incidents of non-trading) and their investors have higher liquidity risk, and as the result unusual returns. 2.The price delay premium is the result of systematic liquidity risk, not insufficient risk sharing. 3. Magnitude of liquidity risk that Investors are facing is the key factor to explain stock market returns, not the pace of information dissemination 4. Business ownership and analyst coverage are the key issues to determine liquidity risk	The Center for Research in Security Prices (CRSP) files with share codes of 10 or 11, the Compustat, I/B/E/S, Thomson Financial, liquidity factor from Weimin Liu, and the conventional asset pricing factors from Kenneth French's website	A sample of NYSE/AMEX/NASDAQ common stocks	Jul. 1974–Jun. 2009
Florackis et al. (2014b)	Investigate the transmission of changes that have impact on the funding liquidity conditions of market participants and financial intermediaries to stock market returns.	Approahes introduced by Kuttner (2001), Florackis et al. (2011), Nyborg and Östberg (2014) and Bernanke and Kuttner (2005) and OLS where t-values are calculated using Newey and West (1987) standard errors. For robustness and to account for outliers, follow Basistha and Kurov (2008), Kurov (2010) and Kontonikas and Kostakis (2013), employing the MM weighted least squares approach of Yohai (1987)	1.Show a strong relationship between macro-liquidity changes and the returns of UK stock portfolios developed based on micro-liquidity measures between 1999 and 2012 2.There exist a significant rise in shares' trading activity and a rather small rise in their trading cost on the Bank of England Monetary Policy Committee (MPC) meeting days 3. During the recent financial crisis the shocks–returns linkage has reversed its sign.	Thomson DataStream, and the list of meetings and decisions is available at http://www.bankofengland.co.uk/monetarypolicy)	Short sterling futures contract that settles on the 3-month British Bankers' Association (BBA) London Interbank Offer Rate (LIBOR) in the UK and a total of 164 MPC meetings and consider all common stocks listed on the LSE for the period from May 1999 to December 2012	Jun. 1999–Dec. 2012

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Acharya et al. (2013)	Analyse the effect of liquidity changes of stocks and Treasury bonds on the US corporate bond returns	A regime-switching regression (the specification is similar to that of Fama and French (1993), completed with the two liquidity risk factors (unexpected changes in the term structure of interest rates and in default risk))	1.In one regime, liquidity changes have insignificant impacts on bond prices, but in another regime, an increase in illiquidity leads to significant but conflicting impacts: Prices of investment-grade bonds increase when prices of speculative-grade (junk) bonds decline substantially (relative to the market) 2.The second regime can be forecasted by economic environments that are called as "stress." These robust impacts to controlling for other systematic risks (term and default), indicate the existence of time-varying liquidity risk of corporate bond returns conditional on episodes of flight to liquidity	The Lehman Brothers Fixed Income Database distributed by Warga (1998) and supplemented by the Merrill Lynch corporate bond index database used by Schaefer and Strebulaev (2008), and CRSP database	On average 2,234 bonds in each month, with a minimum number of 245 and a maximum number of 9,286. The maximum number of months in this sample period is 420, but data are missing for some rating classes in some months.	For Lehman Brothers Fixed Income Database (Jan. 1973– Dec. 1996), and for supplemented with data from the Merrill Lynch Corporate Bond Index Database (Jan. 1994–Dec. 2007). A sample period of Jan. 1973–Dec. 2007
Hagströmer et al. (2013)	Examine the pricing of illiquidity in US equity markets	A conditional version of the liquidity adjusted CAPM (LCAPM) developed by Acharya and Pedersen (2005)	1. Level and the risk in illiquidity are determinants of expected asset returns. 2. Both the magnitude of the illiquidity premia and the variation of premia moving forward are qualitatively uninfluenced by changes in model complexity 3. Depending on model specification total illiquidity premium is on average 1.74–2.08% annually 4. Illiquidity risk varies substantially over time, that indicates the advantage of a conditional modeling technique 5. The magnitude and importance of the illiquidity level premium assoiated to illiquidity risk premia rised steadily since the 1970s but the impact of illiquidity risk, becomes material in times of financial distress.	Stock prices from the Centre for Research in Security Prices (CRSP) daily database, and for portfolio return calculation, stock returns from the CRSP monthly files has been used	US stocks (stocks traded at the New York Stock Exchange (NYSE) and the American Stock Exchange (AMEX))	1927–2010

