Policy Uncertainty: Implications for Financial Sector Stability

by
Andromachi Papachristopoulou

A dissertation submitted in satisfaction of the
requirements for the degree of
Doctor of Philosophy
in
Finance

Supervisory Teams:
2016 – 2017: Prof. Roman Matousek, Prof. Ekaterini Panopoulou
2017 – 2019: Prof. Ekaterini Panopoulou, Dr. Nikolaos Voukelatos
2019 – 2020: Dr. Timothy King, Dr. Nikolaos Voukelatos

AUTUMN 2019

KENT BUSINESS SCHOOL, FACULTY OF SOCIAL SCIENCES
UNIVERSITY OF KENT

Abstract

The recent market turmoil and political situation in the U.S. and in the rest of the world, raised questions about the effect of policy uncertainty on the stability of the financial system. Do the rise of political polarization, the increase of populism and nationalism and the country-specific political events (i.e. Greek or Brexit referendum) impact the financial sector? This thesis focuses on the consequences of economic policy uncertainty on the capital shortfall of Global financial firms, the short- and long-term liquidity needs of U.S. Bank Holding Companies and the distance-to-default and capital shortfall of Greek firms. This thesis provides evidence that have meaningful implications to both practitioners and policymakers on understanding the effects of the uncertainty that arises from both politicians and regulators. This thesis consists of three main chapters corresponding to three research papers.

In the second chapter, we examine how policy uncertainty affects firm's capital shortage in the case of a financial crisis. Employing a Global Economic Policy Uncertainty index, we show that an increase in policy uncertainty leads to future capital shortfall increases in case of a severe market decline. Moreover, we find that the effect of policy uncertainty is not dependent on the severity of the crisis. A significant policy effect is prevalent for North America, European, and Asian companies, and for different financial sectors. Financial firms that have already capital shortage are significantly affected by policy uncertainty, whereas, well-capitalized financial firms are less affected. Overall, these findings have implications for policymakers and politicians since if their response during a severe market decline is not timely and decisive it does not come without a cost and for firms' managers, as we show that in periods of elevated policy uncertainty and a severe market downturn, firms will face additional capital requirements than expected.

In the third chapter, we examine how policy uncertainty affects the Basel III Liquidity Coverage Ratio and the Net Stable Funding Ratio for US Bank Holding Companies. First, we construct two proxies, one for the Liquidity Coverage Ratio and one for the Net Stable Funding Ratio. Then, we use the US Economic Policy Uncertainty Index of Baker, Bloom and Davis (2016) and show that an increase of policy uncertainty leads in the next period to an increase of banks' liquidity ability. This increase is due to the negative relation between economic policy uncertainty and total net cash outflows and the required amount of stable funding (denominators). Our results are robust to the level of the ratios and the size of banks. The instrumental variable analysis and the placebo tests we conduct, confirm our evidence.

The final chapter examines the relationship between Greek Economic Policy Uncertainty and the Distance-to-Default and Capital Shortfall of firms in Greece. We follow the work of Baker, Bloom, and Davis (2016) to construct the Greek Economic Policy Uncertainty index and we show that an increase in policy uncertainty is related to a decrease (increase) of Distance-to-Default (Capital Shortfall). We demonstrate that the effect is essential for many sectors in Greece. The results point out that the increase of policy uncertainty depresses the stability of the financial system and it is the uncertainty that arises from policymakers and politicians that affects the financial health of firms and not from the uncertainty that arises from the economic conditions.

Research Declaration

This thesis is a presentation of my original research work. It has not been submitted, in whole or in part, in any previous application for a degree. Except where states otherwise by reference or acknowledgment, the work presented is entirely my own.

The work presented in **Chapter 2** is under review at the Journal of Corporate Finance as "Policy Uncertainty and Capital Shortfall of Global Financial Firms" by Professor Roman Matousek, Professor Ekaterini Panopoulou and PhD Candidate Andromachi Papachristopoulou. At the time, both Prof. Matousek and Prof. Panopoulou were my supervisors and the research was carried out by me under their supervision. This chapter was also presented by me as a research paper in the Financial, Engineering and Banking Society (FEBS) Conference 2018 in Rome, Italy and the 14th Athenian Policy Forum 2018 in Athens, Greece.

The work presented in **Chapter 3** was presented by me as a research paper in the 23rd Annual International Conference on Macroeconomic Analysis and International Finance 2019 in Rethymnon, Greece and the 9th National Financial, Engineering and Banking Society Conference 2018 in Athens, Greece.

Acknowledgements

First and foremost, I would like to express my deep gratitude to my supervisors **Professors Roman Matousek, and Ekaterini Panopoulou and Drs. Nikolaos Voukelatos and Timothy King** for giving me the opportunity to pursue a Ph.D. and their encouragement and guidance towards completing my studies. Their knowledge, patience and support have significantly contributed to this thesis and my academic development.

I would also like to thank my parents, Chrysanthos and Anna, for their encouragement to pursue my goals in both academia and life and my sister Evangelia, for being an example of pursuing our own dreams.

I am deeply grateful to my husband, Timotheos, for his patience and understanding during these years. His support and his insights have been an irreplaceable help and motivation during my studies and his contribution is of unparalleled importance.

Table of Contents

List of Tables

List of Figures

List of Abbreviations and Symbols

a	Firm fixed effects
A2E	Asset to Equity ratio
ADS	US business index
ASF	Available amount of Stable Funding
ASSET	Assets of BHCs
beta	Beta coefficient with respect of the Morgan Stanley Capital International world index
BCBS	Basel Committee of Banking Supervision
BHC	Bank Holding Company
CAP	Firm's market capitalization
CBO	Congressional Budget Office
CNTS	Cross-National Time-Series Data Archive
Conf	Greek economic confidence index
Cons	Greek consumer confidence index
Corp_Spread	Corporate spread
Crises	Dummy variable to account for the crisis period
CSV	Cross-sectional standard deviation of monthly stock returns
d	Threshold of a 6-month market decline
Debt	Book value of Debt
DtD	Distance-to-Default
ELECTION	Set of Election Binary Variables
EPU	Economic Policy Uncertainty
EPU*	Greek Economic Policy Uncertainty Index of our own construction

EPU^{COMP}	US Economic Policy Uncertainty Index as the weighted sum of EPU indices reflecting newspaper coverage, government spending disagreements, economic forecasters disagreements about the consumer price index and the number of federal tax code provisions set to expire in future years
EPU^{Fou}	Greek Economic Policy Uncertainty Index by Fountas, Karatasi and Tzika (2018)
EPU^{Gover}	US Economic Policy Uncertainty Index about newspaper coverage
EPU^{Har}	Greek Economic Policy Uncertainty Index by Hardouvelis, Karalas, Karanastasis and Samartzis (2018)
EPU^{Infl}	US Economic Policy Uncertainty Index about economic forecasters disagreements about the consumer price index
EPU^{News}	US Economic Policy Uncertainty Index about government spending disagreements
EPU^{Tax}	US Economic Policy Uncertainty Index about the number of federal tax code provisions set to expire in future years
Equity	Current market capitalization
FDIC	Federal Deposit Insurance Corporation
FED	Federal Reserve
FINANCIAL	Financial uncertainty index
FSI	Financial Stress Indicator
GDP	Gross Domestic Product
GEPU	Global Economic Policy Uncertainty Index
GFCF	Gross fixed capital formation
GICS	Global Industry Classification Standard
GFC	Global Financial Crisis in 2008
HQLA	High Quality Liquid Assets
IMF	International Monetary Fund
k	Prudential Capital Ratio
LCR	Liquidity Coverage Ratio
LEPU	Country-specific (local) economic policy uncertainty indices

LRMES	Long-run marginal expected shortfall
LVG	Leverage ratio
M	Set of control variables
MFEAR	Migration Fear index
MKT	Excess market return of the developed markets
MNT	Set of seasonal monthly dummy variables
N2I	Non-interest income to total interest income ratio
NBER	US Recessions binary variable
$\boldsymbol{Nominate\ Score^{House}}$	Political Polarization in the US House of Representatives
$\boldsymbol{Nominate\ Score^{Senate}}$	Political Polarization in the US Senate
NPL	Non-performing loan ratio
NSFR	Net Stable Funding Ratio
OECD	Organization for Economic Co-operation and Development
PConflict	Partisan Conflict Index
Q	Set of calendar quarterly dummy variables
REAL	Macroeconomic uncertainty index
Recession	Dummy variable for the yearly Gross Domestic Product decrease
REIT	Real Estate Investment Trusts
Ret	Monthly stock return of the General Index of the Greek Stock Exchange
ROA	Return to Asset ratio
ROE	Return on equity
RSF	Required amount of Stable Funding
RW2T	Risk-weighted assets to Tier 1 capital ratio
SD	Annualized standard deviation of firm’s returns
SDMKT	Annualized monthly standard deviation of the developed stock markets index returns

Spread	Difference between the Greek and Bud 10-year bond yield
SRISK	Systemic Risk Indicator (Capital Shortfall)
TARP	Troubled Asset Relief Program
Term	Difference between 10-year Treasury constant maturity rate and the 3-month Treasury constant maturity rate
TNCO	Total Net Cash Outflows
TOT ASSETS	Firm's total assets
VIX	Chicago Board Options Exchange Volatility Index
Vol	Annualized stock market volatility

Chapter 1

Introduction

"The Federal Open Market Committee (FOMC) is firmly committed to fulfilling its statutory mandate from the Congress of promoting maximum employment, stable prices, and moderate long-term interest rates. The Committee seeks to explain its monetary policy decisions to the public as clearly as possible. Such clarity facilitates well-informed decision-making by households and businesses, reduces economic and financial uncertainty, increases the effectiveness of monetary policy, and enhances transparency and accountability, which are essential in a democratic society." p. 130 Annual Report 2017 FED.

The last global financial crisis (GFC) prompted unprecedented capital injections into financial institutions worldwide, which resulted in significant fiscal costs. There is a general consensus that if appropriate financial regulation and supervision of the financial markets and financial institutions had been imposed prior to or during the GFC, then the degree of uncertainty and the economic impact would have been less severe. Therefore, it is essential to investigate whether unclear and delayed policy decisions by central banks, regulators, and governments negatively affect different aspects of the stability of the financial system.

Policy uncertainty affects the environment in which firms and households operate. A well-developed strand of the literature shows that policy uncertainty, which arises not only from the uncertainty stemming from elections and political instability, but also from the actions of policymakers, can have long-lasting effects on the stock and bond markets as well as on the real economy.

Existing empirical studies concerning economic policy uncertainty show that it negatively affects the real economy along with the financial markets (e.g., Pástor and Veronesi, 2012; Baker, Bloom, and Davis, 2016; Kelly, Pástor, and Veronesi, 2016). From a firm's perspective, the effects of elevated economic policy uncertainty range from the postponement and decrease of corporate investments (Bernanke, 1983; Gulen and Ion, 2016; Julio and Yook, 2016) to adverse effects in terms of corporate spreads and lending availability (Waisman, Ye, and Zhu, 2015; Çolak, Durnev, and Qian, 2017; Lee, Lee, Zeng, and Hsu, 2017; Nguyen and Phan, 2017). Further, a number of studies show that an increase in bank failures and delays in firms' leverage adjustments is related to the political component of economic policy uncertainty (Dam and Koetter, 2012; Liu and Ngo, 2014; Çolak, Gungoraydinoglu, and Öztekin, 2018).

While the impact of policy uncertainty on economic outcomes and firms' plans is a heavily researched area, the impact of policy uncertainty on the stability of the financial system remains a relatively unexplored field of research. In this thesis, we provide empirical evidence on the effect of policy uncertainty on capital shortfall of global financial firms, short- and long-term liquidity needs of US Bank Holding Companies, as well as on the stability of the financial system in Greece. This thesis includes three main chapters that correspond to three papers.

In Chapter 2, we investigate the relationship between policy-related uncertainty and the expected capital needs of financial firms in the event of a future crisis. We employ an international dataset and consider all types of financial firms. In this way, we are able to explore which types of financial firms and which regions are more affected in the case of a new financial crisis and under which circumstances the effect will be minimal. To the best of our knowledge, this represents the first attempt to examine the effect of global policy uncertainty on financial firms' capital shortfall. To quantify this relationship, we employ Davis's (2016) global economic policy uncertainty (GEPU) index as a measure of policy uncertainty globally and the systemic risk (SRISK) indicator proposed by Acharya, Engle, and Richardson (2012) and Brownlees and Engle (2016) as a measure of capital shortfall. The GEPU index is a gross domestic product (GDP)-weighted average of Baker, Bloom, and Davis's (2016) national news-based indices, which capture uncertainty due to economic policy decisions, while the SRISK indicator is a market-data-based risk measure, which calculates the expected capital shortfall conditional on a severe market downturn and is an increasing function of systemic risk and leverage.

Our main contribution is that we aim to offer international empirical evidence concerning the relation between economic policy uncertainty and a firm's capital shortfall in the event of a new financial crisis. While most of the related literature regarding policy uncertainty focuses on only the US, we endeavor to provide a global analysis by investigating 1,162 firms in five regions. Furthermore, we seek to expand the research focus by investigating the importance of policy uncertainty in five financial sectors, whereas the majority of the prior literature focuses on either banks or non-financial firms. This represents an important contribution because non-bank financial firms that operate in multiple countries are less regulated, although they do contribute to the systemic risk (e.g., the US government rescued AIG with a $182 billion bailout). Moreover, by decomposing the capital shortfall, we aim to show that economic policy uncertainty exerts a greater effect on the systemic component than on the leverage component, which points to pronounced effects during economic downturns due to the interconnectedness of financial firms. Finally, we aim to establish that the economic mechanism through which global economic policy uncertainty affects the capital shortfall occurs via both investments and profitability, although the impact of economic uncertainty running through firms' profitability is more pronounced than that of investments.

In terms of our key results, we document a positive and significant (both statistically and economically) relation between the GEPU index and the SRISK indicator, and this relation holds for all financial sectors and geographical regions. We also quantify the rise in the capital shortfall if governments and policymakers are not decisive and swift to act during a crisis period. Our findings indicate that a one-standard-deviation increase in the GEPU index is associated with a $205 billion increase in the capital shortage at the end of 2016 in the case of a systemic event. Furthermore, a 100% increase in policy uncertainty is related to a 17.6% increase, on average, in the capital shortage, which corresponds to $528 billion in additional capital at the end of 2016. This is a significant finding, as the GEPU index increased by 119% after the 9/11 terrorist attacks and by 92% twice, first during the GFC of 2008 and then following the US presidential elections in 2016.

Our findings withstand a battery of alternative specifications, subsample analyses, and robustness tests. First, we take into account the potential omitted variable bias by including the relevant sets of control variables for the market and macroeconomic conditions as well as for the different sources of uncertainty. Second, we employ an instrumental variable analysis, placebo tests, and exogenous shocks to identify the exogenous variation in economic policy uncertainty and to mitigate concerns about endogeneity and possible reverse causality. Finally, we analyze the effect of global economic policy uncertainty on the regional capital shortfall, as per types of financial firms, market threshold declines, and capital shortfall severity. We also consider well-capitalized firms and alternative regression specifications.

In Chapter 3, we investigate whether economic policy uncertainty (EPU) affects the two new proposed liquidity measures by the Basel Committee of Banking Supervision, the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR). By using the index of US economic policy uncertainty of Baker, Bloom and Davis (2016) and constructing two proxies for the aforementioned ratios, we find that an increase of economic policy uncertainty leads to an increase of the short and long-term liquidity ability of Bank Holdings Companies (BHCs). Given that banks are not obligated to report the LCR and the NSFR yet, the results of this chapter are important since we will know in advance if the dispute among policymakers about which changes are the most effective affect the banks' ability to inject liquidity in the markets. The positive relation that we document is due to the negative relation between EPU and the denominators of the ratios. In the short-term, there is a negative relation between EPU and total net cash outflows, whereas in the long run, between EPU and the required amount of stable funding. Therefore, EPU decreases the ability of BHCs to borrow in the next 30-day period but in the long run, EPU affects negatively the profitability of BHCs.

Our study contributes to the literature by providing evidence on the relation between economic policy uncertainty and banks' ability to meet the short and long-term liquidity requirements. We show that a one-standard deviation increase of EPU leads to a 8.60% future increase of LCR relative to its average value, while the corresponding increase of NSFR equals to 2.55%. In order to investigate the counterintuitive relation, we decompose the two liquidity measures to their components. The decomposition explains the positive relation. An increase of policy uncertainty leads to a decrease of the denominators of the ratios, which increases the ratios. A one-standard-deviation increase of EPU is related to 11.18% (1.95%) decrease of total net cash outflows (required amount of stable funding).

We demonstrate that economic policy uncertainty leads positively the short-term liquidity of the least liquid BHCs, while it affects the long-term liquidity for the most and the least liquid BHCs. A one-standard deviation increase of EPU is related to a 4.36% future increase of LCR relative to its average value of the least liquid BHCs, while the increase of EPU is related to a 1.00% (1.58%) increase of NSFR for the least (most) liquid banks. For both measures, the increase is mainly due to the decrease of the denominators of the ratios.

Furthermore, our results do not depend on the size of BHCs since we uncover the same positive relation for small and large BHCs, and the positive relation is driven mainly by the decrease of the denominators of the ratios during period of heighten economic policy uncertainty. Finally, we show that the news and the government spending component of the index drives our results, since are positively related to the future levels of LCR and NSFR.

To address any endogeneity issue, we follow the work of Bonaime, Gulen and Ion's (2018) and use the Partisan Conflict Index by Azzimonti (2018) as an instrumental variable. Furthermore, following the work of Berger, Guedhami, Kim and Xinming (2017) we conduct placebo tests to eliminate the probability that our results are due to spurious correlation. Both the instrumental variable analysis and the placebo tests support our main results of a statistically significant positive relation between policy uncertainty and the liquidity ability of BHCs, and that the source of the positive relation is the decrease of total net cash outflows and the required amount of stable funding during periods of heighten economic policy.

Chapter 4 examines the relationship between policy-related uncertainty and Greek firm's Distance-to-Default and expected capital needs in the event of a future crisis. To achieve this goal, we use Greek Economic Policy Uncertainty Indices, based on the work of Baker, Bloom, and Davis (2016), one of them of our own construction, and the Distance-to-Default (DtD) and systemic risk (SRISK) indicator by Acharaya, Engle and Richardson (2012) and Brownlees and Engle (2016).

We show that Greek Economic Policy Uncertainty forecasts a decrease (increase) of Distance-to-Default (Capital Shortfall), while its prediction power remains intact when we introduce financial and economic variables that are related to the main independent variables. The short-lived effect is important for most of the Greek sectors. The indiosyncratic Economic Policy Uncertainty mainly drives the financial stability of Greek firms, and the effect is not due to the uncertainty that arises from the economic conditions.

Our work is related to the research of Fountas, Karatasi and Tzika (2018) and Hardouvelis, Karalas, Karanastasis, and Samartzis (2018) who, in independent works develop an Economic Policy Uncertainty index for Greece and examine its effects on the real economy. We provide further empirical evidence and extend the recently published studies. Our work complements and extends theirs as we examine how policy uncertainty affects the financial vulnerability of firms and the capital shortage of a firm if a financial crisis occurs, and focuses on the micro-level of the economy.

Furthermore, our work is also related to the research of Eichler and Sobański (2016) who study the relationship between national politics and the distance to default for a sample of 123 banks from seven eurozone countries. Our work complements and extends theirs in several ways. First, the Economic Policy Uncertainty index captures not only the uncertainty that arises from electoral cycles, the power and the ideology of government but also global and country-specific factors (i.e. Brexit and Greek referendum, terrorist attacks, Global/European crisis) that affect the stability of the financial system. Second, we use not only the Distance-to-Default but also the

SRISK, which is an ex-ante risk measure that quantifies the capital shortage and not only the probability of default.

Most importantly, we show that the Greek Economic Policy Uncertainty index we construct contains incremental information for the Distance-to-Default and Capital Shortfall of Greek firms over the other two indices, as their effect turns out to be insignificant when we include all the indices in the baseline model.

The remainder of this thesis is organized as follows. Section 2 is the paper: "Policy Uncertainty and Capital Shortfall of Global Financial Firms", while Section 3 is the paper: "Economic Policy Uncertainty and the Short and Long Term Liquidity Needs of US Bank Holding Companies". Section 4 presents the paper: "Policy Uncertainty in Greece and the Stability of the Financial System", while Section 5 concludes this thesis.

Chapter 2

Policy Uncertainty and Capital Shortfall of Global Financial Firms

2.1 Introduction

"*The crisis taught us that we must be vigilant in safeguarding the resilience of our financial system at times when vulnerabilities are building up. The slower growth momentum we are seeing increases the risk of tail events… Bank capital plays a crucial role in absorbing these tail risks: it provides solvency insurance and makes it more likely that banks will be able to continue to provide credit during a downturn.*" Luis de Guindos, Vice-President of the European Central Bank, May 2019.

The last global financial crisis (GFC) prompted unprecedented capital injections into financial institutions worldwide, which resulted in significant fiscal costs. There is a general consensus that if appropriate financial regulation and supervision of the financial markets and financial institutions had been imposed prior to or during the GFC, then the degree of uncertainty and the economic impact would have been less severe. Therefore, it is essential to investigate whether unclear and delayed policy decisions by central banks, regulators, and governments are related to future capital shortages (or shortfalls) on the part of economic agents in the event of a new crisis.

There exists a broad consensus that economic policy uncertainty affects the economic environment in which firms and households operate. Existing empirical studies concerning economic policy uncertainty show that it negatively affects the real economy along with the financial markets (e.g., Pástor and Veronesi, 2012; Baker, Bloom, and Davis, 2016; Kelly, Pástor, and Veronesi, 2016). From a firm's perspective, the effects of elevated economic policy uncertainty range from the postponement and decrease of corporate investments (Bernanke, 1983; Gulen and Ion, 2016; Julio and Yook, 2016) to adverse effects in terms of corporate spreads and lending availability (Waisman, Ye, and Zhu, 2015; Çolak, Durnev, and Qian, 2017; Lee, Lee, Zeng, and Hsu, 2017; Nguyen and Phan, 2017). Further, a number of studies show that an increase in bank failures and delays in firms' leverage adjustments is related to the political component of economic policy uncertainty (Dam and Koetter, 2012; Liu and Ngo, 2014; Çolak, Gungoraydinoglu, and Öztekin, 2018).

While the impact of policy uncertainty on economic outcomes and firms' plans is a heavily researched area, the impact of policy uncertainty on the future capital shortfall remains a relatively unexplored field of research. The concept of a capital shortage is very important in today's global business environment because corporations now operate in an interconnected and globalized environment, and hence, the failure of one firm would instantaneously affect other firms. Recently, concerns have been growing regarding the capital shortfall of financial institutions, as the implementation of the Basel III rules necessitates that financial institutions raise more capital in order to meet the regulatory standards. For example, in March 2019, the Bundesbank announced that "*The total capital shortfall assuming the full implementation of the final Basel III standards increased slightly from €12.2 billion to €15.5 billion compared with the previous survey based on*

31 December 2017 data,"[1] while the Financial Times reported that "*Listed Chinese banks will need to raise about $260bn in fresh capital over the next three years as regulations force shadow-bank loans back on to balance sheets and global rules on systemically important groups impose extra requirements on the largest lenders.*"[2]

In this chapter, we investigate the relationship between policy-related uncertainty and the expected capital needs of financial firms in the event of a future crisis. We employ an international dataset and consider all types of financial firms. In this way, we are able to explore which types of financial firms and which regions are more affected in the case of a new financial crisis and under which circumstances the effect will be minimal. To the best of our knowledge, this represents the first attempt to examine the effect of global policy uncertainty on financial firms' capital shortfall. To quantify this relationship, we employ Davis's (2016) global economic policy uncertainty (*GEPU*) index as a measure of policy uncertainty globally and the systemic risk (*SRISK*) indicator proposed by Acharya, Engle, and Richardson (2012) and Brownlees and Engle (2016) as a measure of capital shortfall. The *GEPU* index is a gross domestic product (GDP)-weighted average of Baker, Bloom, and Davis's (2016) national news-based indices, which capture uncertainty due to economic policy decisions, while the *SRISK* indicator is a market-data-based risk measure, which calculates the expected capital shortfall conditional on a severe market downturn and is an increasing function of systemic risk and leverage.

Our main contribution and the novelty of our approach can be summarized by the following research objectives. First, we aim to offer international empirical evidence concerning the relation between economic policy uncertainty and a firm's capital shortfall in the event of a new financial

---

[1] https://www.bundesbank.de/en/tasks/banking-supervision/legal-basis/basel-framework/basel-iii-monitoring-622584
[2] https://www.ft.com/content/6a9ff690-4593-11e9-b168-96a37d002cd3

crisis. While most of the related literature regarding policy uncertainty focuses on only the US, we endeavor to provide a global analysis by investigating 1,162 firms in five regions. Second, we seek to expand the research focus by investigating the importance of policy uncertainty in five financial sectors, whereas the majority of the prior literature focuses on either banks or non-financial firms. This represents an important contribution because non-bank financial firms that operate in multiple countries are less regulated, although they do contribute to the systemic risk (e.g., the US government rescued AIG with a $182 billion bailout). Third, by decomposing the capital shortfall, we aim to show that economic policy uncertainty exerts a greater effect on the systemic component than on the leverage component, which points to pronounced effects during economic downturns due to the interconnectedness of financial firms. Fourth, we aim to establish that the economic mechanism through which global economic policy uncertainty affects the capital shortfall occurs via both investments and profitability, although the impact of economic uncertainty running through firms' profitability is more pronounced than that of investments.

Our study is related to the works by Gulen and Ion (2016) and Nguyen and Phan (2017), who document a negative relation between policy uncertainty and US firm-level investments and mergers and acquisitions, respectively. However, the availability of capital is a prerequisite for these corporate actions. If policy uncertainty contributes to increases in the capital shortage, firms will postpone or cancel their investments and acquisitions. Hence, our research provides further evidence regarding the economic channel that links policy uncertainty and corporate actions. As we will show, our study extends the work of Gungoraydinoglu, Çolak, and Öztekin (2017), since our empirical findings provide evidence of the relationship between a firm's capital availability and policy uncertainty. Their work identifies the financial intermediation channel between a firm's investment, leverage, and cash management policies and policy uncertainty, and they find that at uncertain times the cost burden of a firm will be higher. We take a step back, and by establishing a link between a firm's available capital and increasing policy uncertainty, argue that during such times the available capital will be lower than expected.

In terms of our key results, we document a positive and significant (both statistically and economically) relation between the *GEPU* index and the *SRISK* indicator, and this relation holds for all financial sectors and geographical regions. We also quantify the rise in the capital shortfall if governments and policymakers are not decisive and swift to act during a crisis period. Our findings indicate that a one-standard-deviation increase in the *GEPU* index is associated with a $205 billion increase in the capital shortage at the end of 2016 in the case of a systemic event. To put these amounts into perspective, the Capital Purchase Program used $205 billion from the funds of the Troubled Asset Relief Program, which amounted to $700 billion. Furthermore, a 100% increase in policy uncertainty is related to a 17.6% increase, on average, in the capital shortage, which corresponds to $528 billion in additional capital at the end of 2016. This is a significant finding, as the *GEPU* index increased by 119% after the 9/11 terrorist attacks and by 92% twice, first during the GFC of 2008 and then following the US presidential elections in 2016.

Our findings withstand a battery of alternative specifications, subsample analyses, and robustness tests. First, we take into account the potential omitted variable bias by including the relevant sets of control variables for the market and macroeconomic conditions as well as for the different sources of uncertainty. Second, we employ an instrumental variable analysis, placebo tests, and exogenous shocks to identify the exogenous variation in economic policy uncertainty and to mitigate concerns about endogeneity and possible reverse causality. Finally, we analyze the effect of global economic policy uncertainty on the regional capital shortfall, as per types of financial firms, market threshold declines, and capital shortfall severity. We also consider well-capitalized firms and alternative regression specifications.

The remainder of this chapter is organized as follows. Section 2.2 reviews the relevant empirical literature, while Section 2.3 describes the dataset and the empirical methodology we employ to investigate the relationship between policy uncertainty and the capital shortfall. Section 2.4 provides empirical evidence in support of the view that policy uncertainty matters, while Section 2.5 establishes the channel through which economic policy uncertainty affects the capital shortfall. In Section 2.6, we present the tests used to mitigate endogeneity and reverse causality concerns, and in Section 2.7, we present the sensitivity analyses and robustness tests. Finally, Section 2.8 concludes the chapter.

2.2. Literature review

2.2.1 Economic policy uncertainty

Uncertainty, whether political or impact, affects the environment in which firms and households operate.[3] A well-developed strand of the literature shows that policy uncertainty, which arises not only from the uncertainty stemming from elections and political instability, but also from the actions of policymakers, can have long-lasting effects on the stock and bond markets as well as on the real economy. Pástor and Veronesi (2012, 2013) develop a theoretical model that explains the relation between policy uncertainty and stock prices, and they show that changes in government policy lead to substantial price declines. Naturally, the option markets and bond markets are affected as the price, tail, variance risk (Kelly, Pástor, and Veronesi, 2016), and corporate spreads

[3] Pástor and Veronesi (2012) define two types of policy uncertainties that affect stock prices. The first is political uncertainty, and it arises because firms and households do not know whether a government will continue to implement current policies in the future (e.g., tax policy). The second one is impact uncertainty, which is related to the impact that the new policies will have on the economy.

all increase (Waisman, Ye, and Zhu, 2015). Baker, Bloom, and Davis (2012, 2016) and Azzimonti (2018) show that periods of high uncertainty (policy or political) adversely impact gross investment, industrial production, employment, and therefore, the real economy.

The main mechanism, as identified in the literature, through which uncertainty affects the real economy is via corporate decisions such as investments, dividend policies, leverage adjustments, and mergers and acquisitions. In his research on cyclical investment fluctuations, Bernanke (1983) shows that in periods of high uncertainty, companies postpone investments, especially if the project is irreversible, or if high costs will arise from firing workers or canceling the project, while they implement investments following the end of the uncertainty period.[4] More recently, Stokey (2016) develops a model of tax policy and business fixed investments, and she shows that firms adopt a wait-and-see policy when the uncertainty of the implemented tax reforms is high, while they implement their projects when the uncertainty is resolved. Gulen and Ion (2016) provide evidence in support of the notion that policy uncertainty can serve to depress corporate investment by inducing precautionary delays due to the irreversibility of investments. The authors attribute a 10% decrease in capital investments during the last GFC to the increase in policy uncertainty. The effect on dividend policies is examined by Buchanan, Xuying Cao, Liljeblom, and Weihrich (2017), who show that before an expected tax increase, dividend policies are revised, which leads to increased dividend amounts in the year prior to the tax increase. Çolak, Gungoraydinoglu, and Öztekin (2018) find that the leverage adjustment of firms' delays when uncertainty is high, as well as the time needed to minimize the gap between firms' actual and

[4] Nowadays, politicians recognize the effect of policy uncertainty on firms' investments. Chancellor Philip Hammond, while analyzing the negotiations between the EU and the UK regarding their post-Brexit relation, said that "It is absolutely clear [to] businesses where they have discretion over investment, where they can hold off, are doing so - you can understand why … They are waiting for more clarity about what the future relationship with Europe will look like" (http://www.bbc.com/news/business-40623473).

optimal capital structures, double during periods of elevated uncertainty. Finally, policy uncertainty affects mergers and acquisitions negatively, in addition to increasing the time required to complete them (Nguyen and Phan, 2017; Bonaime, Gulen, and Ion, 2018).[5]

Bank credit growth is another important channel through which policy uncertainty affects the real economy, corporate firms, and financial institutions. Bordo, Duca, and Koch (2016) show that high levels of policy uncertainty slowed banks' loan growth and decreased the annual loan growth by an average of 2.5% from 2007 to 2013. This effect is more pronounced for larger, lower capitalized, and less liquid banks. Similarly, Lee, Lee, Zeng, and Hsu (2017) focus on the leverage decisions of financial institutions, and they find that uncertainty has a negative short-term effect on the leverage decisions of financial institutions, although it has a positive long-term effect. Tightening credit conditions often impact firms' cost of capital, and Francis, Hasan, and Zhu (2014) document a 5% increase in the loan price during the period from 1990 to 2010.