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Rosch and Kaserer (2013)	Examine the dynamics and the drivers of market liquidity during the financial crisis, using a unique volume-weighted spread measure	An order-size dependent volume-weighted spread WS(q) derived from the limit order book and panel-data regression analysis.	1. During market declines stock market liquidity diminishes 2.More market liquidity risk in times of crisis are especially pronounced for larger volume classes and therefore any adequate market liquidity risk management concept needs to account for this. 3.liquidity commonality differs over time, increases during market down-turns, peaks at major crisis events and becomes weaker if we have clear look at limit order book. 4.Funding liquidity tightness drives a rise in liquidity commonality which then causes market-wide liquidity dry-ups 5.There exists a positive linkage between credit risk and liquidity risk	The European Central Bank, Deutsche Börse Thomson Financial Datastream, and if no rating information was available in Thomson Financial Datastream data obtained from the company's annual or quarterly reports, website or from the company's investor relation department	160 firms listed major German stock indices (DAX, MDAX, SDAX, TecDAX), which are all traded on Xetra	Jan. 2003–Dec. 2009
Karstanje et al. (2013)	Explore the short-horizon predictive power of liquidity on monthly stock market returns	Following liquidity measure: 1. Effective spread based on bid–ask bounce from Roll (1984) 2. Holden (2009) and Goyenko et al. (2009) measure that is based on price clustering, which developed based on the findings of Harris (1991) and Christie and Schultz (1994) 3. Lesmond et al. (1999) measure that is based on the proportion of days with zero returns. 4. Corwin and Schultz (2012) measure that is based on daily high and low prices. 5. The measure developed in Amihud (2002) proxies for the price impact of a trade.	1. Liquidity timing causes tangible economic profits 2. A risk-averse investor will pay a high performance fee to switch to a liquidity measures that conditions on the Zeros measure Lesmond et al. (1999) 3. The Zeros measure performs better that other liquiditymeasures due to its robustness in extreme market environments.	The Center for Research in Security Prices (CRSP) sharecode 10 or 11,	Daily data of common stocks listed on the New York Stock Exchange (NYSE) (16,083,228 stock/day observations)	Jan. 1947–Dec. 2008

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Anand et al. (2013)	Look into the effect of institutional trading on stock resiliency during the financial crisis of 2007–2009	Amihud (2002) market liquidity measure	1.That buy-side institutions react differently to liquidity factors based on their trading style 2.Liquidity supplying institutions take the long-term order imbalances in the market and are critical to recovery patterns after a liquidity innovation 3. The suppliers of this liquidity avoid from risky securities when facing the crisis and their participation does not recover for an extended period of time 4. Institutional trading patterns have large influence over the illiquidity of specific stocks	Abel Noser Solutions, CRSP and TAQ databases	Common stocks listed on NYSE or Nasdaq with data available (Total of 982 buy-side institutions, responsible for approximately 47 million orders in 8,630 U.S. stocks)	1 Jan. 1999–30 Sep. 2010
Riordan and Storkenmaier (2012)	Investigate the effect that latency decline has on liquidity and price discovery	Several proxies for liquidity: quoted spreads, effective spread, realized spread, price impact	1. Latency decline in a market cause an increase in liquidity, mostly in small- and medium.sized stocks 2. The efficiency of prices clearly improve post upgrade, as does the relative contribution of quotes to price discovery 3. A lack of competition between liquidity suppliers, as the realized spread increases fourfold which leads to an increase in liquidity supplier revenues	The Reuters DataScope Tick History archive, and Reuters Instrument Codes (RIC)	98 stocks listed in Deutsche Boerse's HDAX segment and The observation period consists of 40 trading days before and after the introduction of Xetra 8.0 on April 23, 2007	On 23 Apr. 2007
Friewald et al. (2012)	Test whether liquidity is an key price factor in the US corporate bond market especially during financial crisis	Liquidity proxies such as Amihud (2002) that is based on Kyle (1985), price dispersion measure of Jankowitsch et al. (2011), Effective spread based on bid–ask bounce from Roll (1984) and Zero-return measure and panel data regressions and the Fama-MacBeth regressions	Liquidity impacts can approximately explain 14% of the market-wide corporate yield spread changes and the impact is more during crisis, and for speculative grade bonds	Traded prices from TRACE, along with market valuations from Markit, bond characteristics from Bloomberg, and credit ratings from Standard & Poor's.	23,703 corporate bonds and 3,261 firms in the US	1 Oct. 2004–31 Dec. 2008

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Lin et al. (2011)	Consider the impact of liquidity risk on the cross section of corporate bonds	Pastor and Stambaugh (2003) and Amihud (2002) measures, other variants as proxies for the liquidity, and regression and portfolio-based test approaches	1. Liquidity risk has impact on the corporate bond market 2. There is a significant positive economic linkage between expected corporate bond returns and liquidity risk even after controlling for the effects of default and term betas, stock market risk factors, bond characteristics, the level of liquidity, and ratings and this linkage is robust no matter which model specifications and liquidity measures have been used	The Trade Reporting and Compliance Engine (TRACE) of the National Association of Securities Dealers (NASD) and National Association of Insurance Commissioners (NAIC), the FISD, and French's website: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html	11,729 bonds in our final sample: 1,016 Aaa bonds, 1,833 Aa bonds, 3,390 A bonds, 2,610 Baa bonds, and 2,880 speculative bonds.	Jan. 1994–Mar. 2009
Lee (2011)	Analyse the liquidity-adjusted capital asset pricing approach of Acharya and Pedersen (2005) on a international level	Cross-sectional regressions, and the test of the LCAPM from Acharya and Pedersen (2005)	1. The pricing of liquidity risk is not dependent on market risk in global markets 2. The US market has a key role in international liquidity risk 3. Liquidity risks are priced according to geographic, economic, and political environments 4. International portfolio can employ systematic dimension of liquidity for diversification purposes	Datastream, and K. French's data library: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html	30,069 stocks and varies across 50 countries, 22 developed market countries and 28 emerging-market countries, and years	Jan. 1988–Dec. 2007
Sadka (2006)	Expolre the components of liquidity risk that are important for understanding asset-pricing anomalies.	Cross-section analysis, Glosten and Harris (1988) model, Brennan and Subrahmanyam (1996), Amihud (2002) , Pastor and Stambaugh (2003), Acharya and Pedersen (2005)market liquidity measure	1.Unexpected systematic (market-wide) changes of the variable component not the fixed component of liquidity are shown to be priced within the context of momentum and post-earnings-announcement drift (PEAD) portfolio returns. 2. An important part of momentum and PEAD returns can be seen as reward for the unexpected changes in the aggregate ratio of informed traders to noise traders	The Institute for the Study of Securities Markets (ISSM) and the New York Stock Exchange Trades, Automated Quotes (TAQ), The Center for Research in Securities Prices (CRSP) data	1,159 firms beginning in January 1983 and then 2,226 in August 2001 for NYSE-listed stocks (An exception is July 1987, in which only 506 firms are observed.) 4,082 different firms are employed for the estimation of liquidity. The total number of trades used is 645 million, 26 million trades of which are above ten thousand shares.	Jan. 1983–Aug. 2001

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Acharya and Pedersen (2005)	Test a simple theoretical approach to explain how asset prices are influenced by liquidity risk and commonality in liquidity	Liquidity-adjusted capital asset pricing model, liquidity measure by Amihud (2002), Generalized Method of Methods (GMM) framework following Cochrane (2005)	1. A security's required rate of return affects by its expected liquidity and the covariances of its own return and liquidity with the market return and liquidity 2. A persistent negative innovation to a security's liquidity leads to a low concurrent returns and high predicted future returns	The Center for Research in Security Prices (CRSP), the COMPUSTAT	Daily return and volume data for all common shares listed on NYSE and AMEX	1 Jul. 1962–31 Dec. 1999
Gibson and Mougeot (2004)	Test whether aggregate market liquidity risk is priced in the US stock market	Bivariate Garch (1,1)-in-mean specification, the BEKK model proposed by Kroner and Ng (1998), quasi-maximum likelihood (QML) method of Bollerslev and Wooldridge (1992)	1. Liquidity risk is priced in the US and the sign of the liquidity risk premium is significantly negative and time-varying. 2. Systematic liquidity risk has high impact on market risk and is insensitive to the introduction of extreme liquidity events such as the October'87 crash	Datastream, and NBER	300 monthly observations for standardized number of shares in the S&P 500 Index	Jan. 1973–Dec. 1997
Pastor and Stambaugh (2003)	Explore whether marketwide liquidity is a state variable is a key factor for asset pricing	The generalized method of moments Hansen (1982), the equilibrium model of Campbell et al. (1993), a simple modification of the liquidity-defining regression, a pooled time-series, and cross-sectional regression approach.	1. Expected stock market returns are associated cross-sectionally to the sensitivities of returns to changes in aggregate liquidity 2. The average return on stocks with high sensitivities to liquidity is 7.5% annually higher for stocks with low sensitivities, adopted for exposures to the market return, size, value, and momentum factors 3. A Liquidity risk driving force is accountable for half of the gains to a momentum strategy over the same 34-year period	The Center for Research in Security Prices (CRSP share codes 10 and 11) at the University of Chicago, the CRSP daily stock file, the CRSP monthly stock file, Ibbotson Associates	individual stocks on the New York Stock Exchange (NYSE) and American Stock Exchange (AMEX)	Jan. 1966–Dec. 1999