More importantly, the stability of the entire financial system is at risk during periods of high policy uncertainty. Bank failures are more likely to occur following gubernatorial elections (Liu and Ngo, 2014), while bailouts are unlikely to happen during election years (Dam and Koetter, 2012).[6] Governments are more likely to bail out banks after elections, since politicians are reluctant

[5] Isolating the political component of policy uncertainty, Julio and Yook (2012, 2016) find that during election years, there is a 4.8% decrease in investments and a significant drop in foreign direct investments. The decrease is more pronounced when the outcome of the election is unpredictable and the country's institutional level is low. Similarly, gubernatorial elections and the political turnover affect initial public offering (IPO) activity (Çolak, Durnev, and Qian, 2017) and corporate investments (An, Chen, Luo, and Zhang, 2016), respectively. Financial intermediation costs also contribute to the effect of political uncertainty on corporate activities. Gungoraydinoglu, Çolak, and Öztekin (2017) simultaneously analyze financing, investment, and cash policies, and they report a decrease in leverage levels and corporate security offerings when firms are exposed to policy uncertainty. Their findings confirm that during policy-related uncertain times, firms experience difficulties raising external capital.

[6] During election periods or the year leading to them is not likely to witness bank failures or bailouts, given the significant political cost. Liu and Ngo (2014) state an example: "A more recent example is that of Cleveland thrift Am Trust, whose failure was delayed by 11 months because Ohio representative Steven C. LaTourette and Cleveland mayor Frank G. Jackson intervened when the Federal Deposit Insurance Corporation (FDIC) tried to seize and sell the institution in January 2009. By the time Am Trust was finally seized by the FDIC on December 4, 2009 its common

to act before the elections due to the political costs associated with firm failures (Brown and Dinc, 2005). Similarly, electoral cycles, as well as the power and the ideology of the government, can affect the stability of the banking sector, as shown by Eichler and Sobański (2016), who study the relationship between national politics and the distance-to-default for Eurozone banks. Their findings suggest that the impact of national political factors on banks' stability is much more pronounced for large and weakly capitalized banks. Large banks are typically too big to fail and thus strongly rely on governmental support during periods of distress. Conversely, highly capitalized banks are more immune to political uncertainty.

2.2.2 Capital shortfall and systemic risk

A firm is systemically important if its failure contributes to a system-wide failure. Firm failures are more likely to occur during periods of elevated uncertainty because, during such periods, other firms cannot acquire a failed firm due to the aggregate capital shortfall and so cannot resolve the temporary instability (Acharya, Engle, and Richardson, 2012). Motivated by this, Acharya, Engle, and Richardson (2012) and Brownlees and Engle (2016) develop the *SRISK* indicator, which is a market-data-based risk measure that calculates the expected capital shortfall conditional on a severe market downturn and is an increasing function of the systemic risk and leverage.[7]

Due to the multiple dimensions of systemic risk, it is almost impossible for a single measure to capture all its aspects. Acharya, Engle, and Pierret (2014) compare the capital shortfall that is generated by the regulatory stress tests with that generated by the *SRISK* indicator. They show that

---

equity had fallen by $667 million to $276 million from the year before. The failure cost the FDIC insurance fund $2 billion".

[7] Among others, Bisias, Flood, Lo, and Valavanis (2012), Brunnermeier and Oehmke (2012), Hansen (2014), and Silva, Kimura, and Sobreiro (2017) provide extensive surveys of the systemic risk measures.

the rankings of financial institutions based on these two measures are correlated when the required capitalization is a function of the total assets, and hence, they suggest that regulatory stress tests must include a market risk component so as to improve their accuracy. Benoit, Hurlin, and Perignon (2018) compare the *SRISK* indicator and other market-data-based systemic risk measures with the systemic risk-scoring methodology of the Basel Committee of Banking Supervision (2013b), and they find that a key advantage of the former is that they can easily be implemented and compared, unlike the regulatory approach, since they are based on publicly available data.

Brownlees and Engle (2016) demonstrate that the *SRISK* indicator identified the financial firms with the largest capital shortfalls as early as 2005. These firms were Fannie Mae, Freddie Mac, Morgan Stanley, Bear Stearns, and Lehman Brothers, which all faced substantial financial problems during the last GFC. Thus, the authors show the importance of their measure as an early warning indicator. Following the onset of the subprime mortgage crisis in 2007, large commercial banks, such as Citigroup, Bank of America, and JP Morgan, join the list of the most important systemic risk contributors. As the crisis deepens (August 2008), this list is extended to include AIG, Merrill Lynch, and Wachovia Bank. Between 2007 and 2009, the US Federal Reserve carried out several recapitalization programs, the most notable and extensive of these being the Troubled Asset Relief Program (TARP). The majority of the financial firms identified above as being major systemic risk contributors received government aid. For example, Freddie Mac and Fannie Mae were seized by the US government and placed under conservatorship, while Wachovia Bank was sold to Citigroup with the help of the Federal Deposit Insurance Corporation (FDIC), which absorbed the losses. Citigroup, Bank of America (which acquired Merrill Lynch), AIG, JP Morgan (which purchased Bear Sterns), and Morgan Stanley all received aid via TARP. Lehman Brothers was the only systemic firm to file for bankruptcy in September 2008. Overall, during the last financial crisis, the large financial firms with severe capital shortfalls (as proxied by the *SRISK* indicator) were eventually bailed out by governments due to being "too big to fail."

2.3 Data and methodology

Our empirical analysis is based on a monthly panel of 1,162 financial firms, as defined in the Global Industry Classification Standard (GICS).[8] Table 2.1 presents the definitions of the five financial sectors included in our analysis (Diversified and Regional Banks, Investment Banking and Diversified Capital Markets, Insurance Services, Diversified Financial Services, and Mortgage Real Estate Investment Trusts).

We use the *SRISK* indicator as a measure of systemic risk and the *GEPU* index as a measure of global economic policy uncertainty (henceforth, we use the terms economic policy uncertainty, policy uncertainty, and uncertainty interchangeably). We take a global view by investigating the effect of policy uncertainty on the capital shortfall in the case of a new crisis in five regions (North and South America, Europe, Asia, and Africa). Our sample period (June 2000 to December 2016) is limited to the availability of the *SRISK* data.[9] In the following sections, we provide detailed descriptions of the indices and datasets employed.

2.3.1 Measuring the capital shortfall

Acharya, Engle, and Richardson (2012) and Brownlees and Engle (2016) define $SRISK_{i,t}$ as the capital shortfall of firm i at month t during a systemic event calculated as:

[8] The GICS is an industry classification developed by MSCI and Standard & Poor's (S&P) for use by the global financial community.

[9] We wish to thank the V-Lab team members for making the data available on the V-Lab website (https://vlab.stern.nyu.edu/). Since we analyze the global effect of policy uncertainty on firms' capital shortages, we use the GMES database of V-Lab. The database includes only the major global financial firms so as to calculate the expected capital shortfall of a systemically important firm in the event of another crisis.

$$SRISK_{i,t} = kDebt_{i,t} - (1-k)(1 - LRMES_{i,t})CAP_{i,t} \quad (2.1)$$

where k is the prudential capital ratio, which is equal to 5.5% for European firms and 8% for non-European ones;[10] $Debt_{i,t}$ is the book value of the debt; $CAP_{i,t}$ is firm *i*'s market capitalization; $LRMES_{i,t}$ is the long-run marginal expected shortfall, which is equal to $1 - e^{(ln(1-d)beta_{i,t})}$; $beta_{i,t}$ is the beta coefficient with respect to the Morgan Stanley Capital International (MSCI) world index, which is estimated using a dynamic conditional beta model (Engle, 2002); and d is the threshold of a six-month market decline (or systemic crisis event), the default value of which is set to -40%. The *SRISK* indicator combines two characteristics that are essential in terms of measuring the capital shortfall: (1) the liabilities and the size of the financial institution, and (2) the common shock that affects the financial system through the $LRMES$ term.[11]

Table 2.2 presents the countries/nations included in our sample, the number of monthly observations, the number of firms, the average market capitalization, and the average quasi-leverage ratio per country.[12] For a firm to be included in our analysis, it must have at least 12 monthly observations of positive *SRISK* (corresponding to the capital shortfall).[13] As mentioned above, our sample is based on 1,162 firms that are divided into five regions: North America (191), South America (75), Europe (407), Asia (463), and Africa (26). Some 25 countries have less than

[10] V-Lab uses a different capital ratio for European firms due to the difference in dividend accounting. For more information about the justification for the different levels of the capital ratio, see Engle, Jondeau, and Rockinger (2015).

[11] Following the suggestion of Brownlees and Engle (2016) and Engle, Jondeau, and Rockinger (2015), we only use the positive *SRISK* values, since we want to investigate how policy uncertainty affects the amount of capital that firms will need during a severe market decline. Within this framework, a well-capitalized firm that will not need to raise new capital during severe crises is one for which the $SRISK \leq 0$. In the empirical part of the paper (see Section 2.7.1.5), we also investigate the effect of policy uncertainty on well-capitalized firms.

[12] The quasi-leverage ratio is defined as: $(book\ value\ of\ Assets - book\ value\ of\ Equity + CAP)/CAP$, where *CAP* is the firm market capitalization.

[13] The *SRISK* indicator is a daily measure of the capital shortfall in the event of a crisis, and we calculate the monthly *SRISK* as the average of the daily observations for each firm. For a firm to be included in our monthly analysis, it must have at least ten daily observations of positive *SRISK*.

five firms, whereas nine countries/nations (China, France, Hong Kong, India, Italy, Japan, Switzerland, the UK, and the US) have more than 30 firms in our sample. The average quasi-leverage ratio equals 9.70, and it ranges from 1.59 (Curacao) to 48.51 (Slovenia).

Table 2.3 (Panel A) presents summary statistics for the global and regional *SRISK* for the full study period.[14] The *SRISK* indicator is reported in millions of USD. At the global level, the average capital shortfall is close to 8,248 million USD, and it ranges from 10 to 105,492 million USD. The total capital shortage need at the end of 2016 is estimated to be close to 3 trillion USD, which reveals the possible economic impact of a financial crisis. There is significant variation among the firms, with the least (most) capital shortage being observed as the 1% (99%) quantile equals 10 (105,492). The region that contributes the most (least) to the aggregate capital shortfall is North America (Africa), since the mean capital shortfall is equal to 11,161 (1,376). European firms require more capital than Asian and South America firms. Panel B in Table 2.3 presents summary statistics of the *SRISK* for the five financial sectors. The average capital shortfall for the Banks, Capital Markets, Insurances, Diversified Financial Services, and Mortgage REITs is equal to 8,786, 12,962, 6,722, 1,737, and 276, respectively. There is significant within variation in the five sectors. For example, the median capital shortfall for the Banks equals 1,665, while the 25% (75%) quantile equals 384 (5,838).

2.3.2 Measuring policy uncertainty

Relying on political variables to examine the effect of policy uncertainty on the capital shortfall may not be appropriate, since these variables (1) only capture periods of uncertainty around election months, which means that we do not know anything about the level of uncertainty

[14] To mitigate the effect of outliers, we winsorized all the variables at the 1% and 99% levels.

during non-election months; (2) do not quantify the change in uncertainty between periods; and (3) do not capture other events that may be related to policy uncertainty. To this end, we use the *GEPU* index proposed by Davis (2016) to capture the uncertainty that arises not only from the political environment, but also from policymakers themselves. The *GEPU* index is a GDP-weighted average of 18 country-specific EPU indices (Australia, Brazil, Canada, Chile, China, France, Germany, India, Ireland, Italy, Japan, the Netherlands, Russia, South Korea, Spain, Sweden, the UK, and the US). Each country-specific index measures the relative frequency of articles published in local newspapers that cover issues regarding the economy (E), policy (P), and uncertainty (U).

Figure 2.1 plots the *GEPU* index for the period from June 2000 to December 2016. It ranges from 50 to 277, and it shows spikes not only during periods of elections or referenda (e.g., the June 2016 Brexit referendum), but also during periods most likely related to specific policy-changing events (e.g., the Gulf War, 9/11 terrorist attacks, 2008 GFC).[15] Figure 2.1 also presents the total *SRISK* as the sum of individual firms' *SRISK*. There is a clear positive relation between the two variables, with a correlation coefficient of 0.62 ($t - stat = 11.14$). Therefore, based on the graphical analysis, there are indications that policy uncertainty and the *SRISK* move in tandem. In the empirical part of this chpater (Section 2.4), we further investigate whether this relation is statistically and economically significant. Panel C of Table 2.3 presents summary statistics for the *GEPU* index. The average value is equal to 111.01, with a standard deviation of 43.13, and it ranges from 50.26 (July 2007) to 277.09 (November 2016). The minimum value of the *GEPU*

[15] Baker, Bloom, Canes-Wrone, Davis, and Rodden (2014) attribute the increase in the *EPU* to secular growth in government and political polarization.

index occurs a few months prior to the start of the GFC, while the two highest values coincide with two major political events, namely the Brexit referendum and the US presidential elections.

2.3.3 Empirical methodology

Our baseline panel model for testing the effect of policy uncertainty on the capital shortfall is similar to the specification used by Gulen and Ion (2016) and is as follows:

$$\begin{aligned} lnSRISK_{i,t} = \alpha_i + \beta_1 lnSRISK_{i,t-1} + \beta_2 lnGEPU_{t-1} + \beta_3 SD_{i,t-1} + \delta M_{t-1} \\ + \zeta lnCAP_{i,t-1} + \eta Crises_t + MNT_t + \varepsilon_{i,t} \end{aligned} \tag{2.2}$$

where $lnSRISK_{i,t}$ is the natural logarithm of the arithmetic *SRISK* average of firm i in month t; $lnGEPU_{t-1}$ is the natural logarithm of the *GEPU* index in month $t-1$; $SD_{i,t-1}$ represents the annualized standard deviation of firm i's returns in month $t-1$, as provided by V-Lab; $lnCAP_{i,t-1}$ is the natural logarithm of firm i's market capitalization in month $t-1$, which proxies for the firm size (market capitalization is highly correlated with the total assets, rank correlation of 75%); and α_i is the firm fixed effects. We include a set of seasonal monthly dummy variables (MNT_t) to control for the possible seasonality in the capital requirements.[16] $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009, and 0 otherwise.[17] The standard errors are clustered at the firm and calendar-month levels to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$ (Petersen, 2009). Following the work of Gulen and Ion (2016), who investigate the effect of the US *EPU* index on corporate investments, we do not

[16] More specifically, we include 11 dummy variables in our baseline equation. For example, the dummy variable for January equals 1 if the month is January, and 0 otherwise. Gulen and Ion (2016) use the same procedure to account for seasonality in their dataset.

[17] The crisis period includes: (1) the pre-Lehman Brothers period (from June 2007 to September 2008), which was characterized by the interventions of the central banks; (2) the global crisis period (October 2008 to December 2008); and (3) the aftermath of the global crisis (January 2009 to June 2009), during which the recovery started.

include the time fixed effects in Equation (2.2), since the *GEPU* index is common for every firm i in month t, and hence, the time fixed effects would have mechanically absorbed the effect of the *GEPU* index on the capital shortage. However, to take into account the other factors that may also affect the *SRISK*, we include a set of control variables (M_{t-1}) in Equation (2.2) spanning stock market, macroeconomic, and uncertainty-oriented variables.[18] More specifically, we use three sets of control variables:

1. Firm-specific variables: $SD_{i,t}$ is the annualized standard deviation of firm i's stock returns in month t, as provided by V-Lab, and it captures the firm-specific uncertainty. We hypothesize that the standard deviation of the stock returns should be positively related to the *SRISK*, since an increase in the risk coincides with periods of market turbulence (Kelly, Pástor, and Veronesi, 2016). $lnCAP_{i,t}$ is the natural logarithm of the market capitalization of firm i in month t, and it accounts for the different sizes of firms.
2. Market variables: MKT_t is the excess market return of the developed markets. We obtain the market index data from Kenneth French's website. We prefer to use a global stock market index rather than country-specific indices because we want to measure the global systemic effect on the capital shortfall. We hypothesize that when market conditions are positive, the required capital should be lower, since an increase in the market capitalization of firm i is associated with less capital shortage. This hypothesis is in line with the fact that the *SRISK* is a positive function of the market conditions. $SDMKT_t$ is the annualized monthly standard deviation of the developed stock markets index returns. The higher the market risk, the higher

[18] One other possible set of candidate control variables is the balance sheet data. Since these data are suitable for quarterly and yearly analysis, we cannot include them in our baseline model. However, in Equation (2), we add the lag value of the *SRISK* that is, by construction, a function of the total equity, total asset, and debt. Therefore, we have indirectly taken the balance sheet data into account.

the capital needs should be. We also use the VIX_t index, which we obtain from the Federal Reserve Bank of St. Louis, as a market-related uncertainty proxy. The implied volatility index is positively related to the *GEPU* index (Baker, Bloom, and Davis, 2016), and it is negatively related to the quarterly growth rate of the real US GDP (Gulen and Ion, 2016). Hence, the *GEPU* index may not contain additional information to the *VIX* index.

3. Macroeconomic variables: ADS_t is the US business index of Aruoba, Diebold, and Scotti (2009), which measures the economic conditions in real time because it combines weekly, monthly, and quarterly data to estimate the current state of the economy.[19] We calculate the monthly index as the average of the daily index. Positive (negative) values indicate an improvement (deterioration) in the economic conditions. We hypothesize that the relation should be negative, since during economic crises firms will need more capital to cope with the financial problems that they will face. We also use the corporate spread ($Corp\_Spread_t$), which is calculated as the difference between Moody's BBB and AAA US corporate bond yield, as a measure of the financial conditions. We hypothesize that the relation should be positive, since higher spread values are associated with worse economic conditions, and hence, with higher capital needs. Finally, we use the difference between the ten-year Treasury constant maturity rate and the three-month Treasury constant maturity rate ($Term_t$) as an alternative proxy for the economic conditions.[20, 21]

[19] We obtain the ADS index from the website of the Federal Reserve Bank of Philadelphia (https://www.philadelphiafed.org/research-and-data/real-time-center/business-conditions-index).
[20] We obtain the data for the corporate and term spread from the website of the Federal Reserve Bank of St. Louis (https://fred.stlouisfed.org/).
[21] All the macroeconomic variables are US-based, as similar data at the global level are not available. However, these variables are appropriate since the US economy affects the global economic conditions, and in this respect, a common global factor affects both national and regional economies. For example, Kose, Lakatos, Ohnsorge, and Stocker (2017) show that positive and negative developments in the US economy affect the global economy, while Kose, Otrok, and Whiteman (2003) demonstrate that a world factor is a source of local variability and hence that there is a world business cycle.

Panel D in Table 2.3 presents the correlation coefficients between the explanatory variables included in Equation (2.2).

2.4 The effect of economic policy uncertainty on the capital shortfall

2.4.1 The average effect of policy uncertainty on the capital shortfall

Table 2.4 (Panel A) presents our baseline model results for all the countries for the 2000–2016 period. We consider five specifications of Equation (2.2) so as to examine whether policy uncertainty contains incremental information over the three sets of control variables described in Section 2.3.3. Overall, our results show that policy uncertainty is positively and statistically significantly related to the future level of the capital shortfall in the case of a new crisis. As Column (1) of Table 2.4 shows, when policy uncertainty increases by 100%, the *lnSRISK* increases by 88.9%. The significance of the coefficient of policy uncertainty remains intact when we include the lagged value of the *lnSRISK*, even if the coefficient decreases from 0.889 to 0.177 (Column (2)). However, the long-run effect is equal to 1.017 (=0.177/(1-0.826)). Columns (3)–(5) present the results when the control variables are included. With the exception of the corporate spread, *ADS*, and *SDMKT,* all the variables are statistically significantly related to the capital shortfall.

Focusing on Column (5), which presents the results of our baseline model including all the control variables, we observe that the coefficient of policy uncertainty is positive, statistically significant, and equal to 0.176. A 100% increase in policy uncertainty is related to a 17.6% increase, on average, in the capital shortage, given the effect of all the other factors.[22] This increase

[22] A natural question that arises here is whether the *GEPU* index has ever increased by 100%. The five highest monthly increases in the *GEPU* are: 119% (2001M09: terrorist attacks), 92% (2008M09: GFC), 92% (2016M11: US presidential elections), 85% (2016M6: Brexit referendum), and 64% (2000M11: US presidential elections).

is statistically and economically significant, since at the end of 2016 the total capital shortage in the case of a crisis period was close to $3,000,000 million. Thus, the 17.6% increase corresponds to $528 billion more required capital. Even a modest increase in the *GEPU* index is related to a significant increase in the capital shortfall. For example, if the *GEPU* increases by one standard deviation or 38.85% $(= 43.13/111.01)$, the *lnSRISK* will increase by 6.84% $(= 0.176 \times 38.85\%)$, which corresponds to an additional $205 billion in capital in the case of a crisis at the end of 2016. To put these amounts into perspective, the Capital Purchase Program used $205 billion from the funds of the Troubled Asset Relief Program, which amounted to $700 billion.[23] With respect to the control variables, both the firm standard deviation and the term spread are positively related to the future capital shortage, while the global market returns and *VIX* are negatively related. Overall, the effect of policy uncertainty remains intact after the inclusion of the full set of control variables, and it also remains statistically and economically significant.

A potential concern regarding our results is that the *GEPU* index may capture the effect of general economic uncertainty and not just the effect of policy-related uncertainty. Events such as financial crises, wars, and recessions tend to increase both policy uncertainty and overall macroeconomic uncertainty. To ascertain that the *GEPU* index contains incremental information for the *SRISK* relative to the alternative measures of macroeconomic/financial uncertainty, we enrich our baseline specification with four proxies of uncertainty. First, we employ the real and financial uncertainty measures of Jurado, Ludvigson, and Ng (2015). Second, we employ the financial stress indicator provided by the Office of Financial Research.[24] Finally, to better proxy

[23] The source for these data is the US Department of the Treasury (https://www.treasury.gov/initiatives/financial-stability/TARP-Programs/bank-investment-programs/cap/Pages/overview.aspx).
[24] We obtain the data from Professor Ludvigson's website (https://www.sydneyludvigson.com/data-and-appendixes/) and the website of the Office of Financial Research (https://www.financialresearch.gov/financial-stress-index/).

for the stock market uncertainty, we also consider the stock market return dispersion, which is calculated as the cross-sectional standard deviation (CSV_t) of the monthly stock returns. Garcia, Mantilla-García, and Martellini (2014) show that the return dispersion is related to economic uncertainty and also forecasts stock returns.

Our results are reported in Table 2.4, Panel B. In more detail, Columns (6)–(9) report our results when each competing variable is included one at a time, while Column (10) reports a specification with all the variables. In all cases, the coefficient of the *GEPU* index remains positive and statistically significant, while the majority of the competing uncertainty proxies are insignificant. The *GEPU* effect is very close to our baseline specification, since it ranges from 0.170 to 0.177, and its significance remains intact.

2.4.2 The evolution of the policy uncertainty effect over time

We now take a closer look at how the relationship between policy uncertainty and the capital shortfall evolves over time. To this end, we follow the approach of Gulen and Ion (2016) and extend our baseline model to include further lags between the dependent and independent variables. We run 24 regressions, corresponding to lags 1 through 24 for a two-year horizon, and we plot the coefficients of the lagged *GEPU* (the horizontal axis presents the lags) in Figure 2.2. All the coefficients are highly statistically significant, with the exception of lag 24. As is apparent from Figure 2.2, the impact of the *GEPU* on the *SRISK* is hump-shaped, reaching a peak at about 11 months and then steadily declining up to the two-year horizon. More specifically, the coefficient values increase from 0.176 at lag 1 to 0.514 at lag 11 and then steadily decrease to an insignificant value at lag 24. Overall, our results show that policy uncertainty can exert a significant positive long-term impact on the capital shortfall of up to two years in duration in the case of a new crisis.

2.4.3 Out-of-sample predictability

The evidence detailed in Sections 2.4.1 and 2.4.2 shows that economic policy uncertainty is related to future capital needs and also contains incremental forecasting information relative to other financial and economic factors. Given that our evidence is based on an in-sample regression, a question arises concerning whether or not the predictive power of the *GEPU* index holds in an out-of-sample setting. To this end, we employ the predictive accuracy test of Clark and West (2007) to examine whether policy uncertainty statistically improves the forecasting power of the following benchmark models by including in each of them the lagged *lnGEPU* index ($lnGEPU_{t-1}$) and calculating the one-month-ahead prediction errors:

$$lnSRISK_{i,t} = \alpha_i + \varepsilon_{i,t} \tag{2.3a}$$

$$lnSRISK_{i,t} = \alpha_i + \beta_1 lnSRISK_{i,t-1} + \varepsilon_{i,t} \tag{2.3b}$$

$$lnSRISK_{i,t} = \alpha_i + \beta_1 lnSRISK_{i,t-1} + \beta_3 SD_{i,t-1} + \delta MKT_{t-1} + \zeta lnCAP_{i,t-1} + \varepsilon_{i,t} \tag{2.3c}$$

The Clark and West (2007) test statistic is defined as $Adj.\Delta MSPE = \frac{2}{N}\sum_{i,t} PE_{i,t}\left(PE_{i,t} - PE_{i,t}^{lnEPU}\right)$, where $PE_{i,t}$ is the prediction error of firm i at month t of the benchmark model and $PE_{i,t}^{EPU}$ is the prediction error of the model that includes the *GEPU* index. The related test statistic is calculated by regressing the quantity $2PE_{i,t}\left(PE_{i,t} - PE_{i,t}^{lnEPU}\right)$ on a constant with clustered standard errors at the firm and calendar-month levels. For our analysis, we use the first 120 monthly observations and calculate the prediction errors. Then, we consecutively add one month into our sample and repeat the procedure until the end of the sample period.

Table 2.5 reports the results of the out-of-sample study. The *GEPU* index improves the forecasting power of the benchmark models, since in all cases the prediction error is always lower than that of the benchmark model. More specifically, the adjusted difference in the mean square prediction errors ranges from 0.007 to 0.213, and it is statistically significant at the 1% confidence level. The extended model (Column 3) that includes the *GEPU* index appears superior to the more parsimonious specifications because its average forecasting error is the lowest among all the models considered. To summarize, our results hold not only in sample, but also out of sample, which implies that economic policy uncertainty is a major factor that forecasts the future capital needs of firms in a severe market decline and conveys more relative information about the capital shortfall than other economic and financial variables.

2.5 How does policy uncertainty affect the capital shortfall?

In this section, we seek to reveal the mechanisms by which policy uncertainty increases the future level of the capital shortfall in the event of a severe market decline. To address this issue, we follow two approaches. The first approach stems from the calculation of the capital shortfall and its decomposition into its components, namely (a) systemic risk and (b) leverage. The second approach is more economically intuitive and relates to the decrease in private investments and profitability of firms during periods of high policy uncertainty.

2.5.1 Capital shortfall components and policy uncertainty

Kelly, Pástor, and Veronesi (2016) and Pástor and Veronesi (2012, 2013) show that an increase in policy uncertainty is negatively (positively) related to stock prices (volatility). This effect is expected to spill over to the markets (Scheffel, 2016) and to generate a systemic event. Therefore, an increase in policy uncertainty is associated with a decrease in stock prices, and since the *SRISK* indicator is a market-based measure and a function of the market decline, it is also expected to increase. Moreover, Lee, Lee, Zeng, and Hsu (2017) explore the long- and short-term effects of policy uncertainty on the leverage decisions of financial institutions, and they show that the long-term (short-term) economic policy uncertainty is positively (negatively) related to the leverage ratio. They point out that financial institutions prefer to reduce their leverage ratio in an effort to deal with short-term instability, while they increase it in response to long-term uncertainty so as to achieve their long-term goals (e.g., to increase their profits). Since the *SRISK* is a positive function of the leverage ratio, the long-term component of policy uncertainty will increase the capital shortfall.

To shed light on the driving forces behind the capital shortfall increases, we decompose the *SRISK* indicator into the following two components: (a) systemic risk and (b) leverage risk. More specifically, we employ the following alternative definition/decomposition of *SRISK* = $k\left(LVG_{i,t} * CAP_{i,t} - CAP_{i,t}\right) - (1-k) * CAP_{i,t} * \ e^{\left(ln(1-d)*Beta_{i,t}\right)}$. The first part is the natural logarithm of the leverage risk component $\left(COMP1_{i,t} = k\left(LVG_{i,t} * CAP_{i,t} - CAP_{i,t}\right)\right)$, while the second part is the negative of the natural logarithm of the systemic risk component $\left(COMP2_{i,t} = -(1-\mathrm{k}) * \mathrm{CAP}_{\mathrm{i,t}} * \ \mathrm{e}^{\left(\ln(1-\mathrm{d})*\mathrm{Beta}_{\mathrm{i,t}}\right)}\right)$. We estimate our baseline specification (Equation 2.2) by replacing the *lnSRISK* with its two components, and we present our findings in Table 2.6. For both components, the effect of the *lnGEPU* index on the *lnSRISK* is positive and statistically significant. When policy uncertainty increases by 100%, the leverage component increases by 1%, while the systemic risk component increases by 3.7%. Therefore, both components contribute to the increase in the capital shortfall, with the effect of the systemic risk being more economically important.

2.5.2 Investment, profitability, and policy uncertainty

To explore whether the impact of economic policy uncertainty on the capital shortfall is driven by private investments and/or firm profitability, we re-estimate our baseline specification by adding two interaction terms. The first term is the (lagged) interaction term between the economic policy uncertainty measure and the (y-o-y) growth rate of the gross fixed capital formation at constant prices ($GFCF$), as measured at the country level. We obtain the data for the latter variable from the Organization for Economic Co-operation and Development (OECD) database on a quarterly basis.[25] The second term is the (lagged) interaction term between economic policy uncertainty and the return on equity *(ROE)* of the firms included in our sample, as a proxy for profitability. We do not include the main terms of these two variables, that is, the *GFCF* and *ROE*, in the model because they are highly collinear with the relevant interaction terms. We estimate two variants of this model, one at the global level by employing the *GEPU* index and one at the country-specific level by employing the country-level (local) *EPU* (*LEPU*).[26]

Our results (reported in Panel A of Table 2.7) show that the interaction term of the *ROE* is statistically significant, irrespective of whether we employ the *GEPU* or the *LEPU*. In turn, investment growth only appears to be significant when the *GEPU* is used. The marginal effects of the *GFCF* and *ROE*, as reported in Panel B, reveal that the impact of economic uncertainty running through profitability is more pronounced than that running through investments (-0.005 vs. -0.003). Overall, our findings provide support for the view that the economic channel through which global economic policy uncertainty affects the capital shortfall is most likely to be a decrease in corporate profits.

[25] The data for this variable are only available for a subset of 27 of the countries included in our sample: Australia, Austria, Belgium, Brazil, Canada, Chile, Czech Republic, Finland, France, Germany, Greece, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Mexico, Netherlands, Russia, South Korea, Spain, Sweden, Switzerland, the UK, and the US.