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Table C. 2: The impact of illiquidity or liquidity on securities (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Lesmond et al. (1999)	Develop and consider a new approach to estimate transaction costs using only the time series of daily security market returns	The limited dependent variable (LDV) model of Tobin (1958) and Rosett (1959) to compute transaction costs according to the frequency of zero returns	This developed approach has continuous estimates of average round-trip transaction costs that are 1.2% and 10.3% for large and small decile companies, respectively. These estimates has high correlation (85%), with the most commonly employed transaction cost estimators	The CRSP database (the CRSP NYSE/AMEX daily master file), the Institute for Study of Security Markets (ISSM) and the Fitch database	Daily security returns listed on the NYSE and AMEX exchange, daily closing bid and ask quotes for all NYSE and AMEX securities for the 3-year period 1988–1990, and proportional spreads for NYSE securities for the period 1963–1979 that Stoll and Whaley (1983) employed in their study	1963–1990
Brennan and Subrahmanyam (1996)	Investigate the impact of liquidity costs on NYSE stock market returns	Glosten-Harris (GH) from Glosten and Harris (1988) and Hasbrouck-Foster-Viswanathan (HFV) from Hasbrouck (1991), Fama-French OLS regressions, dummy variable GLS regressions, using the Fama-French factors, Cross-sectional correlation matrix, and pooled time-series cross-sectional GLS regressions	A strong positive linkage between average stock market returns and liquidity costs when measured in terms of both bid-ask spreads and price-impact costs	The Institute for the Study of Securities Markets, the CRSP tape, and the ISSM tape	Monthly returns for all NYSE companies	Jan. 1984–Dec. 1991
Amihud and Mendelson (1991)	Explore the impacts of asset liquidity on on the yields of finite-maturity securities that have the same cash flows: U.S. Treasury bills and notes with maturities under 6 month	Pooled Time-Series and Cross-Section Regression	1.The yield to maturity is more for notes that have lower liquidity 2.There exist high impact from liquidity in asset pricing	The quote sheets of First Boston Corporation	489 Matched Triplets of Notes and Bills (37 trading days that represent about 5 days in each month in the U.S and having only bills and notes with less than 6 months to maturity)	Apr. 1987–Nov. 1987

Table C. 3: Alternative measures of illiquidity or liquidity

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Fong et al. (2017)	Investigate different liquidity proxies for global research	Four high-frequency percent-cost benchmarks (percent effective spread, percent quoted spread, percent realized spread and percent price impact) and one high-frequency cost-per-dollar-volume benchmark following Goyenko et al. (2009) and Hasbrouck (2009) and ten monthly percent-cost proxies (‘‘Roll’’from Roll (1984) ;‘‘LOT Mixed’’ and ‘‘Zeros” from Lesmond et al. (1999); “LOT Y-Split” and “Zeros2” from Goyenko et al. (2009); “Effective Tick” from Goyenko et al. (2009) and Holden (2009); “Extended Roll” from Holden (2009); “High–Low” from Corwin and Schultz (2012); and “Closing Percent Quoted Spread” from Chung and Zhang (2014) a new percent-cost proxy, FHT, which is a simplification of the LOT Mixed model) and thirteen monthly cost-per-dollar-volume proxies computed from low-frequency (daily) data (‘‘Amihud’’from Amihud (2002), ‘‘Pastor and Stambaugh’’ from Pastor and Stambaugh (2003), “Amivest” and the extended Amihud class of proxies from Goyenko et al. (2009)), and daily version of two percent-cost proxies: High–Low and Closing Percent Quoted Spread.	1. Closing Percent Quoted Spread is the best monthly percent-cost proxy when available 2. Amihud, Closing Percent Quoted Spread Impact, LOT Mixed Impact, High–Low Impact, and FHT Impact are tied as the best monthly cost-per-dollar-volume proxy 3. The daily version of Closing Percent Quoted Spread is the best daily percent-cost proxy 4. the daily version of Amihud is the best daily cost-per-dollar-volume proxy	US intraday trades and quotes data from the New York Stock Exchange Trade and Quote (TAQ) database and other data such as returns and market capitalization from the Center for Research in Security Prices (CRSP) and Compustat, Intraday trades and quotes data of international markets from the TRTH database, Thomson Reuter database, Datastream, and Bloomberg	1. Primary sample: 42 exchanges, leading exchange by volume in 36 countries, plus three exchanges in China and three exchanges in the US, in 38 countries 2. Secondary sample: The same 42 exchanges	1996–2007 for primary sample and 2008–2014 for secondary sample

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Table C. 3: The different measure of illiquidity or liquidity (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Liu et al. (2016)	Offer a liquidity adjustment to the consumption-based capital asset pricing model (CCAPM)	Using two proxies to calculate transaction costs., the effective trading costs (cGibbs) of Hasbrouck (2009) and the bid-ask spread estimates (CSspread) of Corwin and Schultz (2012) and following representative consumer's multiperiod consumption and investment decision model of Samuelson (1969) and Merton (1969) by incorprating transaction costs into the common CCAPM	1.This liquidity-adjusted model indicates that expected return is also related to transaction costs and liquidity risk 2.The average stock is positively associated to liquidity risk, and the sensitivity of trading costs to consumption 3. The common CCAPM underestimates risk and expected return on average. Changess is significantly associated to returns and this liquidity-adjusted CCAPM describes a major part of the cross-sectional return changes.	Market capitalization (MV) and monthly stock returns from CRSP and Following Davis et al. (2000), we calculate the book equity using data from COMPUSTAT.	NYSE and AMEX ordinary common stocks	Jan. 1950–Dec. 2009
Chacko et al. (2016)	Explore a new liquidity risk measure ,exchange-traded funds (ETFs), that tries to decrease errors such as extraneous risk factors and hedging error. They form a theoretically-supported measure that is long ETFs and short the underlying components of that ETF	Regression approach	This new produced illiquidity measure shows strong association to other measures of illiquidity, explains bond index returns, and indicates a systematic illiquidity component across fixed-income markets.	https://github.com/tammer/scrapers/bloB/Naster/hsieh.rb and Bloomberg	Fourteen bond ETFs along with an equity ETF, the IVV, which represents the S&P 500.	2000–2015