[26] The country-specific indices are available for Australia, Brazil, Canada, Chile, China, France, Germany, Italy, Spain, Hong Kong, Mexico, India, Ireland, Japan, S. Korea, Netherlands, Russia, Singapore, Sweden, the UK, and the US.

2.6 Tests to mitigate endogeneity and reverse causality concerns

Does global economic policy uncertainty affect the capital shortfall or is the relation reversed? To put it differently, do the market conditions underlying the *SRISK* calculation affect the economic policies regarding taxes, interest rates, regulation frameworks, and unemployment? The answers to these questions will reveal the importance of economic policy uncertainty and also alleviate any concern that the elevated capital shortfall created during a crisis period can itself lead to policy uncertainty. To address these issues, we (a) conduct an instrumental variable analysis and placebo tests to control for endogeneity issues and (b) search for exogenous shocks to establish the causality from global economic policy uncertainty to the capital shortfall.

2.6.1 Instrumental variable analysis and placebo tests

An appropriate instrument should be significantly related to economic policy uncertainty and only affect capital shortfall through that relation. We consider two variables to serve as instruments in this regard, namely (a) the migration fear index and (b) the partisan conflict index (Azzimonti, 2018).

The migration fear index measures the migration-related fears in France, Germany, the UK, and the US. It measures the relative frequency of articles published in local newspapers with at least one term from each of the following categories: migration (M) and fear (F). We use the average value of the four local indices to construct the migration fear index (*MFEAR*).[27] The migration fear index may serve as a useful instrument because "The recent influx of refugees to Europe has stoked security fears and created anxiety about the social and economic

[27] We obtain the data for the migration fear index from the Economic Policy Uncertainty website (http://www.policyuncertainty.com/immigration_fear.html). Since these indices are calculated every quarter, we perform a linear interpolation to generate the monthly indices.

consequences."[28] Migration fear is related to economic policy uncertainty (the in-sample correlation coefficient is equal to 0.45), since it has an effect on labor markets, housing markets, schooling, social services, and government spending (Borjas, 2003; Card, 2005; Boeri, De Phillippis, Patacchini, and Pellizzari, 2015). Thus, it leads to economic policy changes. Therefore, the first condition necessary for the *MFEAR* index to be relevant as an instrument is met. As for the second condition, it is not apparent how the increased fear of immigration can directly force firms to increase their capital.

The partisan conflict index (Azzimonti, 2018) measures the political disagreement among US politicians at the federal level.[29] The index is constructed through keyword searches of major US newspapers, and it tracks lawmakers' disagreements about policy both within and between political parties. The higher the values of the index, the greater the conflict in the US political scene. According to the Federal Reserve Bank of Philadelphia, the index "tends to increase near elections and during debates over such contentious policies as the debt ceiling and health-care reform." Partisan conflict is related to economic policy uncertainty (the in-sample correlation coefficient is equal to 0.54) because it renders the legislation process more difficult. During periods of high political polarization, the government becomes dysfunctional and policy changes become unpredictable (Groseclose and McCarty, 2000; McCarty, Poole, and Rosenthal, 2006; McCarty, 2012). Thus, the first condition necessary for the index to be relevant as an instrument in our research is satisfied. As for the second condition, it is not apparent how US partisan conflict can directly drive the global *SRISK*.

[28] https://voxeu.org/article/immigration-fears-and-policy-uncertainty.

[29] We obtain these data from the website of the Federal Reserve Bank of Philadelphia (https://www.philadelphiafed.org/research-and-data/real-time-center/partisan-conflict-index).

As previously stated, the direct effect of conflicts within or between political parties renders the legislative process more difficult and also creates concerns and uncertainties about expected or unexpected changes in economic policies. Therefore, the uncertainty regarding policies created through partisan conflict might not affect the *SRISK* and its components directly, but rather through its effect on policy uncertainty. Thus, the exclusion condition is also satisfied. Even though our study is global in nature, due to the lack of relevant data for other countries, we use the partisan conflict index that refers to the US political environment. We believe that this strengthens our choice of an instrumental variable because it is not certain that the political disagreements in the US would directly affect the capital shortfalls of firms in other countries. Yet, the decision to use the US partisan conflict index may give rise to a question regarding its validity as an instrument, since it could be influenced by business cycles in the US and thus by the global capital shortfall when the US market is included. To address these concerns, we consider two specifications: one including all the firms and the second excluding the US firms.

Following the approach of Bonaime, Gulen, and Ion (2018), we implement a two-stage instrumental variable approach involving a time-series regression in the first stage and a panel regression in the second stage. This approach addresses the overstated correlation between the endogenous variable and its instrument, since these variables do not vary cross-sectionally. The standard errors of the first stage regression are Newey and West (1987) adjusted. In Panels A, B, and C of Table 2.8, we present the results of the first- and second-stage regressions by using the migration fear index, the partisan conflict index, and the partisan conflict index, respectively, with the latter excluding the US firms. For the first-stage regression employing the migration fear index (Panel A), the β_1 coefficient is 0.136, and it is statistically significant at the 5% level. Hence, the regression confirms the expected positive and significant effect of the migration fear index on the

GEPU (the F-statistic of the regression equals 15.76). The relevant first-stage regression results for the partisan conflict index (Panels B and C) show that the inclusion or exclusion of the US firms does not affect our results, since in both cases the β_1 coefficient is positive and statistically significant.

To capture the exogenous variation in policy uncertainty, we re-estimate the average effect of global economic policy uncertainty on the capital shortfall by using the natural logarithm of the fitted values ($\widehat{GEPU}$) from the first-stage regression in each case. The standard errors of the second-stage regressions are bootstrapped (500 replications) because we use estimated regressors. The second-stage regression for the $MFEAR$ shows that the coefficient of the fitted $\widehat{GEPU}$ equals 0.167 and is highly statistically significant. Similarly, in both cases in which the partisan conflict index is employed, the impact on the capital shortfall remains positive, statistically significant, and of a similar magnitude to our baseline specification.

To further alleviate concerns about endogeneity and the potentially spurious relationship between the *GEPU* index and the *SRISK* indicator, we conduct a series of placebo tests by following the approach of Berger, Guedhami, Kim, and Xinming (2018). We construct the $\widetilde{GEPU}$ by randomly selecting values without replacement from the original series of the *GEPU*. Then, we estimate the regression coefficients by using 100 different samples from the random $\widetilde{GEPU}$. In Panel D of Table 2.8, we present the relevant results. Based on these 100 samples, the average coefficient estimate on the *GEPU* is -0.002. More importantly, in only two of the 100 samples is the coefficient positive and statistically significant at the 5% level. In general, the results support our intuition and show that the $\widetilde{GEPU}$ is not statistically significantly related to the *SRISK*.

2.6.2 Employing exogenous shocks as instruments

Another approach to establishing the causality from global economic policy uncertainty to the capital shortfall involves the use of exogenous shocks that affect the economic policy uncertainty, but do not directly affect the capital shortfall. These shocks stem from the political and/or social environment of the various countries worldwide that could shape the global economic policy uncertainty, and through this, the capital shortfall of firms. We focus on both the global *EPU* and the country-specific ones (*LEPU*). For the *GEPU*, we consider the following (cardinal) variables at the country-year level that serve as exogenous shocks: (i) the number of general strikes, which take values from 1 to 13, and zero otherwise; (ii) the number of purges, which take values from 1 to 4, and zero otherwise; and (iii) the number of riots, which take values from 1 to 28, and zero otherwise. For the *LEPU*, we consider the following (cardinal) variables: (i) government crises, which take values from 1 to 4, and zero otherwise; (ii) the number of major cabinet changes, which take values from 1 to 3, and zero otherwise; and (iii) the number of changes in the effective executive, which take values from 1 to 3, and zero otherwise.[30]

Table 2.9 reports the results when these cardinal variables are employed as instruments in our quarterly level dataset. Panel A shows the results when the *GEPU* is treated as endogenous, whereas Panel B shows the results when the endogenous variable is the country-specific one. In all cases, the coefficients in the first-stage regressions are positive and statistically significant, which shows that these shocks actually affect policy uncertainty at both the global and country level. Our second-stage regressions reinforce our baseline findings, since the positive and

[30] We obtain these data from the Cross-National Time-Series Data Archive (CNTS). The CNTS is a database comprised of more than 200 years of annual data (from 1815 onward) for over 200 countries and covering political, legislative, and economic matters, as well as domestic conflict events (terrorism/guerrilla warfare, assassinations, general strikes, major government crises, anti-government demonstrations, revolutions, riots, and purges).

significant impact of economic policy uncertainty (whether global or country-specific) on the capital shortfall, while somewhat inflated, conveys the same message.

2.7 Sensitivity analysis and further robustness tests

In the following sections, we further analyze the effect of global economic policy uncertainty on the capital shortfall regionally, the type of financial firm, the market threshold decline, and the capital shortfall severity. We also consider well-capitalized firms and alternative regression specifications.

2.7.1 Sensitivity analysis

2.7.1.1 The regional effect of global economic policy uncertainty

Can our results be attributed to a specific geographic region, or does global policy uncertainty affect all regions equally? We expect a similar effect across all regions because most financial corporations operate in several countries, while the importance of regional risk has decreased over time, as markets have become more integrated (Bekaert, Hodrick, and Zhang, 2009). We further expect that economic policy uncertainty spillovers occur across countries, as shown by Klößner and Sekkel (2014). Following the approach of Klößner and Sekkel (2014), we calculate the Diebold and Yilmaz (2009) spillover measure for the country-specific $LEPU$ indices. The spillover index is estimated to be 65.69%, thereby providing evidence in favor of the existence of policy uncertainty spillover effects among countries. We also re-estimate Equation (2.2) by including regional dummy variables for four regions (South America, Europe, Asia, and Africa), keeping North America as the base group, and the relevant interaction terms between these regional dummy variables and the $GEPU_{t-1}$. Table 2.10 (Panel A1) presents the corresponding results. As is quickly apparent, the interaction terms are statistically insignificant, with the only exception being the relevant term for Europe, which is statistically significant at the 10% level, indicating that the effect of the *GEPU* on the *SRISK* is similar across all regions.

2.7.1.2 The effect of policy uncertainty on the financial sectors

Baker, Bloom, and Davis (2016) note that policy uncertainty matters significantly in relation to the defense, finance, healthcare, and construction sectors. Hence, it also matters in terms of determining the capital shortfall of other non-bank companies. We use the GICS to examine whether policy uncertainty affects the capital shortfall equally for all the financial sectors. Thus, we include four industry dummy variables in Equation (2.2) (Capital Markets, Insurances, Diversified Financial Services, and Mortgage REITs), keeping Banks as the base group, and keeping the relevant interaction terms between these industry dummy variables and the $GEPU_{t-1}$ consistent.

Panel A2 in Table 2.10 reports the relevant findings. As the results suggest, the impact of policy uncertainty on three sectors, namely Capital Markets, Insurances, and Diversified Financial Services, is similar to that on Banks, since the relevant interaction terms are statistically insignificant. In turn, the impact of uncertainty on Mortgage REITs is almost double that seen in the case of Banks. This could be attributed to a possible large decline in real estate prices in the event of a crisis.

2.7.1.3 Does the market decline threshold matter?

The threshold for a six-month market decline is set as -40%, following the work of Acharya, Engle, and Richardson (2012) and Engle, Jondeau, and Rockinger (2015). Brownlees and Engle (2016) set the threshold as -10% for their baseline scenario, and they also use a higher threshold

(-20%) to examine the ranking sensitivity of the *SRISK*. Thus, we also consider three more systemic event thresholds (-10%, -20%, and -30%) to investigate whether policy uncertainty also affects the capital shortfall in the case of a less severe market decline.

Panel B1 of Table 2.10 presents the results of Equation (2.2) for the different crisis levels. Column 1 presents the results of our baseline scenario (a 40% decrease in the market), which can also be seen in Table 2.4 (Column 5). The overall results indicate that irrespective of the severity of the market decline, an increase in policy uncertainty is related to an increase in the capital shortfall. Hence, policy uncertainty is a significant factor in relation to the stability of the financial system. To explore whether the coefficient of the *GEPU* differs across the different columns in Panel B1, we conduct a coefficient difference test. Panel B2 in Table 2.10 reports the results of the Z-test of the equality of the coefficients between the different market decline thresholds: -40% vs. -30%, -40% vs. -20%, -40% vs. -10%, -30% vs. -20%, -30 vs. -10%, and -20% vs. -10%. In all cases, the differences are not statistically significant and thus the effect of global economic policy uncertainty on the capital shortfall is the same across the various alternative market decline thresholds.

2.7.1.4 Capital shortfall severity and policy uncertainty

Does the relation with global economic policy uncertainty remain intact for lower or higher levels of capital shortfall? The answer to this question is important because if the relation changes for different levels of capital shortfall, then the uncertainty that arises from politicians and policymakers will asymmetrically affect the capital shortfall in the case of a new crisis. To examine the effect of policy uncertainty on the capital shortfall levels, we estimate a quantile regression version of Equation (2.2) for a fine grid of quantiles ranging from the 10^{th} to the 90^{th} quantile. Following the approach of Parente and Santos Silva (2016), we compute the standard errors that are asymptotically valid under conditions of heteroskedasticity and intra-cluster correlation. Table 2.10 (Panel C) presents the results for the firms with the least (10% quantile of the *lnSRISK*) to the most (90% quantile of the *lnSRISK*) capital shortfall. The overall results are in line with the previous evidence. Irrespective of whether the firm has the most or the least capital shortfall, policy uncertainty is positively related to the firm's future required capital needs. For all the quantiles, the coefficient of the *lnGEPU* is positive, with an average value of 0.115, and statistically significant. For the median (50%) quantile, the coefficient is equal to 0.106, and it is lower than the benchmark least squares case of 0.176, which points to a negatively skewed distribution of the capital shortfall. The coefficients decrease monotonically (from 0.220 to 0.050), implying that at low (high) levels of capital shortfall, the importance of economic policy uncertainty is higher (lower).

The percentage increase in the capital shortfall for the firms with the least capital shortage, which is associated with a one-standard-deviation increase, is 8.55% $(= 0.220 \times 38.85\%)$. A different picture emerges when we examine the effect on the most important systemic firms. In this case, a one-standard-deviation increase in policy uncertainty is associated with, on average, a 1.94% $(= 0.05 \times 38.85\%)$ decrease in the capital shortfall of the most systemic firms. The lower effect of policy uncertainty for the financial institutions with the highest capital shortfall might be due to the fact that the capital needs of such companies are too high to be further affected/increased by new policy uncertainty, since the markets already anticipate that these firms may not be able to raise the required capital in the event of a new crisis. Yet, the financial institutions with the least capital shortage are more sensitive to changes in implemented policies, since under a scenario of increased policy uncertainty during a severe market decline, their capital requirements will be significantly higher than their current level and they may not be able to meet their capital needs, which will be unexpected in light of their current position.

2.7.1.5 Does policy uncertainty also affect well-capitalized firms?

Our findings thus far refer to under-capitalized financial firms, which will require additional capital in the event of a new crisis. However, does policy uncertainty also affect well-capitalized firms during a crisis period? In this scenario, we use the absolute value of the *SRISK* of well-capitalized firms to estimate Equation (2.2), since the *SRISK* is negative for such firms. Table 2.11 presents our results for well-capitalized firms globally (Panel A), regionally (Panel B), and across different financial sectors (Panel C). As expected, we observe a negative (statistically significant) relationship between economic policy uncertainty and the capital surplus, which implies that an increase in policy uncertainty decreases the capital surplus. Comparing the absolute values of the coefficients of the capital shortfall and the surplus regressions (0.176 vs. 0.094) reveals that the effect of economic policy uncertainty is more pronounced for under-capitalized firms. As in the case of the capital shortfall, there are no differences between the regions, since the coefficients of the interaction terms are insignificant, with the exception of the coefficient for South America (at the 10% significance level). However, when considering the financial industries, we find an overall negative effect equal to -0.118, which is dampened for the Capital Markets, Insurances, and Mortgage REITs by 0.038, 0.052, and 0.043, respectively. Therefore, the combined evidence in Tables 2.4 and 2.11 suggests that policy uncertainty during a crisis period matters (1) for under-capitalized firms, which due to their high capital needs will induce systemic instability in the global financial system, and (2) for well-capitalized firms, since such firms are also likely to be short of capital in the future.

2.7.2 Further robustness checks

We conduct several additional robustness tests. First, we employ additional econometric specifications. More specifically, we re-estimate our baseline model by employing as a dependent variable the last value of the *SRISK* indicator at month t rather than the monthly average (reported in Table 2.12), in first differences (Table 2.13), not lagging the *GEPU* and control variables (Table 2.14), normalizing the *SRISK* with the related firm market capitalization of firms (Table 2.15), and finally, at a quarterly frequency employing the total assets in lieu of the market capitalization as a control variable (Table 2.16).

Second, we address concerns about survivorship bias. In fact, we include all the firms available in the V-Lab database without taking into account whether they survived to the end of our sample period or not. It is worth mentioning here that the V-Lab database does not include all the financial firms in operation worldwide. It considers only the major global financial firms so as to calculate the expected capital shortfall of a systemically important firm. To mitigate concerns that our results are affected by this feature of the data, we conduct the following test. We randomly select banks from the sample and then, for those banks, we drop the data from a randomly selected month – different for each bank – from that month until the end of the study period. In other words, we impose a randomly selected removal for some of the bank-month observations as if these banks did not survive. Then, we re-run our baseline specification with this reduced sample and report the results in Table 2.17. Overall, we repeat this procedure several times and our results remain intact.

Third, we employ country-specific indices (*LEPU*) of economic policy uncertainty rather than the *GEPU*. Since the *GEPU* is a GDP-weighted index, the *LEPU* will also allow us to examine whether the influence of economic policy uncertainty in the major countries drives our results. Table 2.18 presents the results of our baseline model (Equation (2.2)) using the *LEPU* of Australia, Brazil, Canada, Chile, China, France, Germany, Italy, Spain, Hong Kong, Mexico, India, Ireland, Japan, South Korea, the Netherlands, Russia, Singapore, Sweden, the UK, and the US. The coefficient of the *LEPU* equals 0.092, and it differs significantly from zero. Its magnitude is reduced, providing additional support for the existence of a spillover effect of policy uncertainty among countries.

Fourth, we take into account the effect of influential countries because our panel is not level by country. Hence, bigger countries are weighted with more firms. We first estimate a weighted panel regression of our baseline model and use as a weight the inverse number of observations from each country. Second, we examine whether there are significant differences between the effects of the *GEPU* on the *SRISK* of the most influential countries according to the number of observations (US, UK, Japan) versus the remaining countries. Panels A and B of Table 2.19 report the relevant findings. In both cases, there is a significant positive relation between the *GEPU* and the *SRISK* that is similar in magnitude to our baseline results (0.163 and 0.175, respectively). More importantly, the coefficient of the interaction term is not significant, which provides ample evidence that our results are not driven by the effect of the most influential countries.

Finally, we offer an alternative way to address the issue of whether the *GEPU* not only reflects economic policy uncertainty, but is also contaminated with general financial market uncertainty. We apply a two-stage regression approach. In the first stage, we remove the effect of market conditions from the *GEPU* by running the following time-series regression: $GEPU_t = \alpha + \beta X_t + \gamma Crises_t + \dot{\varepsilon}_t$, where X represents the market condition variable. As a proxy for the market conditions, we employ (a) the financial stress indicator of the Office of Financial Research, (b) the real uncertainty index of Jurado, Ludvigson and Ng (2015), and (c) the financial uncertainty index of Jurado, Ludvigson, and Ng (2015). In the second stage, we estimate our baseline specification by substituting $GEPU$ for the residual ($REPU$) from the first-stage regression. Our findings are shown in Table 2.20. Irrespective of the market condition variable, the results reinforce the notion that it is economic policy uncertainty that affects the capital shortfall. More specifically, when we use the financial stress indicator (Panel A), the coefficient of the $REPU$ equals 0.174, which differs significantly from zero. When we use the real uncertainty index (Panel B) and the financial uncertainty index (Panel C), the coefficients decrease slightly in magnitude (0.154 and 0.156, respectively), but they remain statistically significant.

2.8 Conclusions

Political instability and unclear policy decisions affect both the real economy and firms from various perspectives, including capital investments, mergers and acquisitions, and corporate/country spreads. The rigorous analysis in this chapter sheds light on another effect of policy uncertainty, namely the effect on the capital shortfall of financial firms in the case of a new crisis. This chapter extends the prior literature and provides new empirical evidence of that effect by employing Davis's (2016) *GEPU* index and the *SRISK* indicator proposed by Acharya, Engle, and Richardson (2012) and Brownlees and Engle (2016) as measures of the overall economic policy uncertainty and the capital shortfall, respectively.

Our results indicate a strong positive relationship between policy uncertainty and the future level of the capital shortfall in the case of a severe market decline. We show that a one-standard-deviation increase in the *GEPU* index is associated with a $205 billion increase in the capital shortage in the case of a new crisis at the end of 2016. We also seek to reveal the mechanisms by which policy uncertainty increases the future level of the capital shortfall in the event of a crisis. By decomposing the capital shortfall into its systemic risk and leverage components, we show that economic policy uncertainty has a greater effect on the systemic component than on the leverage component. This finding points to pronounced effects during economic downturns due to the interconnectedness of financial firms. More specifically, when policy uncertainty increases by 100%, the leverage component increases by 1%, while the systemic risk component increases by 3.7%.

Since the prior literature has identified the adverse consequences of policy uncertainty for firms' performance, we further explore whether the transmission mechanism of policy uncertainty occurs via a decrease in private investments and/or the reduced profitability of firms during periods of high policy uncertainty. The results reveal that the impact of economic policy uncertainty running through profitability is more pronounced than that running through investments. In this respect, we support the view that the economic channel through which global economic policy uncertainty affects the capital shortfall is most likely a decrease in corporate profits.

We also extend the prior literature, which has predominantly focused on policy uncertainty in the US, by providing a global perspective when we analyze 1,162 financial firms across five regions (North and South America, Europe, Asia, and Africa). We document how economic policy uncertainty affects all the financial sectors similarly, with the exception of real estate investment trusts, for which the effect is more than two times higher than the average effect. This finding could be explained by the increased exposure of such companies to policy decisions and economic uncertainty during the crisis periods. Our findings are robust to the potential omitted variable bias, since we include the relevant sets of control variables for market and macroeconomic conditions as well as other sources of uncertainty. To identify the exogenous variation in economic policy uncertainty and to mitigate concerns about endogeneity and reverse causality, we apply an instrumental variable analysis, placebo tests, and an exogenous shocks analysis. The results corroborate our expectations and our main findings.

As we describe in this chapter, our results have important policy implications. We unambiguously show that the authorities have to take decisive and prompt action in the case of severe market turbulence. If they allow for any unnecessary delays, then their inactivity could cause additional costs for the economy as a whole. Taking into account the fact that external financing is more difficult to come by during crisis periods, we provide further evidence that during such periods, growing economic policy uncertainty leads to an increase in the capital shortages of financial firms.

We also contribute to the policy-oriented research on the limitations of the capital shortfall. In their recent study, Aikman, Haldane, Hinterschweiger, and Kapadia (2018) argue that one way to avoid capital shortfalls is the implementation of the qualitative elements of the Basel Accord III. One of these recommended elements is the counter-cyclical capital buffer, which takes into account the credit cycle (Basel Committee on Banking Supervision, 2010b). In our study, we further identify the *GEPU* as an additional monitoring tool that could be used to detect a potentially elevated capital shortfall. Since the *GEPU* and the *SRISK* are publicly available, it should be relatively easy to use them as additional qualitative elements.

The findings of this study are also undoubtedly important for firms' managers. We provide evidence that during periods of elevated policy uncertainty and a severe market downturn, firms face higher capital requirements than they originally expect. In other words, firms with low capital will face significant distress and the capital shortfalls might not be covered by the markets, since external financing is difficult to arrange during periods of financial turbulence.

Table 2.1. The Global Industry Classification Standard (GICS).

The table presents the definitions of the firms that are used in our sample divided in 5 different financial sectors, according to the Global Industry Classification Standard (GICS). The Global Industry Classification Standard (GICS) is an industry classification developed by MSCI and Standard & Poor's (S&P) for use by the global financial community. Definitions are provided from https://www.msci.com/gics.

	Banks
Diversified Banks	Large, geographically diverse banks with a national footprint whose revenues are derived primarily from conventional banking operations, have significant business activity in retail banking and small and medium corporate lending, and provide a diverse range of financial services. Excludes banks classified in the Regional Banks and Thrifts & Mortgage Finance Sub-Industries. Also excludes investment banks classified in the Investment Banking & Brokerage Sub-Industry.
Regional Banks	Commercial banks whose businesses are derived primarily from conventional banking operations and have significant business activity in retail banking and small and medium corporate lending. Regional banks tend to operate in limited geographic regions. Excludes companies classified in the Diversified Banks and Thrifts & Mortgage Banks sub-industries. Also excludes investment banks classified in the Investment Banking & Brokerage Sub-Industry.
	Capital Markets
Asset Management & Custody Banks	Financial institutions primarily engaged in investment management and/or related custody and securities fee-based services. Includes companies operating mutual funds, closed-end funds and unit investment trusts. Excludes banks and other financial institutions primarily involved in commercial lending, investment banking, brokerage and other specialized financial activities.
Investment Banking & Brokerage	Financial institutions primarily engaged in investment banking & brokerage services, including equity and debt underwriting, mergers and acquisitions, securities lending and advisory services. Excludes banks and other financial institutions primarily involved in commercial lending, asset management and specialized financial activities.
Diversified Capital Markets	Financial institutions primarily engaged in diversified capital markets activities, including a significant presence in at least two of the following area: large/major corporate lending, investment banking, brokerage and asset management. Excludes less diversified companies classified in the Asset Management & Custody Banks or Investment Banking & Brokerage sub-industries. Also excludes companies classified in the Banks or Insurance industry groups or the Consumer Finance Sub-Industry.
Financial Exchanges & Data	Financial exchanges for securities, commodities, derivatives and other financial instruments, and providers of financial decision support tools and products including ratings agencies
	Insurance
Insurance Brokers	Insurance and reinsurance brokerage firms.
Life & Health Insurance	Companies providing primarily life, disability, indemnity or supplemental health insurance. Excludes managed care companies classified in the Managed Health Care Sub-Industry.
Multi-line Insurance	Insurance companies with diversified interests in life, health and property and casualty insurance.
Property & Casualty Insurance	Companies providing primarily property and casualty insurance.
Reinsurance	Companies providing primarily reinsurance.
	Diversified Financial Services
Other Diversified Financial Services	Providers of a diverse range of financial services and/or with some interest in a wide range of financial services including banking, insurance and capital markets, but with no dominant business line. Excludes companies classified in the Regional Banks and Diversified Banks Sub-Industries.
Multi-Sector Holdings	A company with significantly diversified holdings across three or more sectors, none of which contributes a majority of profit and/or sales. Stakes held are predominantly of a non-controlling nature. Includes diversified financial companies where stakes held are of a controlling nature. Excludes other diversified companies classified in the Industrials Conglomerates Sub-Industry.
Specialized Finance	Providers of specialized financial services not classified elsewhere. Companies in this sub-industry derive a majority of revenue from one specialized line of business. Includes, but not limited to, commercial financing companies, central banks, leasing institutions, factoring services, and specialty boutiques. Excludes companies classified in the Financial Exchanges & Data sub-industry.
	Mortgage Real Estate Investment Trusts (REITs)
Mortgage REITs	Companies or Trusts that service, originate, purchase and/or securitize residential and/or commercial mortgage loans. Includes trusts that invest in mortgage-backed securities and other mortgage related assets.

Table 2.2. National and Regional Characteristics.

The table presents the nations and regions in our sample for which we have data for *SRISK*, as defined in Equation (2.1). It also presents the number of monthly observations per country, the number of firms per country, the average leverage ratio, market capitalization of firms per country and firms' region. The sample period is from 2000M06 to 2016M12.

Nation	Obs.	Firms	Leverage ratio	Market capitalization	Region	Nation	Obs.	Firms	Leverage ratio	Market capitalization	Region
Argentina	767	4	11.40	3,142	S. America	Luxembourg	815	7	9.44	1,391	Europe
Australia	2808	16	7.10	18,312	Asia	Malaysia	2998	17	6.86	3,704	Asia
Austria	1659	12	12.96	3,809	Europe	Malta	321	2	11.68	784	Europe
Bahrain	102	1	7.39	4,156	Asia	Mexico	550	5	3.99	6,919	S. America
Belgium	2536	17	11.23	4,606	Europe	Morocco	559	5	5.33	4,147	Africa
Bermuda	2291	14	3.53	3,821	S. America	Netherlands	1943	14	14.07	9,109	Europe
Brazil	2429	22	4.85	12,751	S. America	New Zealand	135	1	4.83	325	Asia
Canada	5078	28	7.97	14,537	N. America	Nigeria	495	3	5.86	2,398	Africa
Cayman Islands	153	1	3.92	615	S. America	Norway	1516	9	12.19	3,154	Europe
Chile	2456	14	4.02	2,973	S. America	Oman	153	1	6.20	2,778	Asia
China	7816	70	5.07	15,909	Asia	Pakistan	215	2	6.01	2,160	Asia
Colombia	894	7	3.58	11,325	S. America	Peru	799	6	5.68	3,990	S. America
Croatia	198	1	8.29	2,278	Europe	Philippines	1684	11	3.66	2,513	Asia
Curacao	192	1	1.59	6,482	S. America	Poland	2287	14	6.66	3,940	Europe
Cyprus	411	4	31.71	1,880	Europe	Portugal	662	4	22.40	4,227	Europe
Czech	153	1	5.41	7,126	Europe	Puerto Rico	199	1	13.33	3,670	S. America
Denmark	1137	8	11.65	5,022	Europe	Qatar	1370	11	3.15	6,084	Asia
Egypt	292	2	5.20	2,565	Africa	Romania	372	2	7.05	1,647	Europe
Finland	924	5	7.96	3,951	Europe	Russia	791	9	8.15	12,496	Europe
France	6817	47	12.73	8,796	Europe	Saudi Arabia	2172	18	3.32	8,607	Asia
Germany	4469	29	19.13	8,817	Europe	Singapore	3135	22	3.78	5,968	Asia
Greece	2112	13	20.67	3,015	Europe	Slovakia	144	1	8.85	10,945	Europe
Guernsey	128	2	14.21	3,433	Europe	Slovenia	29	1	48.51	64	Europe
Hong Kong	8009	46	3.24	7,335	Asia	South Africa	2732	16	7.16	5,370	Africa
Hungary	330	2	9.04	3,891	Europe	South Korea	2477	24	10.54	4,855	Asia
India	8264	57	18.17	2,688	Asia	Spain	2564	19	13.32	14,647	Europe
Indonesia	2798	19	4.61	3,452	Asia	Sweden	4204	23	5.55	6,436	Europe
Ireland	682	4	23.08	11,592	Europe	Switzerland	5979	39	9.56	9,588	Europe
Israel	2109	12	14.44	2,103	Asia	Taiwan	4052	26	9.27	3,399	Asia
Italy	5002	33	16.96	7,075	Europe	Thailand	2203	13	8.66	3,306	Asia
Japan	9102	56	16.79	9,533	Asia	Turkey	4016	24	6.65	3,507	Europe
Jordan	626	6	5.42	2,168	Asia	UAE	1847	13	5.21	5,109	Asia
Kazakhstan	208	2	11.95	1,918	Asia	Ukraine	238	2	13.26	958	Europe
Kuwait	1008	7	5.14	5,596	Asia	United Kingdom	10157	58	7.05	10,378	Europe
Lebanon	346	3	7.17	2,432	Asia	United States	27048	163	6.37	14,386	N. America
Liechtenstein	138	1	12.89	1,810	Europe	Vietnam	728	9	4.55	1,672	Asia

Table 2.3. Descriptive Statistics and Correlation Analysis.

Panel A presents summary statistics for the global and regional *SRISK* for the period from June 2000 to December 2016. It shows the average, standard deviation, minimum, maximum, skewness, kurtosis, and five quantiles of *SRISK*. It also presents the number of observations (N) in our sample. The countries and the regions are described in Table 2.2. To mitigate the effect of outliers, we winsorized *SRISK* at the 1% and 99%. *SRISK* is priced in millions of USD. Panel B presents summary statistics of *SRISK* for 5 sectors (Banks, Capital Markets, Insurances, Diversified Financial Services and and Mortgage Real Estate Investment Trusts). Panel C presents summary statistics of *GEPU* index. Panel D presents the correlation analysis of the independent variables that we use in our baseline specification. The variables are described in Section 3.3.

Panel A. *SRISK*

Region	Mean	St. dev.	min	max	skewness	kurtosis	p1	p25	p50	p75	p99	N
Global	8248.76	17704.67	10.12	105492.10	3.67	17.59	10.18	408.21	1728.89	6674.39	105492.10	49,532
North America	11161.72	18224.72	10.12	105492.10	2.88	12.40	13.77	799.96	3890.16	12630.14	99724.83	7,809
South America	2900.41	6293.29	10.12	34466.54	3.23	13.13	10.61	167.21	573.15	1815.93	30585.04	1,209
Europe	10406.46	20085.93	10.12	105492.10	3.06	12.77	10.12	405.96	2294.91	9183.90	105492.10	18,547
Asia	5824.05	15628.67	10.12	105492.10	4.82	27.68	10.12	345.39	1285.17	3684.68	104640.10	20,552
Africa	1376.40	2507.51	10.12	33071.94	10.23	125.99	24.67	501.14	876.28	1681.74	5569.78	1,122

Panel B. *SRISK* – Financial Sectors

	Mean	St. dev.	min	max	skewness	kurtosis	p1	p25	p50	p75	p99	N
Banks	8786.48	19678.99	10.12	105492.10	3.45	15.03	11.18	384.27	1665.45	5838.39	105492.10	32,083
Capital markets	12962.45	21864.20	10.12	105492.10	2.55	9.91	10.12	552.91	2638.57	18105.86	105492.10	3,708
Insurance	6722.00	9554.70	10.12	69903.29	2.29	8.86	18.57	682.05	2629.54	8594.38	43652.90	7,585
Diversified Financial Services	1737.18	2427.02	10.12	11751.68	2.14	7.23	11.56	219.42	784.076	1885.67	10938.80	1,547
Mortgage REITS	276.16	742.91	10.12	6067.41	6.09	43.08	10.12	22.05	81.74	282.86	5702.38	335

Panel C. *GEPU*

	Mean	St. dev.	min	max	skewness	kurtosis	p1	p25	p50	p75	p99	N
GEPU	111.01	43.13	50.26	277.09	1.20	5.00	52.98	79.19	104.00	134.75	272.53	199

Panel D. Correlation Analysis

	GEPU	SD	MKT	$SDMKT$	VIX	ADS	$Corp\_Spread$	$Term$	LN CAP
GEPU	1.00								
SD	0.18	1.00							
MKT	-0.13	-0.19	1.00						
$SDMKT$	0.40	0.43	-0.44	1.00					
VIX	0.40	0.42	-0.34	0.88	1.00				
ADS	-0.19	-0.36	0.24	-0.58	-0.67	1.00			
$Corp\_Spread$	0.30	0.39	-0.08	0.65	0.75	-0.73	1.00		
$Term$	0.32	0.10	0.05	0.16	0.27	-0.05	0.26	1.00	
CAP	0.02	-0.22	0.01	-0.07	-0.11	0.07	-0.07	-0.04	1.00

Table 2.4. Global Economic Policy Uncertainty and Capital Shortfall.

Panel A of the table reports the results of our baseline Equation: $lnSRISK_{i,t} = \alpha_i + \beta_1 lnGEPU_{t-1} + \beta_2 lnSRISK_{i,t-1} + \beta_3 SD_{i,t-1} + \delta M_{t-1} + \zeta lnCAP_{i,t-1} + \eta Crises_t + MNT_t + \varepsilon_{i,t}$ where $lnSRISK$ is the natural logarithm of SRISK defined in Equation (1), $lnGEPU$ is the natural logarithm of global economic uncertainty index, SD represents the annualized standard deviation of firm i provided by V-Lab. $M_{t-1}$is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. In Panel B of the table, we include in the baseline specification the financial and macro uncertainty measures (real and financial) of Jurado, Ludvigson and Ng (2015), the Financial Stress Indicator (FSI), and the cross-sectional standard deviation of monthly stock returns defined as: $CSV_{i,t} = \sqrt{\frac{(r_{i,t}-\bar{r}_t)^2}{n-1}}$, where $r_{i,t}$ is the return of stock i in month t. Standard errors are clustered at firm and calendar month level. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

	Panel A. Baseline specification					Panel B. Horse race				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$lnGEPU$	0.889***	0.177***	0.164***	0.154***	0.176***	0.177***	0.177***	0.174***	0.172***	0.170***
$lnSRISK$		0.826***	0.824***	0.828***	0.821***	0.821***	0.821***	0.821***	0.820***	0.820***
SD			0.104***	0.085***	0.093***	0.092***	0.093***	0.092***	0.095***	0.094***
MKT				-0.007***	-0.009***	-0.009***	-0.009***	-0.009***	-0.009***	-0.009***
$Term$				0.013**	0.020***	0.019***	0.020***	0.020***	0.019***	0.016**
$Corp\_Spread$				-0.017	0.040	0.041	0.040	0.039	0.046	0.048
ADS				0.018	0.018	0.020	0.018	0.019	0.011	0.015
VIX					-0.006***	-0.007***	-0.006***	-0.007**	-0.005**	-0.006**
$SDMKT$					0.001	0.001	0.001	0.001	0.001	0.001
$FINANCIAL$						0.044				0.084
$REAL$							0.016			-0.022
FSI								0.002		0.001
CSV									-0.013**	-0.015**
$lnCAP$	0.007	0.041***	0.054***	0.047***	0.038***	0.038***	0.037***	0.038***	0.035***	0.036***
Crises	0.113*	0.076***	0.053**	0.088***	0.098***	0.097***	0.098***	0.093***	0.106***	0.101***
Firm fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Seasonal (monthly) dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Obs.	49,292	47,306	47,306	47,306	47,306	47,306	47,306	47,306	47,208	47,208
R^2 (within)	11.43%	73.68%	73.74%	73.96%	74.03%	74.04%	74.03%	74.03%	74.01%	74.02%

Table 2.5. The Out-Of-Sample Predictive Power of Economic Policy Uncertainty.

The table presents the out-of-sample analysis. We implement the predictive accuracy test of Clark and West (2007) to examine whether the policy uncertainty improves the forecasting power of the following benchmark models: $lnSRISK_{i,t} = \alpha_i + \varepsilon_{i,t}$ (column 1), $lnSRISK_{i,t} = \alpha_i + \beta_1 lnSRISK_{i,t-1} + MNT_t + \varepsilon_{i,t}$ (column 2) and $lnSRISK_{i,t} = \alpha_i + \beta_1 lnSRISK_{i,t-1} + \beta_3 SD_{i,t-1} + \delta MKT_{t-1} + \zeta lnCAP_{i,t-1} + \varepsilon_{i,t}$ (column 3). The variables are described in Section 3.3. The Clark and West (2007) test statistic is defined as: $Adj.\Delta MSPE = \frac{2}{N}\sum_{i,t} PE_{i,t}\left(PE_{i,t} - PE_{i,t}^{lnGEPU}\right)$, where $PE_{i,t}$ is the prediction error of firm i at month t of the benchmark model, and $PE_{i,t}^{lnGEPU}$ is the prediction error of the model that includes the ln$GEPU$ index. We obtain the statistic by regressing the quantity $2PE_{i,t}\left(PE_{i,t} - PE_{i,t}^{lnGEPU}\right)$ on a constant with clustered standard errors at firm and calendar month level. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. The out-of-sample study starts on 2010M06 and we use a recursive sample. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)
$\overline{PE}$	0.414	0.037	0. 054
$\overline{PE}^{lnGEPU}$	0.246	0.010	0. 008
$Adj.\Delta MSPE$	0.213***	0. 007***	0.009***

Table 2.6. Economic Policy Uncertainty and the Components of SRISK.

The table reports the effect of policy uncertainty on leverage and systemic risk, which are the two components of *SRISK*. $COMP1$ is the natural logarithm of $\mathrm{k}\left(LVG_{\mathrm{i,t}} * cap_{i,t} - cap_{i,t}\right)$, $COMP2$ is the negative of the natural logarithm of $(1-\mathrm{k}) * cap_{i,t} * e^{\left(ln(1-d)*Beta_{i,t}\right)}$, $LVG_{\mathrm{i,t}}$ is the quasi-leverage ratio defined as: $\frac{book\ value\ of\ assets_{i,t} - book\ value\ of\ equity_{i,t} + cap_{i,t}}{cap_{i,t}}$, k is the prudential capital ratio which is equal to 5.5% for European firms and 8% for non-European ones, $beta_{i,t}$ is the beta coefficient with respect to the MSCI World Index, which is estimated by using a Dynamic Conditional Beta model (Engle, 2002, 2009), and d is a threshold of a six month market decline (or systemic crisis event) and its default value is set to -40%. $lnGEPU$ is the natural logarithm of global economic uncertainty index, SD represents the annualized standard deviation of firm i provided by V-Lab. M_{t-1} is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Standard errors are clustered at firm and calendar month level. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

	Leverage Component	Systemic Risk Component
$lnGEPU$	0.010**	0.037***
$COMP1$	0.959***	
$COMP2$		0.713***
SD	-0.015**	0.108***
MKT	0.001**	-0.005***
$Term$	0.002**	0.000
$Corp\_Spread$	0.010***	-0.023
ADS	0.009***	-0.019*
VIX	-0.001	-0.001
$SDMKT$	0.000	0.000
$lnCAP$	0.016***	-0.240***
Crises	0.019***	-0.002
Firm fixed effects	yes	yes
Seasonal (monthly) dummies	yes	yes
Obs.	47,306	47,306
R^2 (within)	96.37%	93.65%

Table 2.7. Economic Policy Uncertainty and Capital Shortfall: Investment or Profitability?

The table explores whether the impact of economic policy uncertainty to capital shortfall is driven by investments and profitability. We re-estimate Equation 2.2 (Panel A) by adding two interaction terms. The first, is the (lagged) interaction term between the economic uncertainty measure, either the global ($GEPU$, column 1) or the country-specific ($LEPU$, column 2), and the (y-o-y) growth rate of gross fixed capital formation (GFCF) at constant prices ($GFCF$) measured at the country level. The second, is the (lagged) interaction term between economic uncertainty and the profitability (ROE) of the firms in our sample, as a proxy for profitability. Panel B reports the (average) marginal effects of $GFCF$ and ROE to $SRISK$. SD represents the annualized standard deviation of firm i provided by V-Lab. $M_{t-1}$is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. They are calculated as averages within a quarter. To control for the size of a firm we include the natural logarithm of firm's total assets ($TOT\ ASSETS$). Standard errors are clustered at firm and calendar quarter level. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are quarterly and the sample period is from 2000Q3 to 2016Q4.

Panel A. Baseline specification		
	(1)	(2)
$lnGEPU$	0.124***	
$GEPUxROE$	-0.001***	
$GEPUxGFCF$	-0.001**	
$LEPU$		0.094***
$LEPUxROE$		-0.001***
$LEPUxGFCF$		0.000
$SRISK$	0.579***	0.601***
SD	0.092***	0.081***
MKT	-0.014*	-0.017**
$Term$	0.032*	0.027
$Corp\_Spread$	0.017	0.067
ADS	0.058	0.077
VIX	-0.002	-0.001
$SDMKT$	0.003	0.003
$TOT\ ASSETS$	0.556***	0.530***
Crises	0.184**	0.177**
Firm fixed effects	yes	yes
Quarterly Dummies	yes	yes
Obs.	7,677	6,545
R^2 (within)	65.25%	65.55%
Panel B. Marginal Effects		
ROE	-0.005***	-0.005***
$GFCF$	-0.003**	-0.002

Table 2.8. Instrumental Variable Analysis and Placebo Tests.

The table presents the results from the two-stage instrumental variable approach (Panels A, B, and C) and from the placebo test (Panel D). We use the Migration Fear Index (Panel A), and the Partisan Conflict Index (Panel B) as instrumental variables for the Global Economic Policy Uncertainty index. In Panel C, we exclude the US companies from our dataset and repeat the analysis by using the Partisan Conflict Index. Standard errors are 500 bootstrapped and clustered at firm level. Panel D presents the average coefficient estimates from the regression of $SRISK$ on randomly selected values of $GEPU$. We construct the $\widehat{GEPU}$ by randomly selecting values without replacement from the original series of GEPU. Then, we estimate regression coefficients by using 100 different samples from the random $\widehat{GEPU}$. $Controls$ are described in Section 2.3.3. Coefficients for the control variables are omitted due to space limitations. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

Panel A. Instrumental variable analysis. The Migration Fear Index		
	First Stage	Second Stage
	$lnGEPU$	$lnSRISK$
$\widehat{GEPU}$		0.167***
$MFEAR$	0.136**	
Controls	yes	yes
Firm fixed effects		yes
R-squared	51.00%	73.85%
Panel B. Instrumental variable analysis. The Partisan Conflict Index		
	First Stage	Second Stage
	$GEPU$	$SRISK$
$\widehat{GEPU}$		0.164***
$PConflict$	0.787***	
Controls	yes	yes
Firm fixed effects		yes
R-squared	62.20%	73.89%
Panel C. Instrumental variable analysis. The Partisan Conflict Index (excluding the US firms)		
	First Stage	Second Stage
	$GEPU$	$SRISK$
$\widehat{GEPU}$		0.170***
$PConflict$	0.752***	
Controls	yes	yes
Firm fixed effects		yes
R-squared	63.61%	74.81%
Panel D. Placebo tests		
	$SRISK$	
$\widehat{GEPU}$	-0.002	
Controls	yes	
Firm fixed effects	yes	

Table 2.9. Exogenous Shocks.

Panel A presents the results of our baseline equation when GEPU is treated as endogenous, whereas Panel B the relevant results when the endogenous variable is the country-specific EPU. In Panel A we use as instruments i) the number of general strikes in a sample country in a given year, taking values from 1 to 13, and zero otherwise; ii) the number of purges in a sample country in a given year, taking values from 1 to 4, and zero otherwise; and iii) the number of riots in a sample country in a given year, taking values from 1 to 28, and zero otherwise. In Panel B we use as instruments i) government crises, which take the value from 1 to 4, and zero otherwise; ii) number of major cabinet changes in a sample country in a given year, taking values from 1 to 3, and zero otherwise; and iii) number of changes in effective executive, taking values from 1 to 3 and zero otherwise. The variables used as instruments are obtained from the Cross-National Time-Series Data Archive (C.N.T.S.). The other variables are described in Section 2.3.3. Standard errors are 500 bootstrapped and clustered at firm level. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

	Panel A. GEPU			Panel B. Country-specific EPU		
	General Strikes	Purges	Riots	Government Crises	Major Cabinet Changes	Changes in Effective Executive
	First stage			First stage		
Instrument	0.026***	0.173***	0.020***	0.099***	0.069***	0.052***
	Second stage			Second stage		
$lnGEPU$	0.772***	0.487***	0.411***	0.316***	0.269***	0.312**
Controls	yes	yes	yes	yes	yes	yes
Firm fixed effects	yes	yes	yes	yes	yes	yes
Seasonal (monthly) dummies	yes	yes	yes	yes	yes	yes
Obs.	44,930	44,930	44,930	31,901	25,021	25,021
R^2 (within)	70.14%	73.13%	73.61%	74.71%	75.95%	75.69%

Table 2.10. Economic Policy Uncertainty and the Capital Shortage: Sensitivity Analysis.

Panel A1 examines whether there are significant differences between regions (North America, South America, Europe, Asia, and Africa). Panel A2 examines whether there are significant differences between industries (Banks, Capital Markets, Insurances, Diversified Financial Services and Mortgage Real Estate Investment Trusts). Panel B1 reports the results of our baseline Equation for four market decline thresholds (40%, 30%, 20%, and 10%). The first (fourth) column presents the results for the 40% (10%) market decline threshold. Panel B2 of the table reports the results of the Z-test of the equality of coefficients between different market decline thresholds: -40% vs -30%, -40% vs -20%, -40% vs -10%, -30% vs -20%, -30 vs -10% and -20% vs -10%. Standard errors are clustered at firm and calendar month level. Panel C reports the quantile regression results of our baseline Equation and each column presents the results for a q∈ $[0.10, 0.90]$ quantile. $lnSRISK$ is the natural logarithm of SRISK defined in Equation (1), $lnGEPU$ is the natural logarithm of global economic uncertainty index, SD represents the annualized standard deviation of firm i provided by V-Lab. M_{t-1} is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

Panel A. Regional and Industry Analysis

Panel A1. Regions		Panel A2. Industries	
$lnGEPU$	0.211***	$lnGEPU$	0.178***
$D^{SA} \times GEPU$	-0.025	$D^{CM} \times GEPU$	-0.022
$D^{EUROPE} \times GEPU$	-0.060*	$D^{INS} \times GEPU$	-0.003
$D^{ASIA} \times GEPU$	-0.026	$D^{DFS} \times GEPU$	-0.028
$D^{AFRICA} \times GEPU$	-0.041	$D^{RE} \times GEPU$	0.187***
Controls	yes	Controls	yes
Firm fixed effects	yes	Firm fixed effects	yes
Seasonal (monthly) dummies	yes	Seasonal (monthly) dummies	yes
Obs.	47,306	Obs.	47,306
R^2 (within)	74.05%	R^2 (within)	74.05%

Panel B. Alternative Market Decline Thresholds

Panel B1. The Effect of Market Decline Threshold	(1)	(2)	(3)	(4)	Panel B2. Testing the equality of coefficients across columns (Z-test)	
$lnGEPU$	0.176***	0.167***	0.157***	0.168***	Column (1) vs Column (2)	0.26
Controls	yes	yes	yes	yes	Column (1) vs Column (3)	0.51
Firm fixed effects	yes	yes	yes	yes	Column (1) vs Column (4)	0.20
Seasonal (monthly) dummies	yes	yes	yes	yes	Column (2) vs Column (3)	0.27
Obs.	47,306	41,984	37,085	32,856	Column (2) vs Column (4)	-0.03
R^2 (within)	74.05%	74.26%	74.59%	73.48%	Column (3) vs Column (4)	-0.27

Table 2.11. (cont'd) Economic Policy Uncertainty and the Capital Shortage: Sensitivity Analysis.

Panel C. Capital Shortfall Severity and *GEPU*									
	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
$lnGEPU$	0.220***	0.151***	0.128***	0.114***	0.106***	0.097***	0.090***	0.075***	0.050***
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes
Firm fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes
Seasonal (monthly) dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Obs.	47,306	47,306	47,306	47,306	47,306	47,306	47,306	47,306	47,306
R^2 (within)	23.64%	23.12%	23.11%	23.19%	23.64%	24.43%	24.98%	24.64%	18.28%

Table 2.12. Capital Surplus and Economic Policy Uncertainty: Global, Regional, and Industry Analysis.

We use the absolute value of *SRISK* of the well-capitalized firms as dependent variable, since SRISK is negative for these firms. Panel A reports the results of our baseline equation. Panel B examines whether there are significant differences between regions (North America, South America, Europe, Asia, and Africa) by using interaction terms. Panel C examines whether there are significant differences between industries (Banks, Capital Markets, Insurances, Diversified Financial Services and Mortgage Real Estate Investment Trusts) by using interaction terms. Standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

Panel A. Global		Panel B. Regions		Panel C. Industries	
$lnGEPU$	-0.094***	$lnGEPU$	-0.106***	$lnGEPU$	-0.118***
		$D^{SA} \times GEPU$	0.039*	$D^{CM} \times GEPU$	0.038***
		$D^{EUROPE} \times GEPU$	0.007	$D^{INS} \times GEPU$	0.052***
		$D^{ASIA} \times GEPU$	0.018	$D^{DFS} \times GEPU$	0.028
		$D^{AFRICA} \times GEPU$	0.014	$D^{RE} \times$ GEPU	0.043***
Controls	yes	Controls	yes	Controls	yes
Firm fixed effects	yes	Firm fixed effects	yes	Firm fixed effects	yes
Seasonal (monthly) dummies	yes	Seasonal (monthly) dummies	yes	Seasonal (monthly) dummies	yes
Obs.	120,309	Obs.	120,309	Obs.	120,309
R^2 (within)	86.08%	R^2 (within)	86.09%	R^2 (within)	86.09%

Table 2.13. Economic Policy Uncertainty and Capital Shortfall. Last value of daily $SRISK$.

The table reports the results of our baseline equation, where $lnSRISK$ is the natural logarithm of $SRISK$ defined in Equation (2.1) by using the last monthly value. $SRISK$ is the natural logarithm of SRISK defined in Equation (1), $lnGEPU$ is the natural logarithm of global economic uncertainty index, SD represents the annualized standard deviation of firm i provided by V-Lab. $M_{t-1}$is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$.To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$lnGEPU$	0.872***	0.201***	0.161***	0.189***	0.197***	0.209***	0.203***	0.232***	0.201***	0.173***
$lnSRISK$		0.765***	0.817***	0.767***	0.764***	0.766***	0.765***	0.762***	0.765***	0.809***
SD			-0.007							-0.027
MKT				-0.004**						-0.005**
$Term$					0.014*					0.025***
$Corp\_Spread$						-0.020				0.052
ADS							0.005			-0.001
VIX								-0.003**		-0.010***
$SDMKT$									0.000	0.006**
$lnCAP$		0.063***	0.048***	0.063***	0.065***	0.059***	0.062***	0.052***	0.063***	0.030***
Crises	0.111**	0.074***	0.064**	0.063**	0.074**	0.094**	0.083**	0.115***	0.074**	0.089**
Firm fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Seasonal (monthly) dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Obs.	50,391	47,738	46,388	47,738	47,738	47,738	47,738	47,738	47,738	46,388
R^2 (within)	10.34%	63.91%	66.74%	63.96%	63.93%	63.91%	63.91%	63.95%	63.91%	66.99%

Table 2.14. Economic Policy Uncertainty and Capital Shortfall. The First Difference Model.

The table reports the results of our baseline Equation estimated in first differences. SD represents the annualized standard deviation of firm i provided by V-Lab. M_{t-1} is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$lnGEPU$	0.152***	0.102***	0.103***	0.058***	0.103***	0.097***	0.102***	0.102***	0.098***	0.054***
$lnSRISK$		-0.112***	-0.112***	-0.112***	-0.112***	-0.112***	-0.112***	-0.112***	-0.112***	-0.112***
SD			-0.009							-0.015*
MKT				-0.006***						-0.006***
$Term$					0.002					0.005**
$Corp\_Spread$						-0.020***				-0.014*
ADS							0.006			0.006
VIX								0.000		0.000
$SDMKT$									0.001**	0.000
$lnCAP$		-0.354***	-0.357***	-0.282***	-0.354***	-0.358***	-0.357***	-0.352***	-0.345***	-0.288***
Crises	0.065***	0.041***	0.043***	0.028***	0.041***	0.061***	0.051***	0.038***	0.034***	0.055***
Firm fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Seasonal (monthly) dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Obs.	47,208	45,591	45,591	45,591	45,591	45,591	45,591	45,591	45,591	45,591
R^2 (within)	0.87%	2.57%	2.28%	2.97%	2.33%	2.28%	2.29%	2.35%	2.29%	3.12%

Table 2.15. Economic Policy Uncertainty and Capital Shortfall. The Contemporaneous Model.

The table reports the results of our baseline Equation: $lnSRISK_{i,t} = \alpha_i + \beta_1 lnSRISK_{i,t-1} + \beta_2 lnGEPU_t + \beta_3 lnCAP_{i,t} + \beta_4 SD_{i,t} + \delta M_t + \zeta Crises_t + MNT_t + \varepsilon_{i,t}$. $lnSRISK$ is the natural logarithm of SRISK defined in Equation (1), $lnGEPU$ is the natural logarithm of global economic uncertainty index, SD represents the annualized standard deviation of firm i provided by V-Lab. $M_t$is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$lnGEPU$	0.857***	0.199***	0.179***	0.184***	0.197***	0.203***	0.208***	0.199***	0.185***	0.189***
$lnSRISK$		0.824***	0.821***	0.827***	0.823***	0.824***	0.823***	0.824***	0.825***	0.818***
SD			0.173***							0.172***
MKT				-0.005***						-0.006***
$Term$					0.006					0.010
$Corp\_Spread$						-0.013				0.044
ADS							0.024**			0.043**
VIX								0.000		-0.003
$SDMKT$									0.001	0.000
$lnCAP$		-0.010	0.012	-0.009	-0.009	-0.012	-0.016	-0.010	-0.007	0.000
Crises	0.115*	0.077***	0.039	0.067***	0.076***	0.090***	0.120***	0.077**	0.060**	0.101***
Firm fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Seasonal (monthly) dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Obs.	49,531	47,306	47,306	47,306	47,306	47,306	47,306	47,306	47,306	47,306
R^2 (within)	10.90%	73.79%	73.97%	73.87%	73.79%	73.79%	73.81%	73.78%	73.80%	74.11%

Table 2.16. Economic Policy Uncertainty and Capital Shortfall. Normalization with Market Capitalization.

The table reports the results of our baseline Equation: $\frac{lnSRISK_{i,t}}{lnCAP_{i,t}} = \alpha_i + \beta_1 \frac{lnSRISK_{i,t-1}}{lnCAP_{i,t-1}} + \beta_3 lnGEPU_t + \beta_4 SD_{i,t} + \delta M_t + \zeta Crises_t + MNT_t + \varepsilon_{i,t}$. $lnSRISK$ is the natural logarithm of SRISK defined in Equation (1), $lnGEPU$ is the natural logarithm of global economic uncertainty index, SD represents the annualized standard deviation of firm i provided by V-Lab. M_t is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$lnGEPU$	1.445***	0.106***	0.080***	0.065*	0.108**	0.131***	0.101**	0.109**	0.086*	0.091**
$lnSRISK/lnCAP$		0.973***	0.972***	0.973***	0.973***	0.973***	0.973***	0.973***	0.973***	0.972***
SD			0.180							0.174
MKT				-0.016***						-0.017***
$Term$					-0.005					0.007
$Corp\_Spread$						-0.060				-0.019
ADS							-0.012			-0.018
VIX								0.000		-0.004
$SDMKT$									0.002	-0.002
Crises	-0.272	0.039	-0.002	-0.003	0.039	0.099***	0.017	0.043	0.016	0.017
Firm fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Seasonal (monthly) dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Obs.	49,426	47,306	47,306	47,306	47,306	47,306	47,306	47,306	47,306	47,306
R^2 (within)	0.54%	93.62%	93.62%	93.63%	93.62%	93.62%	93.62%	93.62%	93.62%	93.63%

Table 2.17. Economic Policy Uncertainty and Capital Shortfall: Quarterly Regressions.

The table reports the results of the baseline specification in quarterly frequency employing total assets in lieu of market capitalization to control for firm size. $lnSRISK$ is the natural logarithm of SRISK defined in Equation (1), $lnGEPU$ is the natural logarithm of global economic uncertainty index, SD represents the annualized standard deviation of firm i provided by V-Lab. $M_{t-1}$is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Standard errors are clustered at firm and calendar quarter level to take into account the potential cross-sectional and serial correlation in residual terms. To mitigate the effect of outliers, we winsorized $SRISK$ at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are quarterly and the sample period is from 2000Q3 to 2016Q4.

	(1)	(2)	(3)	(4)	(5)
$lnGEPU$	0.517***	0.166***	0.152***	0.130***	0.129***
$lnSRISK$		0.625***	0.617***	0.620***	0.622***
SD			0.105***	0.108**	0.102**
MKT				-0.014**	-0.011
$Term$				0.036**	0.039**
$Corp\_Spread$				-0.064	-0.083
ADS				-0.006	-0.014
$SDMKT$					-0.005
VIX					0.007
$TOT\ ASSETS$	1.131***	0.436***	0.455***	0.454***	0.444***
Crises	0.092	0.172***	0.149**	0.148**	0.152**
Firm fixed effects	yes	yes	yes	yes	yes
Seasonal (quarterly) dummies	yes	yes	yes	yes	yes
Obs.	16,029	14,977	14,977	14,977	14,977
R^2 (within)	36.06%	64.56%	64.66%	65.06%	65.07%

Table 2.18. Economic Policy Uncertainty and Capital Shortfall: Randomly Reduced Sample.

The table reports the results of the baseline specification in a randomly reduced sample. Firms are randomly selected and for these firms we drop the data from a randomly selected month – different for each one of them – from that month till the end of the time period examined. $lnSRISK$ is the natural logarithm of SRISK defined in Equation (1), $lnGEPU$ is the natural logarithm of global economic uncertainty index, SD represents the annualized standard deviation of firm i provided by V-Lab. M_t is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Standard errors are clustered at firm and calendar quarter level to take into account the potential cross-sectional and serial correlation in residual terms. To mitigate the effect of outliers, we winsorized *SRISK* at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

	Baseline specification	Horse race
$lnGEPU$	0.178***	0.172***
lnSRISK	0.821***	0.820***
SD	0.107***	0.108***
MKT	-0.009***	-0.009***
$Term$	0.020***	0.016**
$Corp\_Spread$	0.038	0.046
ADS	0.017	0.015
VIX	0.001	0.001
$SDMKT$	-0.006***	-0.006**
$FINANCIAL$		0.094
$REAL$		-0.033
FSI		0.001
CSV		-0.015**
lnCAP	0.041***	0.039***
Crises	0.091***	0.093***
Firm fixed effects	yes	yes
Seasonal (monthly) dummies	yes	yes
Obs.	38,772	38,675
R^2 (within)	73.9%	73.9%

Table 2.19. Country-specific Effect of Economic Policy Uncertainty to Capital Shortfall.

The table presents the results of our baseline equation by using the country-specific Economic Policy Uncertainty Indices, LEPU, of Australia, Brazil, Canada, Chile, China, France, Germany, Italy, Spain, Hong Kong, Mexico, India, Ireland, Japan, S. Korea, Netherlands, Russia, Singapore, Sweden, U.K., U.S, instead of the Global Economic Policy Index. ln$SRISK$ is the natural logarithm of SRISK defined in Equation (1). Controls are SD represents the annualized standard deviation of firm i provided by V-Lab. M_t is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

$LEPU$	0.092***
Controls	yes
Firm fixed effects	yes
Seasonal (monthly) dummies	yes
Obs.	33,812
R^2 (within)	75.34%

Table 2.20. Policy Uncertainty and Capital Shortfall. The Effect of the Most Influential Countries.