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Table C. 3: The different measure of illiquidity or liquidity (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Marshall et al. (2013)	Study different liquidity proxies to see which one best measure the actual cost of trading in 19 frontier markets	Two approaches, the first one involves correlation analysis and the second one uses root mean squared errors) and following proxies: effective spread based on bid–ask bounce from Roll (1984), the effective trading costs of Hasbrouck (2009) and Hasbrouck (2004), the zero-return measure from Lesmond et al. (1999), the zero-return from Goyenko et al. (2009), the monthly average quoted spread is, following Fong et al. (2011) (updated version Fong et al. (2017)), Amihud (2002) measure, Amihud et al. (1997) measure, Pastor and Stambaugh (2003)	Gibbs, Amihud, and Amivest proxies have the largest correlation with liquidity benchmarks, while the FHT measure give us the best way to measure the magnitude of actual transaction costs	Thomson Reuters Tick History (TRTH), the Securities Industry Research Centre of Asia Pacific (SIRCA), the Reuters Integrated Data Network (IDN), Thomson Reuters Datastream	19 countries include: Argentina, Bahrain, Bulgaria, Croatia, Estonia, Jordan, Kuwait, Lebanon, Lithuania, Oman, Pakistan, Qatar, Romania, Serbia, Slovenia, Sri Lanka, the United Arab Emirates (UAE), Ukraine, and Vietnam	2002–2011
Banti et al. (2012)	Investigate liquidity in the FX market of 20 US dollar exchange rates	A measure of global liquidity risk (liquidity as the expected return reversal accompanying order flow) in the foreign exchange (FX) market (Following Pastor and Stambaugh (2003))	1.This measure has proper properties, and that there exists a strong common component in liquidity across currencies 2. liquidity risk is priced in the cross-section of currency market returns, and show the liquidity risk premium in the FX market close to 4.7 percent per annum	FX spot exchange rates of the US dollar versus these currencies from Datastream and the WM/Reuters Closing Spot Rates from Reuters at about 16 GMT	Daily data for 20 US dollar exchange rates (10 for developed economies and 10 for emerging markets) and order flow of institutional investors	14 Apr. 1994–17 Jul. 2008
Bao et al. (2011)	Explore the linkage between illiquidity and corporate bond valuation	The OLS regression, Fama–MacBeth cross-sectional regressions, Newey–West t-statistics, Roll (1984) liquidity measure	1. Illiquidity measure has strong economic impact on corporate bonds 2. Bid–ask bounce is not enough to explain the magnitude of the reversals 3. Price reversals are stronger after a decrease in price than a rise in price 4. illiquidity has positive relationship with a bond's age and maturity, but a negative one with its issuance size 5. Price reversals are inversely associated to trade size and the illiquidity of individual bonds fluctuates substantially over time	Financial Industry Regulatory Authority's (FINRA) TRACE, CRSP, the Fixed Investment Securities Database (FISD), CBOE, the Federal Reserve, Bloomberg, and Datastream	1,035 bonds	14 Apr. 2003–30 Jun. 2009

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Table C. 3: The different measure of illiquidity or liquidity (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Florackis et al. (2011)	Study new price impact ratio, RtoTR, as an alternative to Amihud (2002) Return-to-Volume ratio (RtoV)	Three asset pricing models (Jensen's alpha from the CAPM, three-factor Fama and French (1993) model, the four-factor Carhart (1997) model), and Cross-sectional, two-stage Fama and MacBeth (1973) regressions, and two alternative price impact ratios: Amihud (2002), and the Return-to-Turnover Rate ratio	1. New ratio is free of a size bias 2. There is no simple direct relationship between trading costs and stock market returns and it means that the compound impact of trading frequency and transaction costs that matters for asset pricing, not each of them in isolation	Thomson DataStream	Daily data from both presently listed and dead stocks listed on the London Stock Exchange	Jan. 1991–Dec. 2008
Goyenko et al. (2009)	Examine the hypothesis that low-frequency measures of transaction costs, measured monthly and annually, can effectively compute high-frequency measures, and if this is the case, specify which measures are working better	Following the technique of Hasbrouck (2009), The Bayesian regression Spread proxies (Roll, Effective Tick, Effective Tick2, Holden, Gibbs, LOT Mixed, LOT Y-split, Zeros, Zeros2) Price impact proxies (Roll, Effective Tick, Effective Tick2, Holden, Gibbs, LOT Mixed, LOT Y-split, Zeros, Zero2, Amihud Pastor and Stambaugh, Amivest)	New effective/realized spread measures work better than majority of horseraces, while the Amihud (2002) measure is doing better in measuring price impact	Trade and Quote (TAQ) and Rule 605 database, the Center for Research in Security Prices (CRSP), Thomson Financial's Datastream, Transaction Auditing Group, Inc. (www.tagaudit.com)	400 randomly selected stocks	1993–2005 for NYSE TAQ
Holden (2009)	Examine new developed spread proxies that get three attributes of the low-frequency (daily) data	An integrated model, the Holden model, and combined models, the Multi-Factor models, following the methodology of Hasbrouck (2009), six existing low-frequency spread proxies and eleven New low-frequency spread proxies	All three performance dimensions, (1) higher individual company relation with the benchmarks, (2) higher portfolio correlation with the benchmarks, and (3) lower distance relative to the benchmarks, the new integrated approach and the new combined approach do significantly better job than existing low-frequency spread proxies	The Center for Research in Security Prices (CRSP), and the NYSE's Trade and Quote (TAQ) dataset	400 randomly selected stocks with annual replacement of stocks that do not survive (62,100 stock-months)	1993–2005