Panel A presents the results of our baseline equation by estimating a weighted panel regression that uses as a weight the inverse number of observations from each country. Panel B examines whether there are significant differences between the effect of GEPU on influential countries (US, UK, Japan) and all the other countries. We estimate the baseline equation with the interaction term D^{INF} for firms in US, UK and Japan. $lnSRISK$ is the natural logarithm of SRISK defined in Equation (1), $lnGEPU$ is the natural logarithm of global economic uncertainty index. Controls are SD represents the annualized standard deviation of firm i provided by V-Lab. M_t is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

Panel A. Weighted		Panel B. Difference of Influential Countries	
$lnGEPU$	0.163***	$lnGEPU$	0.175***
		D^{INF} × GEPU	0.012
Controls	yes	Controls	yes
Firm fixed effects	yes	Firm fixed effects	yes
Seasonal (monthly) dummies	yes	Seasonal (monthly) dummies	yes
Obs.	45,815	Obs.	47,306
R^2 (within)	71.25%	R^2 (within)	74.05%

Table 2.21. Removing the Effect of Market Conditions from *GEPU*.

The table presents the results from a two-stage regression in order to remove the effect of market conditions from Global Economic Policy Uncertainty Index. In the first stage we run the following time-series regression: $lnGEPU_t = \alpha + \beta X_t + \gamma Crises_t + \dot{\varepsilon}_t$, where X represents the market condition variable: (a) the Financial Stress Indicator, Panel A, (b) Real Uncertainty Index of Jurado, Ludvigson and Ng (2015), Panel B, and (c) Financial Uncertainty Index of Jurado, Ludvigson and Ng (2015), Panel C. In the second stage, we estimate our baseline equation by substituting $GEPU$ with the residual from the first stage $\dot{\varepsilon}$. Controls are SD represents the annualized standard deviation of firm i provided by V-Lab. M_t is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Standard errors are 500 bootstrapped and clustered at firm level. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.

Panel A. Financial Stress Indicator		Panel B. Real Uncertainty Index		Panel C. Financial Uncertainty Index	
First Stage Beta (β)	0.048***	First Stage Beta (β)	0.713	First Stage Beta (β)	0.786***
$REPU$	0.174***	$REPU$	0.154***	$REPU$	0.156***
Controls	yes	Controls	yes	Controls	yes
Firm fixed effects	yes	Firm fixed effects	yes	Firm fixed effects	yes
Seasonal (monthly) dummies	yes	Seasonal (monthly) dummies	yes	Seasonal (monthly) dummies	yes
Obs.	47,306	Obs.	47,306	Obs.	47,306
R^2 (within)	74.01%	R^2 (within)	73.99%	R^2 (within)	73.99%

Figure 2.1. Global Economic Policy Uncertainty Index and SRISK.

The figure plots the Global Economic Policy Uncertainty Index (left axes) and the sum of individual firms SRISK (right axes). The Global index of Economic Policy Uncertainty (GEPU) is a GDP-weighted average of 18 country-specific EPU indices (Australia, Brazil, Canada, Chile, China, France, Germany, India, Ireland, Italy, Japan, Netherlands, Russia, South Korea, Spain, Sweden, United Kingdom and United States). Each country-specific index measures the relative frequency of articles in newspapers that discuss issues about economy (E), policy (P), and uncertainty (U). SRISK is defined in Equation (2.1). The sample period is from 2000M06 to 2016M12.

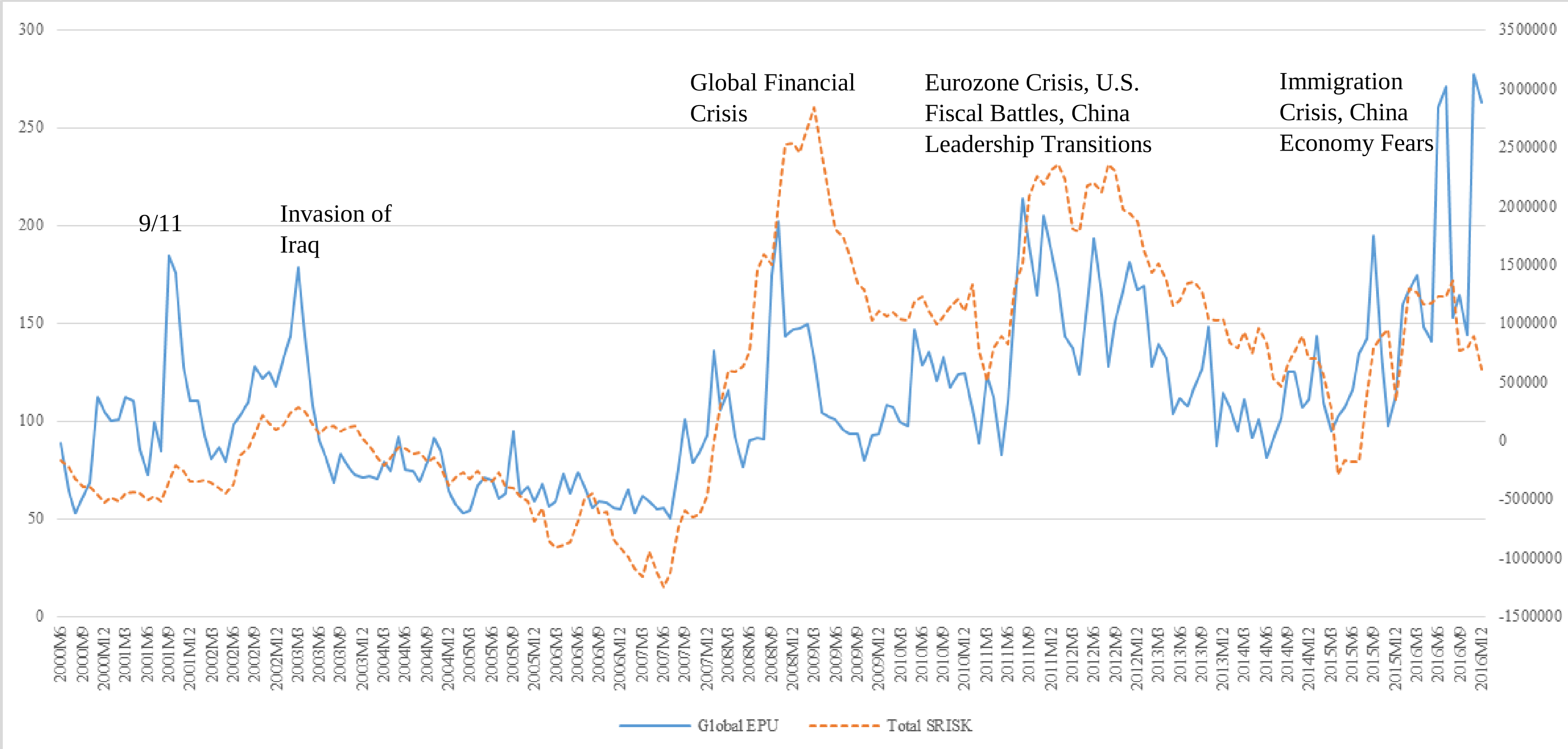
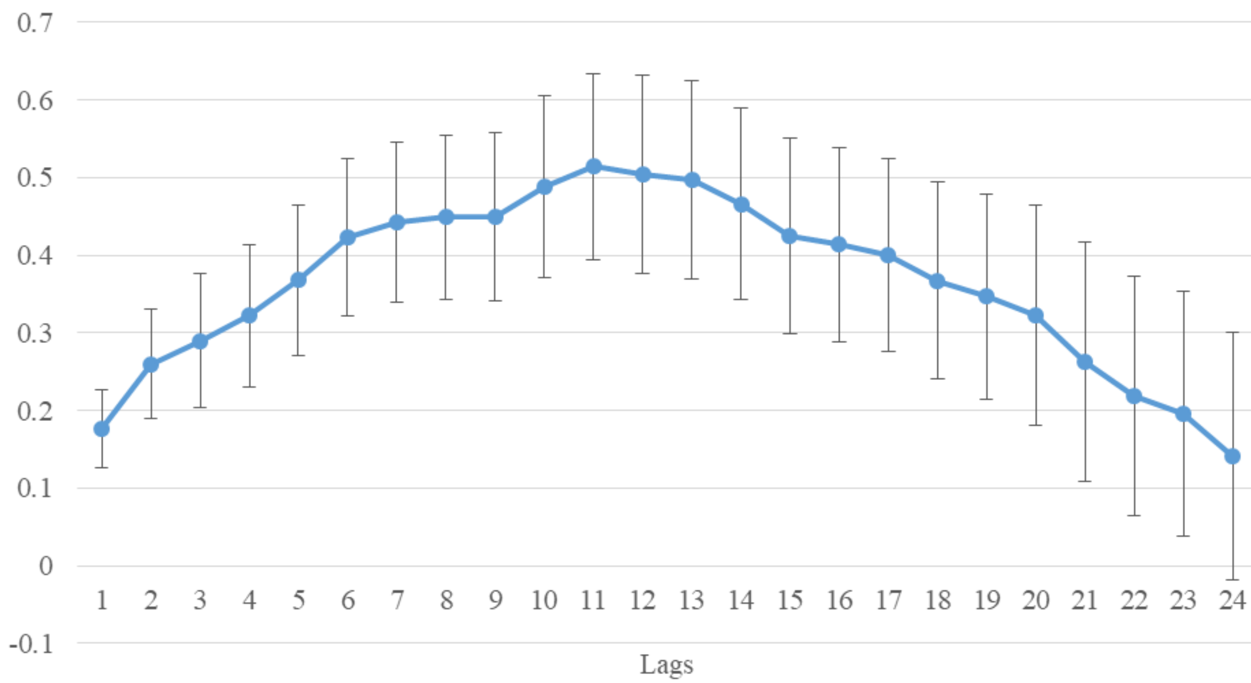


Figure 2.2. The Time Dimension of the Effect of Global Economic Policy Uncertainty.

The figure plots the time dimension effect of Global Economic Policy Uncertainty on SRISK and the 2 standard error confidence interval by estimating the following Equation: $lnSRISK_{i,t} = \alpha_i + \beta_1 lnGEPU_{t-p} + \beta_2 lnSRISK_{i,t-p} + \beta_3 SD_{i,t-p} + \delta M_{t-p} + \zeta lnCAP_{i,t-p} + \eta Crises_t + MNT_t + \varepsilon_{i,t}$, where $p = 1,2, \ldots 24$. $SRISK$ is the natural logarithm of SRISK defined in Equation (1). Controls are SD represents the annualized standard deviation of firm i provided by V-Lab. M_t is a set of control variables that includes stock market, macroeconomic, and uncertainty oriented variables. Specifically, MKT is the excess market return of the developed markets of Fama and French (2012), $Term$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate, $Corp\_Spread$ is the difference between Moody's BBB and AAA US Corporate Bond Yield, and. α_i's are firm fixed effects, ADS is the US business index of Aruoba, Diebold and Scotti (2009), VIX is the implied volatility index of S&P500, $SDMKT$ is the annualized monthly standard deviation of market returns. MNT_t is a set of calendar monthly dummy variables to control for possible seasonality in capital shortfall, $lnCAP$ is the natural logarithm of stock i market capitalization in month t, and $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized SRISK at the 1% and 99%. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The data are monthly and the sample period is from 2000M06 to 2016M12.



Chapter 3

Economic Policy Uncertainty and the Short and Long Term Liquidity Needs of US Bank Holding Companies

3.1 Introduction

“Global liquidity – the ease of financing in international financial markets – remains at the centre of policy debates” BCBS Newsletter 10-2018.

Economic policy uncertainty affects negatively the economic output through several channels. During periods of high policy uncertainty, firms decrease or postpone corporate investments (Bernanke, 1983; Gulen and Ion, 2016; Julio and Yook, 2012; Julio and Yook, 2016), and the banks have reduced ability to supply liquidity to the economy (Lee, Lee, Zeng, and Hsu, 2017; Berger, Guedhami, Kim, and Li, 2017).

The last Global Financial Crisis (GFC) highlighted the importance of a strong liquidity base not only for the survival of the individual financial institutions but also for the stability of the financial system as a whole. As a result, of the multiple bank failures and the collapse of interbank market during the GFC, the regulatory authorities proposed a series of changes on the reporting of capital adequacy, liquidity and leverage of the financial institutions. In the aftermath of the GFC, the aim of the supervisory authorities of the financial institutions, as expressed from the Basel Committee on Banking Supervision (2013a), is to invigorate the financial stability in terms of liquidity and promote a more resilient banking sector. For these reasons, the Basel Committee on Banking Supervision (2013a) suggested that banks report the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR, Basel Committee on Banking Supervision, 2014) in order to monitor their short and long-term ability to fund the households, the corporate firms and their obligations. Therefore, any diversion from the threshold of the two measures may affect significantly the liquidity ability of BHCs.

One of the new proposed ratios, the LCR, takes into account the market liquid assets that banks hold. However, holding of market liquid assets does not come without a cost for the economy as a whole. The more liquid assets banks hold, the more the negative effects for the economy. Because of the countercyclicality of bank liquidity, banks hold low liquid assets in economic booms and vice versa in recessions (Acharaya, Gale and Yorulmazer, 2011; Du, 2017) and as a result, the lending volume that financial institutions provide to the real economy decreases in crucial times (recessions – Bonner, Van Lelyveld and Zymek, 2015). As a result, studies show that it affects negatively the credit cycle, real GDP growth and policy interest rates that shows a negative effect to the monetary policy (Delechat, Henao, Muthoora and Vtyurina, 2012).

Our study contributes to the literature by providing evidence on the relation between economic policy uncertainty and banks' ability to meet the short and long-term liquidity requirements.

In this chapter, we investigate whether economic policy uncertainty (EPU), by using the measures of policy uncertainty of Baker, Bloom and Davis (2016), affects the two new proposed measures. Given that banks are not obligated to report the LCR and the NSFR yet, the results of this chapter are important since we will know in advance if the dispute among policymakers about which changes are the most effective affect the banks' ability to inject liquidity in the markets. Unexpectedly, we find that an increase of economic policy uncertainty leads to an increase of the short and long-term liquidity ability of Bank Holdings Companies (BHCs). However, the increase is due to the negative relation between EPU and the denominators of the ratios. In the short-term there is a negative relation between EPU and the net cash outflows, whereas in the long run, between EPU and the required amount of stable funding. Therefore, EPU decreases deposits and other borrowed funds in the next 30-day period but in the long run, EPU affects negatively the profitability of BHCs.

We show that a one-standard deviation increase of EPU leads to a 8.60% future increase of LCR relative to its average value, while the corresponding increase of NSFR equals to 2.55%. In order to investigate the counterintuitive relation, we decompose the two liquidity measures to two components. The decomposition explains the positive relation. An increase of policy uncertainty leads to a decrease of the denominators of the ratios, which increases the ratios. An one-standard-deviation increase of EPU is related to 11.18% (1.95%) decrease of total net cash outflows (required amount of stable funding).

We also examine in which case the least and most liquid BHCs are affected. We demonstrate that economic policy uncertainty leads positively the short-term liquidity of the least liquid BHCs, while it affects the long-term liquidity for the most and the least liquid BHCs. An one-standard deviation increase of EPU is related to a 4.36% future increase of LCR relative to its average value of the least liquid BHCs, while the increase of EPU is related to a 1.00% (1.58%) increase of NSFR for the least (most) liquid banks. For both measures, the increase is mainly due to the decrease of the denominators of the ratios.

Furthermore, our results do not depend on the size of BHCs since we uncover the same positive relation for small and large BHCs, and the positive relation is driven mainly by the decrease of the denominators of the ratios during period of heighten economic policy uncertainty.

Finally, we show that the news and the government spending component of the index drives our results, since are positively related to the future levels of LCR and NSFR.

To address any endogeneity issue, we follow the work of Bonaime, Gulen and Ion's (2018) and use the Partisan Conflict Index by Azzimonti (2018) as an instrumental variable. Furthermore, following the work of Berger, Guedhami, Kim and Xinming (2017) we conduct placebo tests to eliminate the probability that our results are due to spurious correlation. Both the instrumental variable analysis and the placebo tests support our main results of a statistically significant positive relation between policy uncertainty and liquidity ability of BHCs, and that the source of the positive relation is the decrease of total net cash outflows and the required amount of stable funding during periods of heighten economic policy.

This chapter is structured as follows. Section 3.2 reviews the literature; Section 3.3 describes the dataset and outlines the methodology we use to investigate the relationship between policy uncertainty and liquidity needs; Section 3.4 provides empirical evidence in favor of the view that policy uncertainty matters, and Section 3.5 presents the instrumental variable analysis and the placebo tests. Finally, Section 3.6 concludes the chapter.

3.2 Literature Review

The last Global Financial Crisis began with an increase in funding uncertainty. Interbank rates were volatile and remained in high levels for a long period (Taylor and Williams, 2009) and interbank lending decreased in volume and was more volatile (Afonso, Kovner, and Schoar, 2011; Kuo, Skeie, Vickery, and Youle, 2013).

3.2.1 Liquidity Coverage Ratio and Net Stable Funding Ratio

Basel III (BCBS, 2009, 2010a, 2010b, 2014) introduced new regulatory requirements and standards for liquidity, leverage and capital adequacy. These measures are micro-prudential and discussion continues about whether a macro-prudential framework should be applied (Hanson, Kashyap and Stein, 2011).

The new banking regulatory framework focuses on coping with both the short-term and the long-term liquidity risk of banks. One of the reforms is the introduction of the Liquidity Coverage Ratio (LCR) that aims to enhance banks' ability to absorb short-term shocks and therefore, to prevent potential spill overs to the whole financial sector and the real economy. The LCR is designed to measure short-term liquidity for the next 30-day period and is accompanied with a set of monitoring tools, in order to help the assessment of the liquidity risk of financial institutions. The microprudential objective of the LCR is to help banks get round a 30-day stress period in terms of liquidity and thus aid regulators and managers to make the appropriate corrective actions for the crisis to be resolved.

At the individual level, the LCR protects creditor's confidence in a financial institution and leads to deleveraging (Kowalik, 2013). As a macroprudential instrument, the LCR can mitigate the systemic liquidity risk but concerns have been raised regarding the incentives it provides for banks' self-insurance (Hardy and Hochreiter, 2014; Shin, 2011). The effects of LCR to the monetary policy has attracted the interest of academics and policymakers (Bech and Keister, 2017; Bonner and Eijffinger, 2015; Schmitz, 2013), especially since central banks are the supplier of the most liquid asset for use in LCR.

LCR is also found to be related with the probability of failure of financial institutions. Hong, Huang and Wu (2014) calculate the LCR and NSFR for US commercial banks. They find that the probability of failure of a financial institution is positively correlated with NSFR and negatively with the LCR highlighting the differences in the two types of liquidity and their effect on the stability of the financial system. LCR is used as a measure for covering immediate needs whereas the Net Stable Funding Ratio of funding stability. Vazquez and Federico (2015) analyze banks' funding structure and how it affects their probability of failure for 11,000 financial institutions in the U.S. and Europe for the period from 2001 to 2009. They find that weaker structural liquidity and higher leverage are related to bank failures and that bank size is negatively related to liquidity risk and positively related to solvency risk (excessive leverage). Even though their results support the new Basel III liquidity requirements, they suggest that greater emphasis should be placed on leverage. Their findings also emphasize the importance of macro-prudential approach to banking regulation as the probability of banks' failure is related to the macroeconomic and monetary conditions.

3.2.2 Economic Policy Uncertainty

The influential paper of Baker, Bloom and Davis (2016) recast the interest of the economic policy uncertainty effect on the economy.[31] Gulen and Ion (2016) study for the period from 1987 to 2013 the relation between policy uncertainty and US firm-level investments and show that there is a negative relationship between them. Evidence also demonstrates that policy uncertainty affects the mergers and acquisitions of US firms as it is negatively related to firm acquisitiveness and increases the required time to complete them (Nguyen and Phan, 2017).

Berger, Guedhami, Kim and Li (2017) investigate the effect of EPU to bank liquidity creation, by using quarterly observations during the period 1985:Q2 to 2016:Q4 in U.S.

[31] Earlier researches use as a proxy of economic policy uncertainty the election periods (Julio and Yook, 2012), changes in the government (Aisen and Veiga, 2006) and political ideologies (Eichler and Sobański, 2016).

commercial banks. By employing the EPU Index by Baker, Bloom and Davis (2016) and its variations (news, government, consumer price, tax) as a measure of economic policy uncertainty and bank liquidity creation measures by Berger and Bouwman (2009), they find that, in total, EPU adversely affects liquidity creation and as a result, the availability of banking funds for productive purposes decreases. Even though their results are similar for all bank size classes, the effect seems to be weaker during financial crises, since during these periods special treatment from governments and regulators takes place leading to reduced policy uncertainty. The authors examine the effect of EPU on total bank liquidity creation as well as on all its components, asset-side (different types of loans, cash, securities holdings), liability-side and off-balance sheet-side. They find that EPU reduces the asset-side and the off-balance sheet-side liquidity creation, whereas it increases the liability-side liquidity creation. The negative effects on the asset- and off-balance sheet-side liquidity creation overall offset the positive effects on the liability-side. Their findings hold for banks with high and low equity capital ratios, pre- and post-Basel III liquidity requirements and for markets with favourable and not economic conditions. Their findings have potential policy implications mostly focused on the potential policies that regulators should consider in order to ensure that liquidity can be created unobtrusively during policy-related uncertain times.

According to Pastor and Veronesi (2012), economic policy uncertainty has two components: political uncertainty that arises because firms and households do not know if a government will continue to implement current policies in the future (e.g. tax policy). The second one is called impact uncertainty and is related to the impact the new policies will have on the economy. These two components affect also the stability of the banking system.

The high levels of policy uncertainty contribute to the slow recovery of the US economy (Bordo, Duca, and Koch, 2016) and to the increase in the loan price during the period from 1990 to 2010 (Francis, Hasan, and Zhu, 2014). There is a negative relation between short-term economic policy uncertainty and leverage decisions since financial institutions reduce their lending activity (Lee, Lee, Zeng, and Hsu, 2017). Furthermore, the electoral cycles, the power and the ideology of government affect the stability of the banking sector (Eichler and Sobański, 2016) and a rise in bank failures is related with the political component of economic policy uncertainty (Liu, and Ngo, 2014; Dam, and Koetter, 2012).

3.3 Dataset and Methodology

In this section, we discuss the construction of the two main variables of interest: the Liquidity Coverage Ratio and the Net Stable Funding Ratio. We also present (1) the main policy and political variables we use in order to examine if policy instability is related to the levels of short and long-term liquidity of BHCs, and (2) the baseline equation that we use. In the following subsections, we provide a detailed description of the datasets employed.

3.3.1 The Construction of the Liquidity Coverage Ratio and Net Stable Funding Ratio

The Basel Committee on Banking Supervision (BCBS) introduce new regulatory requirements and standards for short and long-term liquidity needs for banks in order to cope with the funding risk and to improve the banking sector's ability to absorb shocks during periods of financial instability.[32] Our quarterly sample period is from 2002Q1 to 2016Q4 and we obtain the

[32] A detailed description of the short- and long-term liquidity measures is given in BCBS (2009, 2010a, 2010b, and 2013, 2014).

data from the Consolidated Financial Statements for BHCs in the FR Y-9C reports.[33] We did not include BHCs with negative or missing values of asset.

The short-term measure is the Liquidity Coverage Ratio (LCR) and is defined as:

$$LCR = \frac{Stock\ of\ High\ Quality\ Liquid\ Assets}{Total\ Net\ Cash\ Outflows} \tag{3.1}$$

where high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress. Total net cash outflows (TNCO) are total expected cash outflows minus total expected cash inflows during the 30-day stress period. A LCR greater than 1 aims to ensure that a bank can meet its liquidity needs for a 30-day liquidity stress period, giving the appropriate time for the management, supervisors and central banks to respond appropriately.

Due to the availability of data and the fact that BHCs did not report it prior 2017, we follow the work of Du (2017) who provide a detailed procedure to calculate the LCR by following the rules of BCBS (2013a). Table 3.1 presents the definitions of the BHCs data items in the FR Y-9C that are used for the calculation of the Liquidity Coverage Ratio.

Panel A of Figure 3.1 presents the average LCR per quarter of all BHCs. The figure of the average LCR per quarter reveals three distinct periods. During the first one (from 2002 to 2007), the LCR decreases continuously and reaches the lowest value close to 0.40. Until the end of 2012, we observe a steady increase, which implies that the BHCs improve their ability to cope with short-term liquidity crises. However, during the last period LCR decreases below the threshold of 100%. The same pattern follows the LCR of the BHCs with below and above median assets. An

[33] Following the work of Du (2017), the start of our dataset is set to the first quarter of 2002 since BHCs begin reporting their report positions in 2002.

interesting difference is that during the latest period the LCR of the BHCs with below (above) median assets is above (below) 100%.

The long-term measure is the Net Stable Funding Ratio (NSFR) and is defined as:

$$NSFR = \frac{Available\ Amount\ of\ Stable\ Funding}{Required\ Amount\ of\ Stable\ Funding} \quad (3.2)$$

where $Available\ Amount\ of\ Stable\ Funding$ (AFS) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RFS) is the sum of the off-balance sheet exposures plus the sum of the weighted amounts of the categories of the bank's assets.[34]

Since BHCs are obligated to report the NSFR from 2018, it is not possible to calculate it exactly as defined by BCBS (2014). Therefore, we follow the work of DeYoung and Jang (2016) who calculate the NSFR for U.S. commercial banks. Table 3.2 presents the definitions of the BHCs data items in the FR Y-9C that are used for the calculation of the Net Stable Funding Ratio. Panel A of Table 3.2 presents the items from the Y-9C items used for the computation of the AFS numerator and their ASF factors. The categorization of capital and liabilities is based on their relative stability, which depends on the contractual maturities and the different inclination of the various funding providers to withdraw their funding, inter alia. Panel B of Table 3.2 demonstrates the items from the Y-9C that are used for the computation of the RFS denominator and their RSF factors. The categorization of the bank's assets is based on their residual maturity or liquidity

[34] As expressed by the BCBS (2014) "The NSFR assigns an RSF factor to various OBS activities in order to ensure that institutions hold stable funding for the portion of OBS exposures that may be expected to require funding within a one-year horizon. Consistent with the LCR, the NSFR identifies OBS exposure categories based broadly on whether the commitment is a credit or liquidity facility or some other contingent-funding obligation." However, due to unavailability of the relevant data, we do not include an approximation of the OBS exposure in our analysis.

value. In general, the RSF factors intend to approach the value of an asset in case it would have to be funded either because it will be rolled over or because it could not monetize through sale or used as collateral in a secured borrowing transaction over the course of one year without significant expense.

Panel A of Figure 3.2 plots the average NSFR per quarter of all BHCs. During the first four quarters, the NSFR increased over 1 and then decreased until 2010 to a lower level. After the end of the last financial crisis, it increases continuously and reaches the highest value close to 1.07, which implies that the BHCs improve their ability to cope with long-term liquidity crises. Afterwards, and similar to the pattern of LCR it decreased but remained above the threshold of 1. The same pattern follows the NSFR of the BHCs with below and above median assets.

The comparison of the average evolution of the two liquidity measures reveals an alarm for regulators: both measures increase and decrease during almost the same periods! Therefore, during periods of crises, BHCs face short and long-term liquidity needs as both measures are below 1.

3.3.2 Economic Policy Uncertainty

We use the U.S. EPU indices (Composite and Categorical) of Baker, Bloom and Davis, (2016) to capture uncertainty that arises not only from policymakers but also from the political environment.[35] These indices are based on textual analytics methods of newspaper articles that count the frequency of articles that contain terms from three basic categories – Economy, Policy,

[35] We obtain the Economic Policy Uncertainty Indices (Overall, News, Government Spending, Inflation, Tax) from Baker, Bloom and Davis's website (http://www.policyuncertainty.com/).

Uncertainty – and also terms from a specific policy-related category – Government spending, Inflation, Taxes.[36]

Panel A of Figure 3.3 plots the quarterly average of the composite US EPU index, while Panels B, C, D, and E depict the four components. The composite index ranges from 63 (2006Q4) to 215 (2011Q3) and shows spikes not only during political elections but also during periods that are most likely related to specific policy-changing events. The news (Panel B) and the government indices (panel C) show a similar pattern with the composite. However, the government index steady decreases during the last six years, while the news based one increases from 2014Q3. The last two indices, inflation (Panel D) and tax (Panel E) depict a different picture. For example, the tax EPU index increased from 284 (2008Q4) to 1597 (2012Q4) and then decreased to 81 (2016Q4). Therefore, since the components of composite EPU index display different patterns, we will also investigate in the empirical part which component affect the two liquidity measures of BHCs.

3.3.3 Methodology

Our baseline panel model to test the effect of policy uncertainty on the short and long-term liquidity measures of BHCs is similar to the specification used by Gulen and Ion (2016) and Berger, Guedhami, Kim, and Li (2017). Specifically, we estimate the following equations:

[36] The EPU (News) index computes the relative frequency of article that contain terms from the three basic categories on ten major U.S. newspapers (USA Today, Miami Herald, Chicago Tribune, Washington Post, Los Angeles Times, Boston Globe, San Francisco Chronicle, Dallas Morning News, Houston Chronicle, and Wall Street Journal). The EPU (Government spending) index measures the policy uncertainty related to federal and state/local government spending and the EPU (Inflation) index refers to the inflation risk compiled by the Federal Reserve Bank of Philadelphia. The EPU (Taxes) index calculates policy uncertainty regarding the temporary federal tax code provisions and is a weighted sum of the total dollar amount of future federal tax code provisions with higher weights assigned to expiring tax codes in the near future. The EPU (Composite) index is the weighted sum of the other indices with a weight of 1/2 for EPU (News), and weights of 1/6 for each of the other measures, EPU(Government spending), EPU(Inflation), and EPU(Tax).

$$LCR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \tag{3.3a}$$

$$NSFR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \tag{3.3b}$$

where $LCR_{i,t}(NSFR_{i,t})$ is the Liquidity Coverage Ratio (Net Stable Funding Ratio) of bank i at quarter t, EPU_{t-1} is the natural logarithm of the average EPU during quarter $t-1$. $ELECTION_t$ is a set of election variables, VIX_{t-1} is the arithmetic average of the CBOE Volatility Index (VIX) during quarter $t-1$, fundamental Bank specific variables $\left(BANK_{i,t-1}^{Specific}\right)$, and Q_t is a set of calendar quarterly dummy variables to control for possible seasonality in liquidity measures. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. Specifically, we use four sets of control variables[37]:

1. Election: $ELECTION_t^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION_t^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. We hypothesize that election periods may affect the financial stability since there is a relation between election periods and bank failures (Brown and Dinc, 2005; Dam and Koetter, 2012; Liu and Ngo, 2014; Eichler and Sobański, 2016). In their study, Eichler and Sobański (2016) find that national politics significantly affect bank defaults in Eurozone especially around elections or if the government is weak or is left-oriented. Moreover, Brown and Dinc (2005) and Liu and

[37] Table 3.3 presents the detailed definitions of the variables that are used in our baseline specification.

Ngo (2014) show in their independent studies that bank bailouts are less likely in the year leading up to an election.

2. Bank Specific: $Ln\_Asset_{i,t-1}$ is the natural logarithm of assets of BHC i at the end of quarter $t-1$, $A2E_{i,t-1}$ is the asset to equity ratio of BHC i at the end of quarter $t-1$, $ROA_{i,t-1}$ is the return to asset ratio of BHC i at the end of quarter $t-1$, $NPL_{i,t-1}$is the non-performing loan ratio of BHC i at the end of quarter $t-1$, $N2I_{i,t-1}$ is the non-interest income to total interest income ratio of BHC i at the end of quarter $t-1$, and $RW2T_{i,t-1}$ is the risk-weighted assets to Tier 1 capital ratio of BHC i at the end of quarter $t-1$. We use the bank specific variables in order to examine if economic policy uncertainty contains incremental information over them, or the management of a bank responds according to changes of policy uncertainty.[38]
3. Risk: We use the VIX_{t-1} index as an uncertainty proxy. The implied volatility index is positively related to the EPU index (Baker, Bloom, and Davis, 2016) and is negatively related to the quarterly growth rate of the real US GDP (Gulen and Ion, 2016), and hence the EPU index may not contain further information over the VIX index.
4. Macroeconomic: ADS_{t-1} US business index of Aruoba, Diebold and Scotti (2009) which measures the economic conditions in real time as it combines weekly, monthly, and quarterly data to estimate the current state of the economy. We calculate the quartely index as the average of the daily index. The average value of the index is equal to 0 and positive (negative) values indicate an improvement (deteroration) of the economic conditions. $RGDP_{t-1}^{Growth}$ is the real Gross Domestic Product Growth. $Spread_{t-1}$is the corporate

[38] Similar bank specific control variables Berger, Guedhami, Kim, and Li (2017) use in order to investigate whether economic policy uncertainty affects bank liquidity creation.

spread and is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER_t$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises_t$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise.[39]

Panel A of Table 3.4 presents summary statistics for the LCR and NSFR for the period from 2002Q1 to 2016Q4. The mean of LCR (NSFR) is equal to 0.98 (1.13) slightly below (above) the threshold of 1. It ranges from 0.06 (0.57) to 8.20 (2.22) and there are many BHCs during the examined period which fail to meet the liquidity requirements of Basel III accord. Panel B of Table 3.4 presents summary statistics of the natural logarithm of the average Economic Policy Uncertainty indices during a quarter. The average value of the composite index (EPU^{Comp}) equals to 4.68 with a standard deviation of 0.30. The most volatile index is the EPU^{Tax} since the minimum (maximum) equals to 2.94 (7.38). Panel C of Table 3.4 presents the summary statistics of the other control variables. The average value of natural logarithm of the assets (Ln_Asset) is 14.65, while the mean of asset to equity ($A2E$), return on asset (ROA), non-performing loan of total loans (NPL), the non-interest income to total interest income ($N2I$), risk-weighted assets to Tier 1 capital ratio ($RW2T$) equals to 11.29, 0.00%, 2%, 30%, and 8.54, respectively.

The last columns of Table 3.4 presents the correlation coefficient between each variable and either the LCR or the NSFR. The correlation between the two measures is equal to 0.29, and hence there are indications that periods of high short-term liquidity coincide with periods of high long-term liquidity, a finding that is in line with the average pattern of the measures in Figures 3.1 and

[39] Specifically, the crisis period includes: (1) the pre Lehman Brothers period (from June 2007 to September 2008) which was characterized by the interventions of the central banks, (2) the global crisis period (October 2008 to December 2008), and (3) the aftermath of the global crisis (January 2009 to June 2009) during which the recovery started. For more information of the crisis definition, the reader is referred to the work of Psalida, Elsenburg, Jobst, Masaki, and Nowak, S. (2009).

3.2. The positive correlation between the composite EPU and the two liquidity measures implies that BHCs improve the quality of the asset-liability mixture during periods of policy uncertainty. Furthermore, there are indications that during periods of economic growth (i.e high (low) values of ADS (Spread)) both liquidity measures are high.[40]

3.4 The Effect of Policy Uncertainty on Liquidity Requirements of BHCs

In this section we empirically investigate whether economic policy uncertainty affects either the LCR or the NSFR or both and if it has incremental information over the bank specific or/and the economic variables.

3.4.1 The Effect of Economic Policy Uncertainty on Liquidity Coverage Ratio

The results of our baseline model for the LCR over the period from 2002Q1 to 2016Q4 are presented in Table 3.5.[41] We consider equation 3.3a to examine whether policy uncertainty contains incremental information over the four set of control variables that we described in section 3.3. Overall, the estimation results of the regressions show that policy uncertainty is positively and statistically significantly related to future levels of LCR. Given that we use the natural logarithm of EPU and its standard deviation is equal to 0.30, a one-standard-deviation increase of EPU is related to a 14.39% $(= 0.470 \times 0.30/0.98\ )$ future increase of LCR relative to its average value.

The significance of the coefficient of policy uncertainty remains intact when we include the election variables (columns 2 and 3) or the VIX (columns 4 and 5). All bank specific variables

[40] The results of the unconditional correlation analysis present preliminary evidence of the relation between economic policy uncertainty, bank specific characteristics, economic conditions and short or long-term liquidity measures. In the next section, we investigate formally the effect of each variable on LCR and NSFR by presenting the estimation results of equations 3.3a and 3.3b.

[41] In the baseline equation, we use the natural logarithm of the quarterly average of EPU as the main explanatory variable. In order to examine whether the most recent values of EPU affects more or less the LCR, in Table 3.18 we use the last value of EPU during quarter t. The results are similar with the evidence presented in Table 3.5.

are significant (column 6) and do not affect the significance of EPU. However, the coefficient lowers from 0.470 to 0.199 (column 7). The same picture emerges when we include the macroeconomic variables, since the positive effect of economic policy uncertainty remains significant.

Column 10 presents the results of our baseline model by including all the control variables.[42] The coefficients on all bank specific variables are of the same sign and similar magnitude as in columns 6 and 7. The coefficients of $RGDP^{Growth}$, ADS, and $Spread$ do not differ from zero significantly. Both the $NBER$ and the $Crises$ dummies are negatively related to LCR, and therefore during periods of recessions or the last Global Financial Crisis the LCR decrease. The coefficient of policy uncertainty is positive and statistically significant and is equal to 0.281. A one-standard-deviation increase of EPU is related to a 8.60% $(= 0.281 \times 0.30/0.98)$ future increase of LCR relative to its average value. Overall, the effect of policy uncertainty remains intact after the inclusion of all the control variables and statistically and economically significant. Our results show that during periods of high economic policy uncertainty, BHCs increase in the next quarter their ability to meet the liquidity requirements. But why there is a positive relation which may be counterintuitive?

To answer this crucial question, we focus on the components of LCR. Specifically, we estimate the following two equations:

$$Ln\_HQLA_{i,t} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \quad (3.4a)$$

[42] Table 3.19 presents the individual estimations of all control variables.

$$Ln\_TNCO_{i,t} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \quad (3.4b)$$

where $Ln\_HQLA_{i,t}$ is the natural logarithm of HQLA of bank i in quarter t, and $Ln\_TNCO_{i,t}$ is the natural logarithm of TNCO of bank i in quarter t.

Column 1 (2) of Table 3.6 presents the estimation results of Equation 3.4a (3.4b). EPU^{Comp} is not related to future level of $HQLA$ since the coefficient does not differ from zero statistically. Therefore, BHCs do not adjust their levels of high quality liquid assets during periods of high policy uncertainty. However, they adjust their total net cash outflows. Specifically, an increase of economic policy uncertainty leads to a decrease of their total net cash outflows as the coefficient of EPU^{Comp} is negative $(= -0.367)$ and is statistically significant. Therefore, since EPU^{Comp} has no effect on $HQLA$ and decreases the $TNCO$, the denominator of LCR, the total effect on the liquidity ratio is positive, confirming the relation in Table 3.5. Furthermore, given that the mean value of Ln_TNCO is 12.60 (Panel D of Table 3.4), a one-standard-deviation increase of EPU is related to 11.18% $\left(= -0.367 \times \frac{35.056}{115.117}\right)$ decrease of total net cash outflows.[43]

The decomposition of LCR reveals some other interesting relations. BHCs with large assets have more $HQLA$ and $TNCO$ since for both equations the coefficients of Ln_Asset is positive and statistically significant. However, the effect of the size is more pronounced for the $TNCO$ since the coefficient is larger (0.984 vs 0.701). Therefore, an increase of assets decreases the LCR, a finding that is in line with the evidence in Table 3.5 (the coefficient of Ln_Asset equals to 0.199). Furthermore, in Table 3.5 we show that the relation between NPL and LRC is positive. This is due

[43] The quarter average (standard deviation) of EPU (not the logarithm) for the period from 2002Q1 to 2016Q4 equals to 115.117 (35.056).

to the positive relation with ($coef = 2.543$), and the negative with the denominator ($coef = -5.049$). These relations magnify the total relation between NPL and LRC and generates a positive and statistically significant relation ($coef = 6.005$). Finally, the negative relation between $NBER$, $Crises$ and LCR is attributable mainly to the negative relation with $HQLA$, and hence BHCs lower their assets during economic downturns.

The presented evidence shares a common story: An increase of economic policy uncertainty increases the LCR, and this increase is due to the negative relation with the TNCO. Is this relation robust across the most and least liquid and small and large BHCs?

Table 3.7 provides the answer for the first question. Panel A presents the estimation results of Equations 3.3a (column 1), 3.4a (column 2), and 3.4b (column 3) for BHCs with $LCR < 1$. The coefficient of EPU^{Comp} equals to 0.064 and is statistically significant. Given that the mean of LCR for BHCs with $LCR < 1$ equals to 0.44, a one-standard deviation increase of EPU is related to a 4.36% ($= 0.064 \times 0.30/0.44$) future increase of LCR relative to its average value. Similar to the evidence in Table 3.6 there is a negative and significant relation between EPU and $HQLA$ ($coef\!: -0.187$) and $TNCO$ ($coef\!: -0.333$), which explains the positive overall relation.

On the other hand, economic policy uncertainty does not affect the liquidity ability of BHCs with $LCR \geq 1$, as the coefficient equals to 0.187 and does not differ from zero statistically. However, the examination of the regressions with the components reveals a different picture. An increase of EPU leads to a decrease of both $HQLA$, and $TNCO$. The effect of EPU is more pronounced for the total net cash outflow regression, since a one-standard-deviation increase of EPU is related to 6.82% $\left(= -0.224 \times \frac{35.056}{115.117}\right)$ decrease of total net cash outflows, while the corresponding decrease for high quality liquid assets is 2.71% $\left(= -0.089 \times \frac{35.056}{115.117}\right)$. The detailed results are presented in Panel B of Table 3.7.

Panel A (B) of Table 3.8 presents the estimation results for the small and large, based on the logarithm median of the assets, BHCs. For both categories, an increase of EPU leads to an increase of LCR. A one-standard-deviation increase of EPU is related to an 8.35% $(= 0.323 \times 0.30/1.16)$ for the small size BHCs and 8.10% $(= 0.216 \times 0.30/0.80)$ for the large.[44] Therefore, the effect of EPU is similar for both categories. Furthermore, similar to the presented evidence, an increase of EPU reduces the total net cash outflows and does not affect the high quality liquid assets.

Finally, we examine which component of EPU^{Comp} affects the LCR, estimate Equation 3.3a by using the $EPU^{News}, EPU^{Gover}, EPU^{Infl}, EPU^{Tax}$ and present the estimation results in Table 3.9. The coefficients of EPU^{News} and EPU^{Gover} are positive and statistically significant in line with the positive coefficient (0.281) of EPU^{Comp}. These two uncertainty indicators are negatively related to the total net cash outflows, and their coefficients are equal to -0.343 and -0.277. [45] The relation between EPU^{Infl} and LCR is negative and statistically significant, and hence an increase of uncertainty about future level of prices, decreases the level of LCR. The decrease stems from the following channels: through a decrease in the high quality liquid assets and an increase of total net cash outflows. The uncertainty that arises from federal tax code provisions does not seem to affect the level of LCR. In the last column of Table 3.9 we include the four components of EPU. The coefficients have the same signs and their significance remains intact.

Overall, we demonstrate that there is a positive relation between economic policy uncertainty and the future levels of short term liquidity measure of BHCs. The positive relation is due to the

[44] The average value of LCR for small (large) assets BHCs is equal to 1.16 (0.80).
[45] Table 3.20 presents the estimations results of the components of LCR (Equations 3.4a and 3.4b).

negative relation between EPU and total net cash outflows (the denominator of the ratio), and hence BHCs reduce liability side after an increase of uncertainty. The results hold for the least and most liquid and small and large BHCS. In the next section, we examine whether economic policy uncertainty affects the long-term liquidity measure (Net Stable Funding Ratio) of BHCs.

3.4.2 The Effect of Economic Policy Uncertainty on the Net Stable Funding Ratio

The results of our baseline model for the NSFR over the period from 2002Q1 to 2016Q4 are presented in Table 3.10.[46] We estimate equation 3.3b to examine whether policy uncertainty contains incremental information over the four set of control variables that we described in section 3.3. Overall, the estimation results of the regressions show that policy uncertainty is positively and statistically significantly related to future levels of NSFR. Given that we use the natural logarithm of EPU and its standard deviation is equal to 0.30, a one-standard-deviation increase of EPU is related to a 1.83% $(= 0.069 \times 0.30/1.13)$ future increase of NSFR relative to its average value. The effect is smaller than the effect of EPU on LCR because the NSFR measures the long-term liquidity ability of BHCs, and hence is more difficult for the banks to change their asset/liability mixture of their balance sheet in the short-term.

The significance of the coefficient of economic policy uncertainty remains intact when we include the election variables (columns 2 and 3) or the VIX (columns 4 and 5). All bank specific variables, with the exception of ROA, are significant (column 6) and do not affect the significance of EPU. The same picture emerges when we include the macroeconomic variables, since the positive effect of economic policy uncertainty remains significant.

[46] Similar to LCR case, we consider whether the most recent values of EPU affects more or less the NSFR. Table 3.21 presents the estimation results, which are similar with the evidence presented in Table 3.10.

Column 10 presents the results of our baseline model by including all the control variables.[47] The coefficients on all bank specific variables are of the same sign and similar magnitude as in columns 6 and 7. The coefficients of $RGDP^{Growth}$, ADS, and $Spread$ do not differ from zero significantly. Both the $NBER$ and the $Crises$ dummies are negatively related to NSFR, and therefore during periods of recessions or the last Global Financial Crisis the NSFR decrease. The coefficient of economic policy uncertainty is positive and statistically significant and is equal to 0.096. A one-standard-deviation increase of EPU is related to a 2.55% ($= 0.096 \times 0.30/1.13$) future increase of NSFR relative to its average value. Overall, the effect of policy uncertainty remains intact after the inclusion of all the control variables and is statistically and economically significant. Our results for the NSFR show that during periods of high economic policy uncertainty, BHCs increase in the next quarter their long-term liquidity requirements. However, the effect of EPU is significant smaller than that for the LCR given the nature of the components of NSFR.

Again, the positive relation between economic policy uncertainty and the long-term liquidity ability of BHCs is counterintuitive. Which component of NSFR creates the positive relation? To answer this crucial question, we focus on the components of NSFR. Specifically, we estimate the following two equations:

$$Ln\_ASF_{i,t} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \quad (3.5a)$$

[47] Table 3.22 presents the individual estimations of all control variables.

$$Ln\_RSF_{i,t} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \quad (3.5b)$$

where $Ln\_ASF_{i,t}$ is the natural logarithm of ASF of bank i in quarter t, and $Ln\_RSF_{i,t}$ is the natural logarithm of RSF of bank i in quarter t.

Column 1 (2) of Table 3.11 presents the estimation results of Equation 3.5a (3.5b). EPU^{Comp} is not related to future level of ASF since the coefficient does not differ from zero statistically. Therefore, economic policy uncertainty does not affect the liability side of the ratio in the long run. However, they decrease their asset-related components of the NSFR, and hence BHCs adjust the levels of the long-term assets during periods of high policy uncertainty. Specifically, an increase of economic policy uncertainty leads to a decrease of their required amount stable funding as the coefficient of EPU^{Comp} is negative $(= -0.0.064)$ and is statistically significant. Therefore, since EPU^{Comp} has no effect on ASF and decreases the RSF, the dominator of NSFR, the total effect on the liquidity ratio is positive, confirming the relation in Table 3.10. Furthermore, given that the mean value of Ln_RFS is 14.16 (Panel D of Table 3.4), a one-standard-deviation increase of EPU is related to 1.95% $\left(= -0.064 \times \frac{35.056}{115.117}\right)$ decrease of required amount of stable funding.

The decomposition of NSFR reveals some other interesting relations. BHCs with large assets have more ASF and RSF since for both equations the coefficients of Ln_Asset is positive and statistically significant. However, the effect of the size is more pronounced for the ASF since the coefficient is larger (0.989 vs 0.950). Therefore, an increase of assets increases the NSFR, a finding that is in line with the evidence in Table 3.10 (the coefficient of Ln_Asset equals to 0.037). The negative relation between $NBER$, $Crises$ and NSFR in Table 3.10 is attributable mainly to the positive relation with RSF.

Is this relation robust across the most and least liquid and small and large BHCs? Table 3.12 provides the answer. Panel A presents the estimation results of Equations 3.3b (column 1), 3.5a (column 2), and 3.5b (column 3) for BHCs with $NSFR < 1$. The coefficient of EPU^{Comp} equals to 0.030 and is statistically significant, while the coefficient of EPU^{Comp} for the BHCs with $LCR < 1$ is statistically insignificant. Therefore, economic policy uncertainty for the least liquid BHCs affects only their long-term liquidity ability. Given that the mean of NSFR for BHCs with $NSFR < 1$ equals to 0.90, a one-standard deviation increase of EPU is related to a 1.00% $(= 0.030 \times 0.30/0.90)$ future increase of NSFR relative to its average value. However, it does not affect the two components of the ratio.

Economic policy uncertainty affects positively the liquidity ability of BHCs with $NSFR \geq 1$, as the coefficient equals to 0.076. An increase of EPU leads to a decrease of RFS and does not affect the ASF. A one-standard-deviation increase of EPU is related to 1.58% $\left(= -0.052 \times \frac{35.056}{115.117}\right)$ decrease of RSF. The detailed results are presented in Panel B of Table 3.12.

Panel A (B) of Table 3.13 presents the estimation results for the small and large, based on the logarithm median of the assets, BHCs. For both categories, an increase of EPU leads to an increase of NSFR. A one-standard-deviation increase of EPU is related to a 2.01% $(= 0.077 \times 0.30/1.12)$ for the small size BHCs and 3.12% $(= 0.127 \times 0.30/1.22)$ for the large.[48] Therefore, the effect of EPU is larger for the large based assets BHCs. Furthermore, an increase of EPU decrease the RSF for both categories, which explains the overall increase of the ratio.

[48] The average value of NSFR for small (large) assets BHCs is equal to 1.12 (1.22).

Finally, we examine which component of EPU^{Comp} affects the NSFR and estimate Equation 3.3b by using the $EPU^{News}, EPU^{Gover}, EPU^{Infl}, EPU^{Tax}$ and present the estimation results in Table 3.14. The coefficients of EPU^{News} and EPU^{Gover} are positive and statistically significant in line with the positive coefficient (0.096) of EPU^{Comp}. These two uncertainty indicators are positively (negatively) related to AFS (RSF), and hence the total effect on NSFR is positive due to an increase (decrease) of the numerator (denominator) of the ratio.[49] Uncertainty about future levels of inflation or tax policies does not affect the levels of NSFR. The inclusion of the four components of EPU does not alter significantly are main conclusions (column 5 in Table 3.14).

In summary, we show that there is a positive relation between economic policy uncertainty and NSFR, and LCR, irrespectively of the size and how liquid are the BHCs. Furthermore, the positive relation is due to the decrease of denominator for both liquidity measures during periods of high uncertainty. Economic policy uncertainty affects more the short-term (long-term) liquidity of BHCs since a one-standard-standard deviation increase of EPU leads to an 8.60% (2.55%) increase of future levels of LCR (NSFR).

3.5 Placebo Tests and Instrumental Variable Analysis

The analysis we presented provides evidence in favor of the view that uncertainty deriving from political and other policy-related events increases the short and long-term liquidity ratios of BHCs through the decrease of either the total net cash outflows or the required amount of stable funding. However, one could argue that the relation is generated through the other direction: The banking sector and the economy facing a large negative shock, which causes an increase of policy

[49] Table 3.23 presents the estimations results of the components of NSFR (Equations 3.5a and 3.5b).

uncertainty. Therefore, in order to alleviate endogeneity and potential spurious correlations concerns, we follow two approaches: instrumental variable analysis and a series of placebo tests.

3.5.1 Instrumental Variable Analysis

We follow the work of Bonaime, Gulen and Ion (2018) who use the Partisan Conflict Index by Azzimonti (2018) as an instrumental variable in order to alleviate any endogeneity concerns about the relation between economic policy uncertainty and liquidity ratios.[50] Specifically, we implement a two-stage instrumental variable approach with a time series regression in the first stage and a panel regression in the second. This approach addresses the overstated correlation between the endogenous variable and its instrument, since these two variables do not vary cross-sectionally. The first-stage regression is

$$EPU_t = \alpha + \beta_1 PCONFLICT_t + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_t^{Specific} + \beta_5 MACRO_t + \beta_6 Q_t + \varepsilon_{i,t}, \quad (3.6)$$

where $PCONFLICT_t$ is the Partisan Conflict Index and the other variables are defined in Section 2.2 and calculated as the monthly averages of all firms. The standard errors of the first stage regression are adjusted following the Newey and West (1987) approach with 12 lags. The β_1 coefficient is 0.21 and the F-statistic of the regression equals to 17.33.

[50] Partisan Conflict Index (Azzimonti, 2016) measures political disagreement among U.S. politicians at the federal level. The index is computed by using the frequency of newspaper articles that refer to political disagreement and is constructed through keyword searches in major U.S. newspapers and tracks lawmakers' disagreements about policy both within and between political parties.

To capture the exogenous variation in policy uncertainty, we re-estimate the average effect of the economic policy uncertainty on liquidity ratios and their components by using the natural logarithm of the fitted values ($\widehat{EPU}$) from Equation (3.6)[51]:

$$LCR_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \tag{3.7a}$$

$$NSFR_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \tag{3.7b}$$

$$Ln\_HQLA_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \tag{3.7c}$$

$$Ln\_TNCO_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \tag{3.7d}$$

$$Ln\_ASF_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \tag{3.7e}$$

$$Ln\_RSF_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}, \tag{3.7f}$$

[51] The standard errors are bootstrapped (500 replications) since we use estimated repressors.

Table 3.15 presents the estimation results for the LCR. Overall, the coefficients have the same sign and similar magnitude as in our main Tables. The second stage regression shows that the coefficient of $\widehat{EPU}$ equals to 0.325, is statistically significant, and close to the coefficient of the main model (0.281, Table 3.5). Our results are robust across subcategories $(LCR < (\geq)1, Ln_{Asset} < (\geq)Median)$. For example, the coefficient of $\widehat{EPU}$ for the least liquid BHCs equals to 0.091, while in our main analysis we report a coefficient of 0.064. Again, the $TNCO$ drives the documented positive relation, as in all cases the corresponding coefficient is negative and statistically significant.

Table 3.16 presents the estimation results for the NSFR. In most of the cases, the coefficients have the same sign and similar magnitude as in our main Tables. The second stage regression shows that the coefficient of $\widehat{EPU}$ equals to 0.119, is statistically significant, and close to the coefficient of the main model (0.096, Table 3.10). Our results are robust across subcategories $(NSFR < (\geq)1, Ln_{Asset} < (\geq)Median)$. For example, the coefficient of $\widehat{EPU}$ for the most liquid BHCs equals to 0.086, while in our main analysis we report a coefficient of 0.076. Again, the RSF drives the documented positive relation, as in all cases the corresponding coefficient is negative and statistically significant. Therefore, the analysis demonstrates that the relation between economic policy uncertainty and long-term liquidity ability remains significant and positive as our main results, even under this alternative instrumental variable specification.

To address possible concerns about the significance of our results, we follow the work of Berger, Guedhami, Kim, and Li (2017) and conduct a series of placebo tests. Specifically, we generate 100 random samples with replacement from the original series of EPU to construct our new series $(\widetilde{EPU})$ and estimate the equations 3.3a and 3.3b. Table 3.17 presents the detailed results. For the LCR, the average coefficient (t-statistic) of $\widetilde{EPU}$ equals to 0.005 (0.104) and only in 3 cases the coefficient was positive and statistically significant (at 5% confidence level). The placebo test reveals similar results for the NSFR. The average coefficient (t-statistic) of $\widetilde{EPU}$ equals to 0.004 (0.138) and only in 5 cases the coefficient was positive and statistically significant (at 1% confidence level). In general, the results support our intuition that economic policy uncertainty leads the level of LCR and NSFR, and the relation is not random.

3.6 Conclusions

The recent academic evidence shows that the increase of economic policy uncertainty deteriorates the economic output through the decrease of corporate investments and the reduced liquidity that banks supply to the economy. In our study, we investigate the effect of policy uncertainty on the liquidity ratios of banks by using the EPU index of Davis (2016) to measure the overall economic policy uncertainty and the LCR and NSFR that have been proposed by the Basel Committee on Banking Supervision (2013a) to promote a more resilient banking sector.

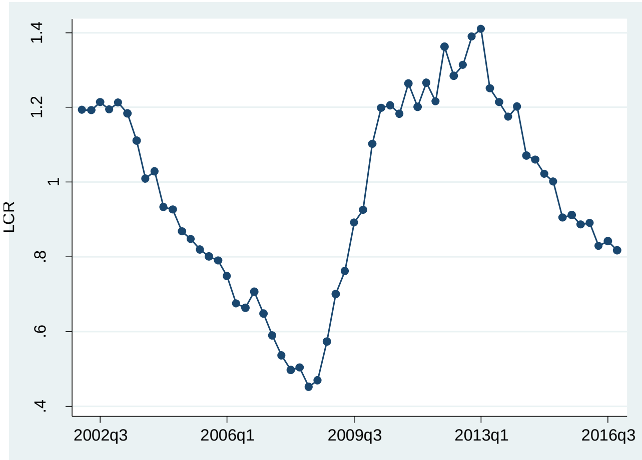
We show that a one-standard deviation increase of EPU leads to a 8.60% future increase of LCR relative to its average value, while the corresponding increase of NSFR equals to 2.55%. The increase is due to the negative relation between EPU and the denominators of the ratios. In the short-term (LCR), it is negatively related with the liability part and hence decreases the ability of BHCs to borrow. In the long-term (NSFR), BHCs decrease their asset-related components of the NSFR, and hence BHCs adjust the levels of the long-term assets during periods of high policy uncertainty. An one-standard-deviation increase of EPU is related to 11.18% (1.95%) decrease of total net cash outflows (required amount of stable funding). The instrumental variable analysis and the placebo tests support the positive relation between policy uncertainty and liquidity ratios of BHCs, and that the source of the positive relation is the decrease of total net cash outflows and the required amount of stable funding during periods of heightened economic policy uncertainty.

3.7 Figures

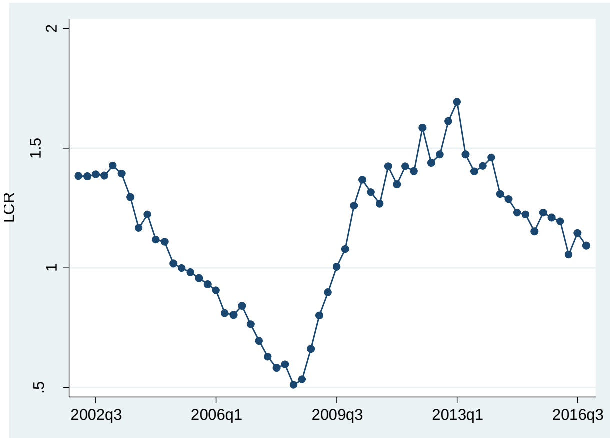
Figure 3.1. Mean Liquidity Coverage Ratio

This figure plots the average Liquidity Coverage Ratio (LCR). The definition of Liquidity Coverage Ratio is provided in Table 3.1. Panel A plots the LCR for all Bank Holding Companies (BHCs), whereas panel B (C) plots the LCR for BHCs with below (C) median assets. The sample period is from 2002Q1 to 2016Q4.

Panel A. Overall



Panel B. Below Median Assets



Panel C. Above Median Assets

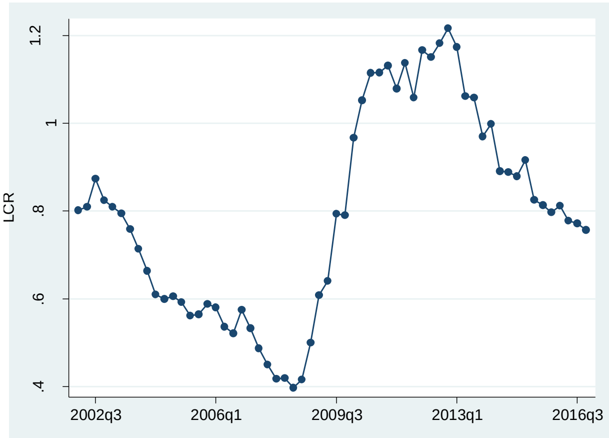
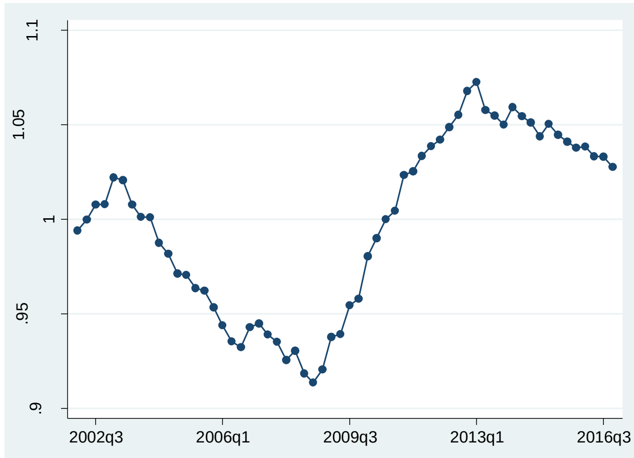


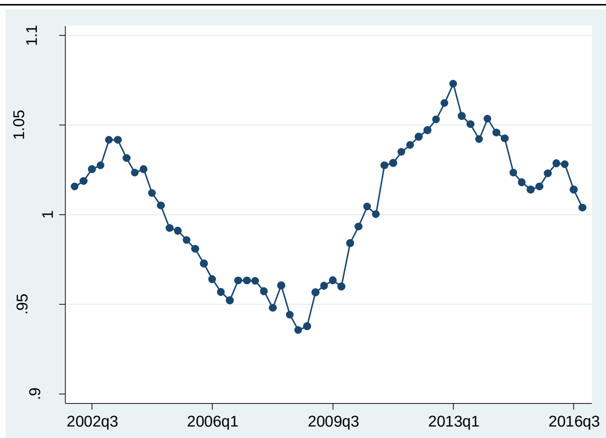
Figure 3.2. Mean Net Stable Funding Ratio

This figure plots the average Net Stable Funding Ratio (NSFR). The definition of Liquidity Coverage Ratio (LCR) is provided in Table 3.1. Panel A plots the LCR for all Bank Holding Companies (BHCs), whereas panel B (C) plots the LCR for BHCs with below (C) median assets. The sample period is from 2002Q1 to 2016Q4.