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Table C. 3: The different measure of illiquidity or liquidity (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Hasbrouck (2009)	Study the linkage between the effective cost of trading and US stock returns	Following liquidity proxies: Roll (1984), Lesmond et al. (1999), Amihud (2002), GMM technique following Cochrane (2005), OLS time-series regression	1. The effective cost (as a characteristic) has positive relationship with stock returns 2. The linkage is strongest in January, but it indicate its distinction from size effects.	CRSP daily data Set (CRSP share code 10 or 11), TAQ data produced by the NYSE, the Fama–French return factors (downloaded from Ken French's web site), an SAS data set containing the long-run Gibbs sampler estimates are available in the following web site: www.stern.nyu.edu/ ~ jhasbrou	22,000 firms and 21,520 days	1926–2006 (1927 to 2006 for NYSE firms, 1963 to 2006 for Amex, and 1985 to 2006 for NASDAQ)
Liu (2006)	Consider new measure of liquidity, the standardized turnover-adjusted number of zero daily trading volumes, for individual securities	The CAPM and the Fama–French three-factor model, , the methods that Kenneth French's website shows, Fama and French (1988), and liquidity measure by Amihud (2002)	1. Liquidity is an important source of priced risk 2. A two-factor (market and liquidity) model well explains the cross-section of stock market returns, explaining the liquidity premium, subsuming documented anomalies related to size, long-term contrarian investment, and fundamental (cashflow, earnings, and dividend) to price ratios 3. The two-factor model accounts for the book-to-market impact, that the Fama–French three-factor model cannot explain	The CRSP/COMPUSTAT merged (CCM) database, Datastream and Kenneth French's website is http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/	All ordinary common stocks in NYSE/AMEX/NASDAQ	Jan. 1960–Dec. 2003
Acharya and Pedersen (2005)	Test a simple theoretical approach to explain how asset prices are influenced by liquidity risk and commonality in liquidity	Liquidity-adjusted capital asset pricing model, liquidity measure by Amihud (2002), Generalized Method of Methods (GMM) framework following Cochrane (2005)	1. A security's required rate of return affects by its expected liquidity and the covariances of its own return and liquidity with the market return and liquidity 2. A persistent negative innovation to a security's liquidity leads to a low concurrent returns and high predicted future returns	The Center for Research in Security Prices (CRSP), the COMPUSTAT	Daily return and volume data for all common shares listed on NYSE and AMEX	1 Jul. 1962–31 Dec. 1999

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Table C. 3: The different measure of illiquidity or liquidity (continued)

Name	Objective	Modelling/Framework	Findings	Database	Sample	Period
Amihud (2002)	Examine the linkage between illiquidity and stock market returns	Fama and MacBeth (1973), and a cross-section model	1. Expected market illiquidity positively influences ex ante stock excess return, that means expected stock excess return partly indicates an illiquidity premium 2. Stock market returns are negatively associated to concurrent unexpected illiquidity	Daily and monthly databases of CRSP (Center for Research of Securities Prices of the University of Chicago)	408 monthly data for stocks traded in the New York Stock Exchange (NYSE)	1963–1997
Lesmond et al. (1999)	Develop and consider a new approach to estimate transaction costs using only the time series of daily security market returns	The limited dependent variable (LDV) model of Tobin (1958) and Rosett (1959) to compute transaction costs according to the frequency of zero returns	This developed approach has continuous estimates of average round-trip transaction costs that are 1.2% and 10.3% for large and small decile companies, respectively. These estimates has high correlation (85%), with the most commonly employed transaction cost estimators	The CRSP database (the CRSP NYSE/AMEX daily master file), the Institute for Study of Security Markets (ISSM) and the Fitch database	Daily security returns all firms listed on the NYSE and AMEX exchange, daily closing bid and ask quotes for all NYSE and AMEX securities for the 3-year period 1988–1990, and proportional spreads for NYSE securities for the period 1963–1979 that Stoll and Whaley (1983) employed in their study	1963–1990
Brennan et al. (1998)	Consider a risk-based asset pricing approach against specific non-risk alternatives employing data on individual securities	The key components model of Connor and Korajczyk (1988), and the characteristic-factor based approach of Fama and French (1993), and cross-section OLS regression	A powerful negative linkage between average market returns and trading volume,that is in line with a liquidity premium in asset prices	The CRSP, and the COMPUSTAT tapes	Monthly returns and other characteristics for an average of 2457 stocks over 360 months in NYSE/AMEX and Nasdaq	Jan. 1966–Dec. 1995