Panel A. Overall



Panel B. Below Median Assets



Panel C. Median Average Assets

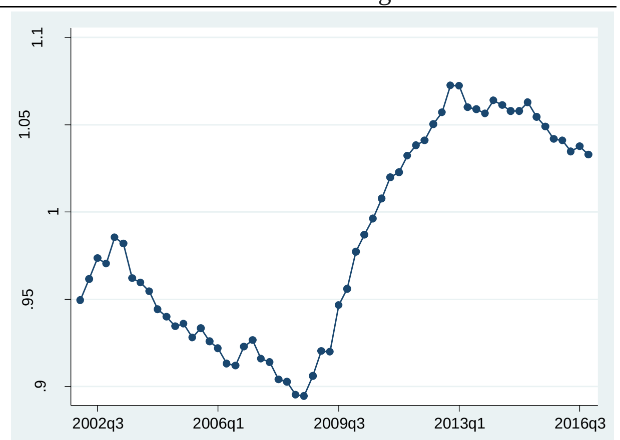
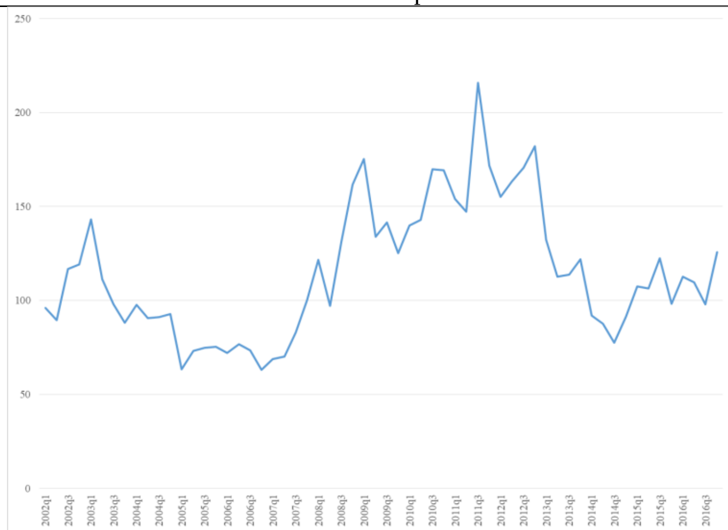


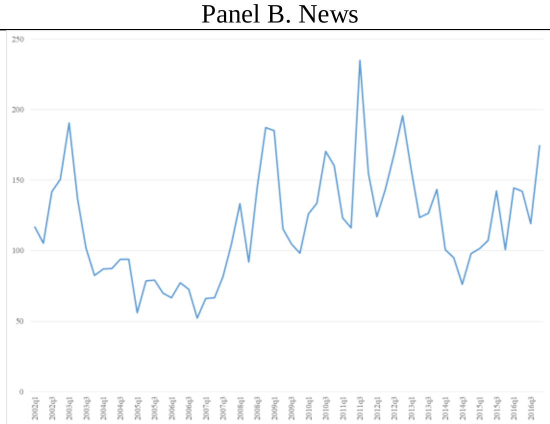
Figure 3.3. US Economic Policy Uncertainty Indices

Panel A plots the quarterly average of the composite US EPU index, while Panels B, C, D, and E plots the news, Government spending, Inflation, and Tax Economic Policy Uncertainty indices of Baker, Bloom and Davis, (2016). The sample period if from 2002Q1 to 2016Q4.

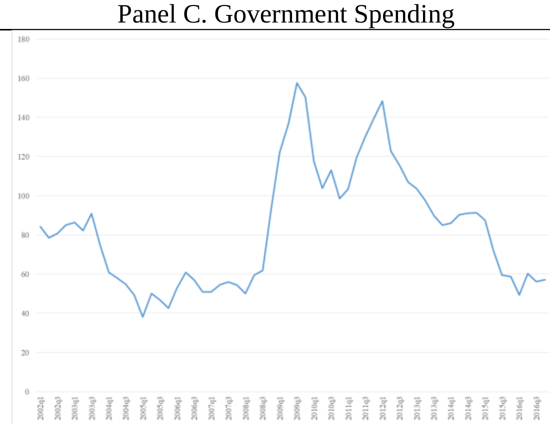
Panel A. Composite



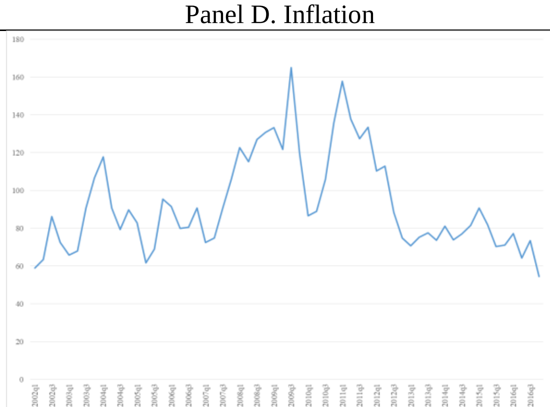
Panel B. News



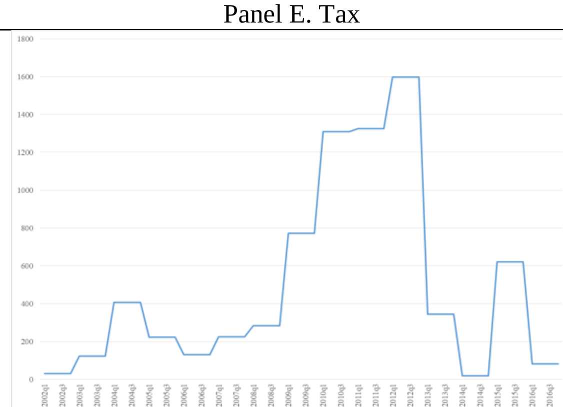
Panel C. Government Spending



Panel D. Inflation



Panel E. Tax



3.8 Tables

Table 3.1. Description Of The Items Used To Construct the Liquidity Coverage Ratio.

The table presents the definitions of the BHCs data items that are used for the calculation of the Liquidity Coverage Ratio, which is defined as: $LCR = \frac{Stock\ of\ High\ Quality\ Liquid\ Assets}{Total\ Net\ Cash\ Outflows}$, where high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress. Total net cash outflows (TNCO) are total expected cash outflows (TCO) minus total expected cash inflows (Inflows) during the 30-day stress period. Panel A presents the HQLA BHCs data items, while Panel B (C) presents the cash outflow (inflow) BHCs data items. $HQLA = \text{Bhck0081} + \text{Bhck0395} + \text{Bhck0397} + \text{Bhck0211} + \text{Bhck1287} + \text{Bhdmb987} + \text{Bhck1289} + \text{Bhck1293} + \text{Bhc1298} + \text{Bhckb989}$. $TCO = 0.03 \times (Bhck1293 + Bhck1298 - Bhdma243 - Bhdma242) + 0.10 \times (Bhfn6631 + Bhfn6636 + Bhdma243 + Bhdma242) + Bhdmb993 + Bhck995 + Bhck2309 + Bhck2332 + Bhck3814 + Bhck3816 + Bhck3817 + Bhck6550 + Bhck6566 + Bhck3820 + Bhck6570 + Bhck3822 + Bhck3411 + Bhckb557$. $Inflows = Bhckb989$. $TNCO = max\{(TCO - Inflows), (0.25 \times TCO)\}$. Data are obtained from the Consolidated Financial Statements for BHCs in the FR Y-9C reports.

Item	Description
	Panel A. High Quality Liquid Assets (HQLA)
Bhck0081	Noninterest-bearing balances and currency and coin.
Bhck0395	Interest-bearing balances in U.S. offices.
Bhck0397	Interest-bearing balances in foreign offices, edge and agreement subsidiaries and ibfs.
Bhck0211	Amortized cost of held-to-maturity U.S. treasury securities.
Bhck1287	Fair value of available-for-sale U.S. treasury securities.
Bhdmb987	Federal funds sold.
Bhck1289	Amortized cost of held-to-maturity U.S. government agency and corporation obligations issued by U.S. government agencies (excluding mortgage-backed securities).
Bhck1293	Fair value of available-for-sale U.S. government agency and corporation obligations issued by U.S. government agencies (excluding mortgage-backed securities).
Bhck1298	Fair value of available-for-sale U.S. government agency and corporation obligations issued by U.S. government- sponsored agencies (excluding mortgage-backed securities).
Bhckb989	Securities purchased under agreements to resell.

Table 3.1. (Cont.)

Panel B. Total Cash Outflows (TCO)	
Bhck1293	Fair value of available-for-sale U.S. government agency and corporation obligations issued by U.S. government agencies (excluding mortgage-backed securities).
Bhck1298	Fair value of available-for-sale U.S. government agency and corporation obligations issued by U.S. government- sponsored agencies (excluding mortgage-backed securities).
Bhdma243	Brokered deposits issued in denominations of less than $100.
Bhdma242	Fixed rate and floating rate time deposits of $100.
Bhfn6631	Noninterest-bearing deposits.
Bhfn6636	Total interest-bearing deposits in foreign and domestic offices.
Bhdmb993	Federal funds purchased in domestic offices.
Bhckb995	Securities sold under agreements to repurchase.
Bhck2309	Commercial paper.
Bhck2332	Other borrowed money with a remaining maturity of one year or less.
Bhck3814	Unused commitments - revolving, open-end lines secured by 1-4 family residential properties.
Bhck3816	Commercial real estate, construction, and land development: commitments to fund loans secured by real estate.
Bhck3817	Unused commitments - securities underwriting.
Bhck6550	Commercial real estate, construction, and land development: commitments to fund loans not secured by real estate.
Bhck6566	Financial standby letters of credit.
Bhck3820	Amount of financial standby letters of credit conveyed to others.
Bhck6570	Performance standby letters of credit - amounts converted at 50%.
Bhck3822	Amount of performance standby letters of credit conveyed to others.
Bhck3411	Commercial and similar letters of credit.
Bhckb557	Allowance for credit losses on off-balance sheet credit exposures.
Panel C. Total Cash Inflows (Inflows)	
Bhckb989	Securities purchased under agreements to resell.

Table 3.2. Description of the Items used to Construct the Net Stable Funding Ratio

This table presents the definitions of the BHCs data items that are used for the calculation of the Net Stable Funding Ratio (NSFR), which is defined as: $NSFR = Available\ Amount\ of\ Stable\ Funding / Required\ Amount\ of\ Stable\ Funding$, where $Available\ Amount\ of\ Stable\ Funding$ (AFS) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RFS) is the sum of the weighted amounts of the categories of the bank's assets. . Data are obtained from the Consolidated Financial Statements for BHCs in the FR Y-9C reports.

Panel A. Available Stable Funding (AFS)

ASF weight (%)	Components	Y-9C report items
100	Total equity capital	BHCK3210
	Subordinated notes and debentures	BHCK4062
95	Total transaction deposits	BHCB2210
90	Non-transaction savings deposits	BHCB2389
	Time deposits of less than $100,000	BHCB6648
50	Time deposits of more than or equal to $100,000	BHCB2604
	Other borrowed money	BHCK3190

Panel B. Required Stable Funding (RFS)

RSF weight (%)	Components	Y-9C report items
100%	Trading assets	BHCK3545
	Premises and fixed assets	BHCK2145
	Other real estate owned	BHCK2150
	Investments and unconsolidated subsidiaries and associated companies	BHCK2130+BHCK2155
	Customers' liability to the bank on acceptances outstanding	BHCK3164 + BHCK5506 + BHCK5507 + BHCK3163
	Intangible assets	BHCK5377 + BHCK5378 + BHCK5379 + BHCK5380 + BHCK5381 + BHCK5382
	Nonperforming loans	BHCK5525 + BHCK5526
	Other assets	BHCK2160
85	Loans secured by real estate excluding 1–4 family mortgages	BHCK1410
	Agricultural loans	BHCK1590
	Commercial and industrial loans	BHCK1766
	Loans to individuals	BHCK1975
	Lease financing receivables	BHCK2165
65	Loans to foreign governments and official institutions	BHCK2081
50	Fed funds sold and securities purchased under agreements to resell	BHCK3365
15	All securities excluding pledged securities	BHCK1754+BHCK1773-BHCK0416
	Securities issued by states and political subdivisions in the U.S.	BHCK1289+BHCK1293+BHCK1294+BHCK1298+ BHCK8496 + BHCK8499
5	U.S. Treasury securities	BHCK0211 + BHCK1287
	Unused loan commitments	BHCK3814 + BHCK3815 + BHCK3816 + BHCK6550 + BHCK3817 + BHCK3818
	Financial standby letters of credit	BHCK6566
	Performance standby letters of credit	BHCK3822
	Commercial and similar letters of credit	BHCK3411

Table 3.3. Variable Description.

This table presents the definitions of the variables that are used in our baseline specification. Panel A of the table presents the definitions of the key independent variables that we use in our baseline specification. The EPU indices are obtained from the Baker, Bloom and Davis's (2016) website (http://www.policyuncertainty.com/). Panel B presents the definitions of the control variables that we use in our analysis. Quarterly balance sheet and income statement data are obtained from the Consolidated Financial Statements for BHCs in the FR Y-9C reports.

Variable	Description
	Panel A. Key Independent Variables
EPU (News)	The index counts the articles that contain terms from three basic categories – economy, policy, uncertainty – in ten major U.S. newspapers.
EPU (Government Spending)	The index reflects the federal/state/local purchases disagreement.
EPU (Inflation)	The index reflects the disagreement among economic forecasters about consumer price index.
EPU (Tax)	The index reflects the number of federal tax code provisions set to expire in future years
EPU (Composite)	The index is constructed as a weighted sum of the previous indices with a ½ for EPU (News) and a 1/6 for EPU (Government Spending), EPU (Inflation) and EPU (Tax) respectively.
	Panel B. Control Variables
ROA	Return On Assets computed as Bhck4340 / bhck2170 where Bhck4340: net income (loss) and bhck2170: total assets.
A2E	Assets to Equity computed as Bhck2170 / bhck3210 where Bhck2170: total assets and bhck3210: total equity capital.
NPL	Non Performing Loans computed as (Bhck5525 + bhck5526) / (bhck5369 + bhckb529) where Bhck5525: total loans, leasing financing receivables and debt securities and other assets - past due 90 days or more and still accruing, Bhck5526: total loans, leasing financing receivables and debt securities and other assets – nonaccrual, Bhck5369: loans and leases held for sale and Bhckb529: loans and leases, net of unearned income and allowance.
N2I	Noninterest Income to Total Interest Income computed as Bhck4079 / bhck4107 where Bhck4079: total noninterest income and Bhck4107: total interest income.
RW2T	Risk-weighted assets to Tier 1 Capital computed as Bhcka223 / bhck8274 where Bhcka223: risk-weighted assets and Bhck8274: tier 1 capital allowable under the risk-based capital guidelines.
LNASSET	Natural logarithm of bhck2170. Bhck2170: total assets.
ADS	US business index of Aruoba, Diebold and Scotti (2009)
GDP_GROWTH	First difference of the natural logarithm of U.S. real gross domestic product. Source: Federal Reserve Bank of St. Louis (https://fred.stlouisfed.org/).
VIX	The arithmetic average of the CBOE Volatility Index (VIX) during a quarter. Source: Federal Reserve Bank Of St. Louis (https://fred.stlouisfed.org/).
NBER	A recession binary variable that takes the value of 1 during US recessions and 0 otherwise. Source: National Bureau of Economic Research (NBER).
Crises	A binary variable that takes the value of 1 for the period from second quarter of 2007 to second quarter 2009 and 0 otherwise. The crisis period includes: (1) the pre Lehman period (from June 2007 to September 2008) which was characterized by the interventions of the central banks, (2) the global crisis period (October 2008 to December 2008), and (3) the aftermath of the global crisis (January 2009 to June 2009) during which the recovery started. For more information of the crisis definition, the reader is referred to the work of Psalida, Elsenburg, Jobst, Masaki, and Nowak (2009).
Election Year	A binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise.
Election Quarter	A binary variable that takes the value of 1 during quarters (2004-11, 2008-11, 2012-11, and 2016-11) of presidential elections, and 0 otherwise.
Partisan Conflict Index	Partisan Conflict Index of Azzimonti (2018) which tracks the degree of political disagreement among U.S. politicians at the federal level. Source: Federal Reserve Bank Of Philadelphia (https://www.philadelphiafed.org/research-and-data/real-time-center/partisan-conflict-index)

Table 3.4. Descriptive Statistics and Correlation Analysis

Panel A of the table presents summary for the LCR, and NSFR:. $LCR = \frac{Stock\ of\ High\ Quality\ Liquid\ Assets}{Total\ Net\ Cash\ Outflows}$, where high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress. Total net cash outflows (TNCO) are total expected cash outflows (TCO) minus total expected cash inflows (Inflows) during the 30-day stress period. $NSFR = \frac{Available\ Amount\ of\ Stable\ Funding}{Required\ Amount\ of\ Stable\ Funding}$, where $Available\ Amount\ of\ Stable\ Funding$ (ASF) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RFS) is the sum of the weighted amounts of the categories of the bank's assets. Panel B presents summary statistics for the five US Economic Policy Uncertainty indices (Composite, News, Government Spending, Inflation and Tax) of Baker, Bloom and Davis, (2016). The indices are calculated as the natural logarithm of the average during a quarter. Panel C presents summary statistics for the other control variables. $ELECTION^{Year}$is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, $NPL_i$is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. The last columns of the table presents the panel correlation coefficient of each variable with either the LCR or the NSFR liquidity measure. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Variables	mean	sd	min	max	p1	p25	p50	p75	p99	N	Correl. with LCR	Correl. with NSFR
Panel A. Liquidity Coverage Ratio and Net Stable Funding Ratio												
LCR	0.98	1.23	0.06	8.20	0.06	0.29	0.58	1.16	8.20	26946	1.00	
$NSFR$	1.13	0.25	0.57	2.22	0.57	0.98	1.09	1.23	2.22	26946	0.29***	1.00
Panel B. Economic Policy Uncertainty												
EPU^{Comp}	4.68	0.30	4.15	5.37	4.15	4.49	4.68	4.94	5.37	26946	0.10***	0.07***
EPU^{News}	4.71	0.33	3.95	5.46	3.95	4.47	4.68	4.97	5.46	26946	0.10***	0.08***
EPU^{Cover}	4.35	0.36	3.64	5.06	3.64	4.03	4.41	4.59	5.06	26946	0.13***	0.08***
EPU^{Infl}	4.49	0.25	4.00	5.11	4.00	4.30	4.46	4.67	5.11	26946	-0.03***	-0.06***
EPU^{Tax}	5.51	1.28	2.94	7.38	2.94	4.81	5.65	6.43	7.38	26946	0.02***	-0.01

Table 3.4 (Cont.)

Panel C. Other Control Variables												
Variables	mean	sd	min	max	p1	p25	p50	p75	p99	N	Correl. with LCR	Correl. with NSFR
Ln_Asset	14.65	1.62	12.21	20.48	12.21	13.53	14.22	15.39	20.48	26946	-0.13***	0.02***
$A2E$	11.29	3.81	4.36	31.43	4.36	8.97	10.74	12.74	31.43	26946	-0.05***	-0.11***
ROA	0.00	0.01	-0.03	0.02	-0.03	0.00	0.00	0.01	0.02	26946	-0.01	0.11***
NPL	0.02	0.02	0.00	0.13	0.00	0.00	0.01	0.02	0.13	26935	0.09***	-0.14***
$N2I$	0.30	0.43	0.00	3.20	0.00	0.12	0.19	0.31	3.20	26946	0.28***	0.07***
$RW2T$	8.54	2.61	2.99	22.97	2.99	7.06	8.36	9.67	22.97	26005	-0.21***	-0.32***
VIX	19.78	8.24	11.03	58.60	11.03	13.74	17.03	21.64	58.60	26946	-0.01	-0.05***
$RGDP^{Growth}$	0.00	0.01	-0.02	0.02	-0.02	0.00	0.01	0.01	0.02	26946	0.06***	0.07***
$NBER$	0.11	0.31	0.00	1.00	0.00	0.00	0.00	0.00	1.00	26946	-0.12***	-0.12***
$ELECT^{Year}$	0.26	0.44	0.00	1.00	0.00	0.00	0.00	1.00	1.00	26946	-0.03***	0.00
$ELECT^{Quarter}$	0.06	0.24	0.00	1.00	0.00	0.00	0.00	0.00	1.00	26946	-0.01*	0.00
$Crises$	0.14	0.34	0.00	1.00	0.00	0.00	0.00	0.00	1.00	26946	-0.13	-0.14
ADS	-0.30	0.69	-3.35	0.47	-3.35	-0.40	-0.16	0.01	0.47	26946	0.08	0.09
$Spread$	1.10	0.44	0.60	3.02	0.60	0.87	0.97	1.29	3.02	26946	-0.03	-0.07
Panel D. The Components of LCR and NSFR												
Ln_HQLA	12.06	1.62	9.26	17.54	9.26	11.00	11.74	12.77	17.54	26946		
Ln_TNCO	12.60	1.81	9.27	18.13	9.27	11.36	12.22	13.50	18.13	26946		
Ln_ASF	14.29	1.56	11.84	19.30	11.84	13.21	13.90	15.04	19.30	26946		
Ln_RSF	14.19	1.57	11.76	19.29	11.76	13.10	13.80	14.94	19.29	26946		

Table 3.5. Economic Policy Uncertainty and Liquidity Coverage Ratio

The table reports the results of our baseline Equation: $LCR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $LCR = \frac{Stock\ of\ High\ Quality\ Liquid\ Assets}{Total\ Net\ Cash\ Outflows}$, high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress. Total net cash outflows (TNCO) are total expected cash outflows (TCO) minus total expected cash inflows (Inflows) during the 30-day stress period. EPU is the US Economic Policy Uncertainty composite index of Baker, Bloom and Davis, (2016). The index is calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
EPU^{Comp}	0.470***		0.488***		0.651***		0.199***		0.535***	0.281***
$ELECT^{Year}$		-0.095	-0.120*							-0.039
$ELECT^{Quarter}$		0.028	0.012							0.028
VIX				0.003	-0.011***					0.000
Ln_Asset						-0.204***	-0.212***			-0.199**
$A2E$						0.044***	0.045***			0.037***
ROA						-6.359*	-5.305			-6.895**
NPL						8.375***	6.847***			6.005***
$N2I$						0.586***	0.564***			0.492**
$RW2T$						-0.084***	-0.079***			-0.061***
$RGDP^{Growth}$								-3.976	3.263	-0.114
ADS								0.133*	0.033	0.032
$Spread$								0.256***	0.015	-0.024
$NBER$								-0.037	-0.217***	-0.147**
$Crises$								-0.366***	-0.152***	-0.123***
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Q. Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of obs	26076	26945	26076	26076	26076	25161	25161	26076	26076	25161
Adj. R-square	3.27%	0.34%	3.74%	0.16%	4.11%	9.50%	9.91%	3.96%	6.64%	11.83%

Table 3.6. Economic Policy Uncertainty and the Components of Liquidity Coverage Ratio

The table reports the results of two regressions: (1) $HQLA_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, and (2) $TNCO_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress. Total net cash outflows (TNCO) are total expected cash outflows (TCO) minus total expected cash inflows (Inflows) during the 30-day stress period. In the regressions we use the natural logarithm of these two components of Liquidity Coverage Ratio. EPU is the US Economic Policy Uncertainty composite index of Baker, Bloom and Davis, (2016). The index is calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)
EPU^{Comp}	-0.071	-0.367***
$ELECT^{Year}$	-0.046***	0.023
$ELECT^{Quarter}$	0.057	0.011
VIX	0.005***	0.003
Ln_Asset	0.701***	0.984***
$A2E$	0.028***	-0.004
ROA	-3.314**	4.446***
NPL	2.543***	-5.049***
$N2I$	0.093	-0.167**
$RW2T$	-0.037***	0.025***
$RGDP^{Growth}$	0.349	-0.391
ADS	0.04	0.002
$Spread$	-0.016	-0.003
$NBER$	-0.148***	0.093
$Crises$	-0.093***	0.085**
Bank FE	yes	yes
Quarter Dummies	yes	yes
Number of obs.	25161	25161
Adj. R-square	29.95%	56.51%

Table 3.7. Economic Policy Uncertainty and the Least and the Most Short-term Liquid BHCs

The table reports the results of three regressions: (1) $LCR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, (2) $HQLA_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, and (3) $TNCO_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where LCR $= \frac{Stock\ of\ High\ Quality\ Liquid\ Assets}{Total\ Net\ Cash\ Outflows}$, high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress and total net cash outflows (TNCO) are total expected cash outflows (TCO) minus total expected cash inflows (Inflows) during the 30-day stress period. Panel A (B) presents the estimation results for BHCs with $LCR < (\geq)$ 1. On the regressions 2 and 3 we use the natural logarithm of these two components of Liquidity Coverage Ratio. EPU is the US Economic Policy Uncertainty composite index of Baker, Bloom and Davis, (2016). The index is calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Panel A. BHCs with $LCR < 1$			Panel B. BHCs with $LCR \geq 1$		
	(1)	(2)	(3)	(1)	(2)	(3)
EPU^{Comp}	0.064***	-0.187***	-0.333***	0.187	-0.089**	-0.224***
$ELECT^{Year}$	-0.018**	-0.03	0.019	-0.003	-0.016	-0.008
$ELECT^{Quarter}$	0.006	0.034	0.019	0.049	0.049**	0.016
VIX	0.001	0.007***	0.003	0.003	0.002	0.001
Ln_Asset	-0.075***	0.735***	0.939***	-0.15	0.837***	0.900***
$A2E$	0.004	0.011**	0.006	0.049***	0.013*	-0.008
ROA	-1.996***	-1.9	3.819**	-4.286	-0.217	1.484
NPL	2.052***	0.601	-5.225***	3.796**	-0.247	-1.640***
$N2I$	0.03	0.038	-0.03	0.702***	0.04	-0.191**
$RW2T$	-0.010**	-0.012	0.009	-0.089***	-0.016*	0.022**
$RGDP^{Growth}$	0.451	-0.073	-1.196	-0.496	1.121	0.88
ADS	0.01	0.028	0.002	-0.025	0.021	0.021
$Spread$	-0.008	-0.029	-0.01	-0.01	0.009	0.018
$NBER$	-0.067***	-0.127***	0.079*	-0.08	-0.013	0.022
$Crises$	-0.040***	-0.071***	0.048*	-0.515***	-0.06	0.144***
Bank FE	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes
Number of obs.	17834	17834	17834	7253	7253	7253
Adj. R-square	14.31%	30.00%	63.39%	5.52%	45.04%	42.14%

Table 3.8. Economic Policy Uncertainty and the LCR of the Small and Large by Assets BHCs

The table reports the results of three regressions: (1) $LCR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, (2) $HQLA_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, and (3) $TNCO_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $LCR = \frac{Stock\ of\ High\ Quality\ Liquid\ Assets}{Total\ Net\ Cash\ Outflows}$, high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress. Total net cash outflows (TNCO) are total expected cash outflows (TCO) minus total expected cash inflows (Inflows) during the 30-day stress period. Panel A (b) presents the estimation results for BHCs with $Ln\_Asset <$ $(\geq)$ $Median$. n the regressions 2 and 3 we use the natural logarithm of these two components of Liquidity Coverage Ratio. EPU is the US Economic Policy Uncertainty composite index of Baker, Bloom and Davis, (2016). The index is calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, $NPL_i$is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Panel A. BHCs with $Ln\_Asset < Median$			Panel B. BHCs with $Ln\_Asset \geq Median$		
	(1)	(2)	(3)	(1)	(2)	(3)
EPU^{Comp}	0.323***	-0.042	-0.388***	0.219**	-0.074	-0.342***
$ELECT^{Year}$	-0.039	-0.036**	0.032	-0.038	-0.056***	0.016
$ELECT^{Quarter}$	0.012	0.008	0.015	0.023	0.086	0.015
VIX	0.004	0.003	0.001	-0.004	0.006***	0.006**
Ln_Asset	-0.295***	0.671***	1.033***	-0.119	0.705***	0.906***
$A2E$	0.040***	0.034***	-0.01	0.037**	0.026***	0.001
ROA	-5.421	-2.505	3.846**	-7.001*	-3.465*	5.475**
NPL	6.658***	1.945**	-4.966***	5.908***	3.289***	-5.291***
$N2I$	-0.019	0.019	-0.012	0.681***	0.129**	-0.207**
$RW2T$	-0.061***	-0.042***	0.028**	-0.067***	-0.031***	0.028***
$RGDP^{Growth}$	2.457	-0.523	-1.887	-3.164	0.361	1.36
ADS	0.015	0.029	-0.012	0.046	0.047*	0.01
$Spread$	-0.048	0.009	-0.004	0.013	-0.035	-0.01
$NBER$	-0.254***	-0.196***	0.108*	-0.048	-0.109***	0.071
$Crises$	-0.151***	-0.092***	0.053	-0.086***	-0.087***	0.099***
Bank FE	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes
Number of obs.	12412	12412	12412	12734	12734	12734
Adj. R-square	11.74%	22.28%	49.31%	13.47%	27.44%	51.18%

Table 3.9. Economic Policy Uncertainty Indices and Liquidity Coverage Ratio

The table reports the results of our baseline Equation: $LCR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $LCR = \frac{Stock\ of\ High\ Quality\ Liquid\ Assets}{Total\ Net\ Cash\ Outflows}$, high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress. EPU is the US Economic Policy Uncertainty indices (News, Government Spending, Inflation and Tax) of Baker, Bloom and Davis, (2016). The indices are calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, $NPL_i$is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively

	(1)	(2)	(3)	(4)	(5)
EPU^{News}	0.310***				0.231***
EPU^{Cover}		0.190***			0.167***
EPU^{Infl}			-0.204**		-0.137*
EPU^{Tax}				-0.018	-0.022**
$ELECT^{Year}$	-0.031	-0.006	0.014	-0.01	0.014
$ELECT^{Quarter}$	-0.003	0.056	0.03	0.067	-0.017
VIX	-0.003	0.004	0.009***	0.007**	-0.004
Ln_Asset	-0.204***	-0.189**	-0.161**	-0.158**	-0.206***
$A2E$	0.037***	0.037***	0.037***	0.038***	0.037***
ROA	-7.704**	-6.404*	-8.017**	-7.266**	-7.808**
NPL	6.471***	6.210***	8.253***	7.859***	6.715***
$N2I$	0.478**	0.496***	0.514***	0.521***	0.466**
$RW2T$	-0.061***	-0.062***	-0.069***	-0.069***	-0.061***
$RGDP^{Growth}$	0.542	-3.681	-1.83	-1.798	-2.601
ADS	0.049	0.036	0.058	0.067	0.044
$Spread$	0.027	-0.074	-0.026	-0.008	-0.005
$NBER$	-0.148**	-0.107*	-0.088*	-0.126**	-0.100**
$Crises$	-0.100***	-0.152***	-0.195***	-0.181***	-0.095***
Bank FE	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes
Number of obs.	25161	25161	25161	25161	25161
Adj. R-square	12.18%	11.74%	11.69%	11.48%	12.53%

Table 3.10. Economic Policy Uncertainty and the Net Stable Funding Ratio

The table reports the results of our baseline Equation: $NSFR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $NSFR = \frac{Available\ Amount\ of\ Stable\ Funding}{Required\ Amount\ of\ Stable\ Funding}$, $Available\ Amount\ of\ Stable\ Funding$ (ASF) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RSF) is the sum of the off-balance sheet exposures plus the sum of the weighted amounts of the categories of the bank's assets. EPU is the US Economic Policy Uncertainty composite index of Baker, Bloom and Davis, (2016). The index is calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
EPU^{Comp}	0.069***		0.070***		0.131***		0.073***		0.099***	0.096***
$ELECT^{Year}$		0.001	-0.003							0.006
$ELECT^{Quarter}$		-0.004	-0.006							-0.004
VIX				-0.001	-0.004***					0.000
Ln_Asset						0.037**	0.034**			0.037**
$A2E$						0.017***	0.017***			0.015***
ROA						-0.071	0.317			-0.119
NPL						-0.396*	-0.960***			-1.110***
$N2I$						0.095**	0.087*			0.067
$RW2T$						-0.035***	-0.033***			-0.029***
$RGDP^{Growth}$								-1.001	0.337	0.593
ADS								0.006	-0.013	-0.005
$Spread$								0.002	-0.043**	-0.024
$NBER$								-0.009	-0.042***	-0.037***
$Crises$								-0.088***	-0.048***	-0.031***
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of obs.	26076	26945	26076	26076	26076	25161	25161	26076	26076	25161
Adj. R-square	1.98%	0.02%	2.00%	0.27%	4.73%	10.94%	12.50%	4.90%	7.43%	15.48%

Table 3.11. Economic policy Uncertainty and the Components of Net Stable Funding Ratio

The table reports the results of two regressions: (1) $ASF_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, and (2) $RSF_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $Available\ Amount\ of\ Stable\ Funding$ (ASF) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RSF) is the sum of the off-balance sheet exposures plus the sum of the weighted amounts of the categories of the bank's assets. EPU is the US Economic Policy Uncertainty composite index of Baker, Bloom and Davis, (2016). The index is calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)
EPU^{Comp}	0.019	-0.064***
$ELECT^{Year}$	0.003	-0.002
$ELECT^{Quarter}$	-0.004	0.002
VIX	-0.001*	-0.001
Ln_Asset	0.989***	0.950***
$A2E$	-0.011***	-0.022***
ROA	-0.008	-0.001
NPL	0.218	1.099***
$N2I$	0.011	-0.034
$RW2T$	0.006*	0.029***
$RGDP^{Growth}$	-0.768	-1.116**
ADS	-0.007	0.000
$Spread$	-0.006	0.014
$NBER$	-0.011	0.021**
$Crises$	-0.009*	0.020***
Bank FE	yes	yes
Quarter Dummies	yes	yes
Number of obs.	25161	25161
Adj. R-square	91.05%	92.00%

Table 3.12. Economic Policy Uncertainty and the Least and the Most Long-term Liquid BHCs

The table reports the results of three regressions: (1) $NSFR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, (2) $AFS_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, and (3) $RFS_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $NSFR = \frac{Available\ Amount\ of\ Stable\ Funding}{Required\ Amount\ of\ Stable\ Funding}$, $Available\ Amount\ of\ Stable\ Funding$ (AFS) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RFS) is the sum of the off-balance sheet exposures plus the sum of the weighted amounts of the categories of the bank's assets.. Panel A (b) presents the estimation results for BHCs with $NSFR < (\geq)\ 1$. n the regressions 2 and 3 we use the natural logarithm of these two components of Liquidity Coverage Ratio. EPU is the US Economic Policy Uncertainty composite index of Baker, Bloom and Davis, (2016). The index is calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Panel A. BHCs with $NSFR < 1$			Panel A. BHCs with $NSFR \geq 1$		
	(1)	(2)	(3)	(1)	(2)	(3)
EPU^{Comp}	0.030***	0.031	-0.025	0.076***	0.005	-0.052***
$ELECT^{Year}$	-0.006**	-0.009	0.002	0.007	0.002	-0.003
$ELECT^{Quarter}$	-0.004	-0.013	0.000	0.004	0.002	-0.002
VIX	-0.001	-0.003	0.000	0.001	0.000	-0.001**
Ln_Asset	0.003	0.969***	0.952***	0.034**	0.980***	0.948***
$A2E$	-0.001	-0.016***	-0.013***	0.018***	-0.009***	-0.023***
ROA	0.098	0.103	0.115	0.153	-0.117	-0.228
NPL	-0.213	0.597	0.828***	-1.207***	-0.045	0.893***
$N2I$	-0.013	0.000	0.014	0.111***	0.03	-0.059**
$RW2T$	-0.001	0.017***	0.015***	-0.032***	0.003*	0.029***
$RGDP^{Growth}$	0.029	-1.346	-0.799	0.928	-0.524	-1.274**
ADS	-0.003	-0.003	-0.002	-0.001	-0.003	0.000
$Spread$	-0.004	0.012	0.006	-0.024	-0.007	0.014
$NBER$	-0.008*	0.003	0.006	-0.032**	0.000	0.024**
$Crises$	-0.002	0.009	0.01	-0.038***	-0.008*	0.024***
Bank FE	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes
Number of obs.	7451	7451	7451	17649	17649	17649
Adj. R-square	3.41%	84.97%	92.83%	17.12%	94.72%	92.01%

Table 3.13. Economic Policy Uncertainty and the NSFR of the Small and Large by Assets BHCs

The table reports the results of three regressions: (1) $NSFR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, (2) $AFS_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, and (3) $RFS_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $NSFR = \frac{Available\ Amount\ of\ Stable\ Funding}{Required\ Amount\ of\ Stable\ Funding}$, $Available\ Amount\ of\ Stable\ Funding$ (AFS) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RFS) is the sum of the off-balance sheet exposures plus the sum of the weighted amounts of the categories of the bank's assets.. Panel A (b) presents the estimation results for BHCs with $Ln\_Asset < (\geq)\ Median$. In the regressions 2 and 3 we use the natural logarithm of these two components of Liquidity Coverage Ratio. EPU is the US Economic Policy Uncertainty composite index of Baker, Bloom and Davis, (2016). The index is calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Panel A. BHCs with $Ln_{Asset} < Median$			Panel A. BHCs with $Ln_{Asset} \geq Median$		
	(1)	(2)	(3)	(1)	(2)	(3)
EPU^{Comp}	0.077***	0.008	-0.063***	0.127***	0.038*	-0.070***
$ELECT^{Year}$	0.007	0.000	-0.005	0.001	0.004	0.004
$ELECT^{Quarter}$	-0.006	0.000	0.007	-0.005	-0.01	-0.002
VIX	0.001	-0.001	-0.001	-0.001	-0.002*	-0.001
Ln_Asset	0.008	0.969***	0.961***	0.082***	0.989***	0.905***
$A2E$	0.015***	-0.005***	-0.018***	0.015***	-0.017***	-0.027***
ROA	0.161	-0.131	-0.263	-0.032	0.086	-0.132
NPL	-0.680***	-0.190*	0.392**	-1.321***	0.694**	1.681***
$N2I$	0.012	0.003	-0.007	0.064	-0.004	-0.034
$RW2T$	-0.031***	0.003	0.027***	-0.025***	0.010**	0.030***
$RGDP^{Growth}$	0.768	-0.741**	-1.267*	0.169	-0.977	-0.977**
ADS	-0.005	-0.003	0.004	-0.005	-0.013*	-0.007
$Spread$	-0.026*	-0.002	0.02	-0.023	-0.013	0.005
$NBER$	-0.036***	0.000	0.032**	-0.039**	-0.020*	0.011
$Crises$	-0.024**	0.005	0.023**	-0.036***	-0.019**	0.018***
Bank FE	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes
Number of obs.	12412	12412	12412	12734	12734	12734
Adj. R-square	15.57%	90.57%	91.39%	18.55%	86.86%	87.78%

Table 3.14. Economic Policy Uncertainty Indices and the Net Stable Funding Ratio

The table reports the results of our baseline Equation: $NSFR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $NSFR = \frac{Available\ Amount\ of\ Stable\ Funding}{Required\ Amount\ of\ Stable\ Funding}$, $Available\ Amount\ of\ Stable\ Funding$ (ASF) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RSF) is the sum of the off-balance sheet exposures plus the sum of the weighted amounts of the categories of the bank's assets EPU is the US Economic Policy Uncertainty indices (News, Government Spending, Inflation and Tax) of Baker, Bloom and Davis, (2016). The indices are calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively

	(1)	(2)	(3)	(4)	(5)
EPU^{News}	0.088***				0.069***
EPU^{Cover}		0.069***			0.053***
EPU^{Infl}			-0.026		-0.012
EPU^{Tax}				-0.001	-0.005**
$ELECT^{Year}$	0.01	0.018***	0.017**	0.014*	0.018***
$ELECT^{Quarter}$	-0.011	0.005	0.004	0.009	-0.011
VIX	0.000	0.001*	0.003***	0.003***	-0.001
Ln_Asset	0.037**	0.039**	0.049***	0.049***	0.034**
$A2E$	0.015***	0.015***	0.015***	0.015***	0.015***
ROA	-0.358	0.064	-0.301	-0.193	-0.236
NPL	-0.896***	-1.069***	-0.520**	-0.599***	-1.015***
$N2I$	0.065	0.068	0.076	0.077	0.061
$RW2T$	-0.029***	-0.029***	-0.031***	-0.031***	-0.029***
$RGDP^{Growth}$	0.7	-0.672	0.09	0.117	-0.155
ADS	0.001	-0.005	0.003	0.004	-0.002
$Spread$	-0.01	-0.042**	-0.025	-0.024	-0.021
$NBER$	-0.036***	-0.023**	-0.025**	-0.030**	-0.028***
$Crises$	-0.028***	-0.040***	-0.054***	-0.052***	-0.024***
Bank FE	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes
Number of obs.	25161	25161	25161	25161	25161
Adj. R-square	15.85%	15.33%	14.26%	14.14%	16.47%

Table 3.15. Instrumental Variable Analysis for the Liquidity Coverage Ratio

The table presents the estimation results of the instrumental variable analysis for the Liquidity Coverage Ratio. We follow a two-stage regression. The first stage regression is: $EPU_t = \alpha + \beta_1 PCONFLICT_t + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_t^{Specific} + \beta_5 MACRO_t + \beta_6 Q_t + \varepsilon_{i,t}$, where where $PCONFLICT_t$ is the Partisan Conflict Index, and the other variables are defined in Section 3.2 and calculated as the monthly averages of all firms. The standard errors of the first stage regression are adjusted following the Newey and West (1987) approach with 12 lags. (1) $LCR_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, (2) $Ln\_HQLA_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, and (3) $Ln\_TNCO_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where the natural logarithm of the fitted values ($\widehat{EPU}$) from Equation (6). Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

		BHCs with $LCR < 1$			BHCs with $LCR \geq 1$			BHCs with $Ln\_Asset < Median$			BHCs with $Ln_{Asset} \geq Median$		
	(1)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Dependent	LCR	LCR	$HQLA$	$TNCO$	LCR	$HQLA$	$TNCO$	LCR	$HQLA$	$TNCO$	LCR	$HQLA$	$TNCO$
EPU^{Comp}	0.325***	0.091***	-0.259***	-0.462***	0.243	-0.138**	-0.307***	0.315**	-0.117	-0.500***	0.312***	-0.106	-0.487***
$ELECT^{Year}$	-0.040***	-0.020***	-0.026**	0.025***	-0.007	-0.013	-0.002	-0.039*	-0.030**	0.041***	-0.041**	-0.055***	0.021**
$ELECT^{Quarter}$	0.03	0.004	0.039***	0.027***	0.053	0.050***	0.013	0.024	0.014	0.013	0.015	0.089***	0.027**
VIX	0.000	0.001	0.008***	0.006***	0.002	0.003*	0.003	0.004	0.005**	0.003	-0.007*	0.007***	0.010***
Ln_Asset	-0.212***	-0.080***	0.749***	0.964***	-0.166	0.848***	0.922***	-0.303***	0.687***	1.066***	-0.139	0.712***	0.936***
$A2E$	0.037***	0.004*	0.011*	0.006	0.049***	0.013*	-0.008	0.040***	0.034***	-0.009	0.037**	0.026***	0.001
ROA	-7.013**	-1.998***	-1.894	3.830***	-4.559	-0.064	1.828	-5.861	-2.458	4.358***	-6.962*	-3.479*	5.413***
NPL	5.779***	1.897***	1.017	-4.486***	3.568*	-0.044	-1.297**	6.682***	2.297***	-4.425***	5.428***	3.457***	-4.534***
$N2I$	0.487**	0.026	0.048	-0.012	0.701**	0.042	-0.189**	-0.012	0.029	-0.003	0.672***	0.132**	-0.194**
$RW2T$	-0.060***	-0.009***	-0.014*	0.006	-0.088***	-0.017*	0.021**	-0.060***	-0.043***	0.026**	-0.065***	-0.032***	0.025***
$RGDP^{Growth}$	0.301	0.575	-0.414	-1.802***	0.087	0.651	0.038	2.823	-0.962	-2.955***	-2.698	0.198	0.625
ADS	0.029*	0.009*	0.032**	0.008	-0.034	0.028*	0.033*	0.015	0.035**	-0.002	0.040*	0.049***	0.021*
$Spread$	-0.019	-0.006	-0.035*	-0.02	-0.007	0.008	0.014	-0.047	0.008	-0.006	0.022	-0.038	-0.023
$NBER$	-0.176***	-0.075***	-0.105***	0.118***	-0.114	0.007	0.066	-0.275***	-0.184***	0.149***	-0.080**	-0.098***	0.122***
$Crises$	-0.088***	-0.027***	-0.105***	-0.012	-0.482**	-0.083	0.099*	-0.129***	-0.117***	-0.009	-0.041	-0.103***	0.028
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of obs.	25171	17866	17866	17866	7305	7305	7305	12430	12430	12430	12741	12741	12741

Table 3.16. Instrumental Variable Analysis for the Net Stable Funding Ratio

The table presents the estimation results of the instrumental variable analysis for the Liquidity Coverage Ratio. We follow a two-stage regression. The first stage regression is: $EPU_t = \alpha + \beta_1 PCONFLICT_t + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_t^{Specific} + \beta_5 MACRO_t + \beta_6 Q_t + \varepsilon_{i,t}$, where where $PCONFLICT_t$ is the Partisan Conflict Index, and the other variables are defined in Section 3.2 and calculated as the monthly averages of all firms. The standard errors of the first stage regression are adjusted following the Newey and West (1987) approach with 12 lags. (1) $NSFR_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, (2) $Ln\_\mathrm{ASF}_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, and (3) $Ln\_RSF_{i,t} = a_i + \beta_1 \widehat{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where the natural logarithm of the fitted values ($\widehat{EPU}$) from Equation (6). Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

		BHCs with $NSFR < 1$			BHCs with $NSFR \geq 1$			BHCs with $Ln\_Asset < Median$			BHCs with $Ln\_Asset \geq Median$		
	(1)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Dependent	$NSFR$	$NSFR$	ASF	RSF	$NSFR$	ASF	RSF	$NSFR$	ASF	RSF	$NSFR$	ASF	RSF
EPU^{Comp}	0.119***	0.047***	0.06	-0.024	0.086***	0.016**	-0.048***	0.087***	0.021*	-0.062***	0.172***	0.069***	-0.080***
$ELECT^{Year}$	0.005*	-0.007***	-0.011	0.002	0.007**	0.001	-0.004	0.007**	-0.001	-0.005*	-0.001	0.003	0.004
$ELECT^{Quarter}$	-0.004	-0.005	-0.015*	-0.001	0.005	0.001	-0.004	-0.005	-0.001	0.005	-0.008*	-0.013**	-0.002
VIX	0.000	-0.001**	-0.003*	0.000	0.001*	-0.001**	-0.002***	0.000	-0.001**	-0.001*	-0.002**	-0.003***	0.000
Ln_Asset	0.031**	0.000	0.965***	0.952***	0.030*	0.978***	0.949***	0.004	0.967***	0.963***	0.072***	0.983***	0.909***
$A2E$	0.015***	-0.001	-0.016***	-0.013***	0.018***	-0.009***	-0.023***	0.015***	-0.006***	-0.018***	0.015***	-0.017***	-0.027***
ROA	-0.157	0.064	0.054	0.125	0.100	-0.116	-0.186	0.057	-0.14	-0.177	-0.01	0.095	-0.141
NPL	-1.228***	-0.291**	0.465	0.826**	-1.265***	-0.109	0.869***	-0.731***	-0.248**	0.389**	-1.558***	0.529	1.735***
$N2I$	0.065	-0.014	-0.001	0.014	0.110***	0.029	-0.060*	0.012	0.001	-0.008	0.06	-0.007	-0.032
$RW2T$	-0.028***	-0.001	0.017***	0.015***	-0.032***	0.003*	0.029***	-0.030***	0.003	0.027***	-0.024***	0.011**	0.030***
$RGDP^{Growth}$	0.777***	0.082	-1.263*	-0.808**	1.032***	-0.454***	-1.279***	0.918***	-0.667***	-1.341***	0.399	-0.816**	-1.030***
ADS	-0.007**	-0.004*	-0.004	-0.002	-0.002	-0.004	-0.001	-0.006**	-0.004	0.004	-0.008	-0.016***	-0.006
$Spread$	-0.022***	-0.003	0.014	0.006	-0.022***	-0.007*	0.013***	-0.026***	-0.002	0.020***	-0.018**	-0.011	0.003
$NBER$	-0.048***	-0.012**	-0.002	0.007	-0.041***	-0.002	0.028***	-0.043***	-0.003	0.036***	-0.056***	-0.028***	0.018**
$Crises$	-0.017***	0.004	0.019*	0.008	-0.029***	-0.004	0.022***	-0.015**	0.009*	0.019***	-0.012	-0.007	0.009
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of obs.	25171	7498	7498	7498	17673	17673	17673	12430	12430	12430	12741	12741	12741

Table 3.17. Placebo Tests

The table presents the average values of the coefficients and the t-statistics for the placebo test. We generate 100 random samples with replacement from the original series of EPU to construct our new series $(\widetilde{EPU})$ and estimate the following equations: (a) $LCR_{i,t} = a_i + \beta_1 \widetilde{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$ and (b) $NSFR_{i,t} = a_i + \beta_1 \widetilde{EPU}_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $LCR = \frac{Stock\ of\ High\ Quality\ Liquid\ Assets}{Total\ Net\ Cash\ Outflows}$, high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress. Total net cash outflows (TNCO) are total expected cash outflows (TCO) minus total expected cash inflows (Inflows) during the 30-day stress period. where $NSFR = \frac{Available\ Amount\ of\ Stable\ Funding}{Required\ Amount\ of\ Stable\ Funding}$, $Available\ Amount\ of\ Stable\ Funding$ (ASF) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RSF) is the sum of the off-balance sheet exposures plus the sum of the weighted amounts of the categories of the bank's assets. $lnEPU$ is the US Economic Policy Uncertainty composite index of Baker, Bloom and Davis, (2016). The index is calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4.

	Coefficient (β_1)	T-statistic
LCR	0.005	0.104
$NSFR$	0.004	0.138

Table 3.18. Economic Policy Uncertainty and the Liquidity Coverage Ratio

The table reports the results of our baseline Equation: $LCR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $LCR = \frac{Stock\ of\ High\ Quality\ Liquid\ Assets}{Total\ Net\ Cash\ Outflows}$, high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress. EPU is the US Economic Policy Uncertainty composite index of Baker, Bloom and Davis, (2016). The index is calculated as the natural logarithm of the last value during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
EPU^{Comp}	0.391***		0.417***		0.498***		0.156**		0.435***	0.226***
$ELECT^{Year}$		-0.095	-0.137**							-0.049*
$ELECT^{Quarter}$		0.028	0.038							0.055
VIX				0.003	-0.007**					0.002
Ln_Asset						-0.204***	-0.212***			-0.192**
$A2E$						0.044***	0.045***			0.037***
ROA						-6.359*	-5.643*			-7.078**
NPL						8.375***	7.147***			6.148***
$N2I$						0.586***	0.570***			0.498***
$RW2T$						-0.084***	-0.080***			-0.062***
$RGDP^{Growth}$								-3.976	2.346	-0.17
ADS								0.133*	0.071	0.054
$Spread$								0.256***	0.093	0.002
$NBER$								-0.037	-0.175***	-0.125**
$Crises$								-0.366***	-0.209***	-0.148***
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of obs.	26076	26945	26076	26076	26076	25161	25161	26076	26076	25161
Adj. R-square	2.70%	0.34%	3.26%	0.16%	3.15%	9.50%	9.82%	3.96%	6.35%	11.82%

Table 3.19. Individual Estimates of All Control Variables

The table reports the results of our baseline Equation: $LCR_{i,t} = a_i + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $LCR = \frac{Stock\ of\ High\ Quality\ Liquid\ Assets}{Total\ Net\ Cash\ Outflows}$, high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
$ELECT^{Year}$	-0.088													
$ELECT^{Quarter}$		-0.066												
VIX			0.001											
Ln_Asset				-0.126*										
$A2E$					0.024***									
ROA						-16.288***								
NPL							8.692***							
$N2I$								0.601***						
$RW2T$									-0.002					
$RGDP^{Growth}$										6.172*				
ADS											0.085***			
$Spread$												-0.004		
$NBER$													-0.380***	
$Crises$														-0.391***
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of obs.	26945	26945	26945	26076	26076	26076	26064	26076	25173	26076	26076	26076	26945	26945
Adj. R-square	0.34%	0.12%	0.09%	0.42%	0.74%	1.33%	4.55%	1.62%	0.27%	0.27%	0.64%	0.04%	2.31%	3.11%

Table 3.20. The Components of LCR and the Components of Economic Policy Uncertainty Index

The table reports the results of two regressions: (1) $HQLA_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, and (2) $TNCO_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where high quality liquid assets (HQLA) are those that, over a 30-day stress period, are unencumbered and can generate funds at little or no loss of value even in periods of severe idiosyncratic and market stress. Total net cash outflows (TNCO) are total expected cash outflows (TCO) minus total expected cash inflows (Inflows) during the 30-day stress period. In the regressions we use the natural logarithm of these two components of Liquidity Coverage Ratio. EPU is the US Economic Policy Uncertainty indices (News, Government Spending, Inflation and Tax) of Baker, Bloom and Davis, (2016). The indices are calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
EPU^{News}	-0.033	-0.343***							-0.064*	-0.256***
EPU^{Cover}			-0.044	-0.277***					0.001	-0.227***
EPU^{Infl}					-0.066*	0.126*			-0.099**	0.073
EPU^{Tax}							-0.006	0.009	0.005	0.022**
$ELECT^{Year}$	-0.050***	0.01	-0.054***	-0.021	-0.041**	-0.024	-0.049***	-0.008	-0.035*	-0.029
$ELECT^{Quarter}$	0.055	0.039	0.05	-0.023	0.036	-0.016	0.048	-0.038	0.044	0.043
VIX	0.005**	0.006**	0.004**	0.000	0.004**	-0.007**	0.003*	-0.006**	0.006***	0.008***
Ln_Asset	0.696***	0.983***	0.698***	0.975***	0.693***	0.937***	0.694***	0.935***	0.700***	0.993***
$A2E$	0.028***	-0.004	0.028***	-0.004	0.028***	-0.004	0.028***	-0.005	0.028***	-0.004
ROA	-3.201**	5.376***	-3.422**	3.704*	-3.573***	5.262***	-3.332**	4.781***	-3.541***	4.957***
NPL	2.286***	-5.850***	2.463***	-5.134***	2.451***	-7.415***	2.329***	-7.131***	2.662***	-5.469***
$N2I$	0.09	-0.157**	0.091	-0.169**	0.084	-0.200**	0.086	-0.204***	0.091	-0.141*
$RW2T$	-0.036***	0.027***	-0.036***	0.026***	-0.036***	0.035***	-0.036***	0.034***	-0.037***	0.025***
$RGDP^{Growth}$	0.473	-0.847	1.198	4.601	0.562	1.586	0.568	1.532	0.166	2.925
ADS	0.034	-0.022	0.039	0.000	0.034	-0.031	0.037	-0.036	0.033	-0.01
$Spread$	-0.021	-0.058	-0.004	0.070	-0.015	0.001	-0.009	-0.008	-0.031	-0.01
$NBER$	-0.151***	0.089*	-0.157***	0.038	-0.141***	0.042	-0.153***	0.065	-0.130***	0.047
$Crises$	-0.087***	0.072**	-0.085***	0.118***	-0.081***	0.172***	-0.076**	0.164***	-0.101***	0.056*
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of obs.	25161	25161	25161	25161	25161	25161	25161	25161	25161	25161
Adj. R-square	29.92%	57.01%	29.93%	56.46%	29.96%	55.16%	29.91%	54.97%	30.00%	57.96%

Table 3.21. Economic Policy Uncertainty and the Net Stable Funding Ratio

The table reports the results of our baseline Equation: $NSFR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK^{Specific}_{i,t-1} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $NSFR = \frac{Available\ Amount\ of\ Stable\ Funding}{Required\ Amount\ of\ Stable\ Funding}$, $Available\ Amount\ of\ Stable\ Funding$ (ASF) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RSF) is the sum of the off-balance sheet exposures plus the sum of the weighted amounts of the categories of the bank's assets EPU is the US Economic Policy Uncertainty composite index of Baker, Bloom and Davis, (2016). The index is calculated as the natural logarithm of the last value during a quarter. $ELECTION^{Year}$is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, $NPL_i$is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
EPU^{Comp}	0.058***		0.059***		0.102***		0.059***		0.081***	0.072***
$ELECT^{Year}$		0.001	-0.005							0.004
$ELECT^{Quarter}$		-0.004	-0.002							0.005
VIX				-0.001	-0.003***					0.001
Ln_Asset						0.037**	0.034**			0.040**
$A2E$						0.017***	0.017***			0.015***
ROA						-0.071	0.2			-0.181
NPL						-0.396*	-0.862***			-1.031***
$N2I$						0.095**	0.089*			0.07
$RW2T$						-0.035***	-0.033***			-0.029***
$RGDP^{Growth}$								-1.001	0.171	0.543
ADS								0.006	-0.006	0.002
$Spread$								0.002	-0.028	-0.016
$NBER$								-0.009	-0.034***	-0.030**
$Crises$								-0.088***	-0.058***	-0.041***
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of obs	26076	26945	26076	26076	26076	25161	25161	26076	26076	25161
Adj. R-square	1.68%	0.02%	1.70%	0.27%	3.74%	10.94%	12.21%	4.90%	7.17%	15.28%

Table 3.22. Individual Estimates of All Control Variables

The table reports the results of our baseline Equation: $NSFR_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $NSFR = \frac{Available\ Amount\ of\ Stable\ Funding}{Required\ Amount\ of\ Stable\ Funding}$, $Available\ Amount\ of\ Stable\ Funding$ (ASF) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RSF) is the sum of the off-balance sheet exposures plus the sum of the weighted amounts of the categories of the bank's assets $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
$ELECT^{Year}$	0.000													
$ELECT^{Quart}$		-0.003												
VIX			-0.001**											
Ln_Asset				0.022										
$A2E$					-0.004***									
ROA						1.370**								
NPL							-0.187							
$N2I$								0.127**						
$RW2T$									-0.019***					
$RGDP^{Growth}$										2.164***				
ADS											0.026***			
$Spread$												-0.025***		
$NBER$													-0.088***	
$Crises$														-0.090***
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of obs.	26945	26945	26945	26076	26076	26076	26064	26076	25173	26076	26076	26076	26945	26945
Adj. R-square	0.02%	0.02%	0.63%	0.35%	0.49%	0.29%	0.09%	2.00%	5.97%	0.84%	1.61%	0.65%	3.48%	4.58%

Table 3.23. The Components of NSFR and the Components of Economic Policy Uncertainty Index

The table reports the results of two regressions: (1) $ASF_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, and (2) $RSF_{i,t} = a_i + \beta_1 EPU_{t-1} + \beta_2 ELECTION_t + \beta_3 VIX_{t-1} + \beta_4 BANK_{i,t-1}^{Specific} + \beta_5 MACRO_{t-1} + \beta_6 Q_t + \varepsilon_{i,t}$, where $Available\ Amount\ of\ Stable\ Funding$ (ASF) is the sum of the weighted amounts of the categories of capital and liabilities of a banking institution and the $Required\ Amount\ of\ Stable\ Funding$ (RSF) is the sum of the off-balance sheet exposures plus the sum of the weighted amounts of the categories of the bank's assets. In the regressions we use the natural logarithm of these two components of Net Stable Funding Ratio. EPU is the US Economic Policy Uncertainty indices (News, Government Spending, Inflation and Tax) of Baker, Bloom and Davis, (2016). The indices are calculated as the natural logarithm of the average during a quarter. $ELECTION^{Year}$ is a binary variable that takes the value of 1 during years (2004, 2008, 2012, and 2016) of presidential elections, and 0 otherwise. $ELECTION^{Quarter}$ is a binary variable that takes the value of 1 during quarters (2004Q4, 2008Q4, 2012Q4, and 2016Q4) of presidential elections, and 0 otherwise. Ln_Asset_i is the natural logarithm of assets of BHC i, $A2E_i$ is the asset to equity ratio of BHC i, ROA_i is the return to asset ratio of BHC i, NPL_i is the non-performing loan ratio of BHC i, $N2I_i$ is the non-interest income to total interest income ratio of BHC i, and $RW2T_i$ is the risk-weighted assets to Tier 1 capital ratio of BHC i. VIX is the implied volatility index. ADS is the US business index of Aruoba, Diebold and Scotti (2009). $RGDP^{Growth}$ is the real Gross Domestic Product Growth. . $Spread$ is the corporate spread is calculated as the difference between Moody's BBB and AAA US Corporate Bond Yield. $NBER$ is a binary variable that takes the value of 1 during US recessions, and 0 otherwise, $Crises$ is a dummy variable that takes the value of 1 for the period from June 2007 to June 2009 and 0 otherwise. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.The sample period is from 2002Q1 to 2016Q4. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
EPU^{News}	0.021**	-0.056***							0.016	-0.044***
EPU^{Cover}			0.016*	-0.043***					0.015	-0.031***
EPU^{Infl}					-0.013	0.013			-0.007	0.007
EPU^{Tax}							-0.002	-0.001	-0.003	0.001
$ELECT^{Year}$	0.003	-0.004	0.005	-0.009*	0.006	-0.008	0.005	-0.006	0.007	-0.008
$ELECT^{Quarter}$	-0.006	0.006	-0.002	-0.004	-0.004	-0.004	-0.001	-0.006	-0.007	0.006
VIX	-0.001**	-0.001	-0.001*	-0.002***	-0.001	-0.003***	-0.001	-0.003***	-0.001**	0.000
Ln_Asset	0.989***	0.949***	0.989***	0.948***	0.992***	0.942***	0.992***	0.942***	0.988***	0.951***
$A2E$	-0.011***	-0.022***	-0.011***	-0.022***	-0.011***	-0.022***	-0.011***	-0.022***	-0.011***	-0.022***
ROA	-0.064	0.154	0.037	-0.111	-0.08	0.099	-0.04	0.031	-0.058	0.066
NPL	0.251	0.949***	0.212	1.050***	0.369*	0.724***	0.362*	0.796***	0.258	1.047***
$N2I$	0.01	-0.033	0.011	-0.035	0.013	-0.04	0.013	-0.041	0.009	-0.031
$RW2T$	0.006*	0.029***	0.006*	0.029***	0.006*	0.031***	0.006*	0.030***	0.006*	0.029***
$RGDP^{Growth}$	-0.724	-1.174**	-1.054**	-0.311	-0.885*	-0.79	-0.898*	-0.83	-0.990*	-0.695
ADS	-0.006	-0.005	-0.007	-0.001	-0.006	-0.006	-0.005	-0.006	-0.006	-0.002
$Spread$	-0.002	0.006	-0.01	0.026**	-0.006	0.015	-0.004	0.016	-0.004	0.014
$NBER$	-0.011	0.020**	-0.008	0.012	-0.007	0.014	-0.009	0.017	-0.008	0.015*
$Crises$	-0.008	0.019***	-0.011*	0.027***	-0.014**	0.035***	-0.013**	0.035***	-0.006	0.017***
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Number of obs.	25161	25161	25161	25161	25161	25161	25161	25161	25161	25161
Adj. R-square	91.06%	92.01%	91.05%	91.97%	91.05%	91.92%	91.05%	91.91%	91.07%	92.03%

Chapter 4

Policy Uncertainty in Greece and the Stability of the Financial System

"Honey, I shut the banks."(Yanis Varoufakis, Greek Minister of Finance from January 2015 to July 2015, to his wife)[52]

4.1 Introduction

The eyes of the whole world, during the last decade, are upon the Greek economy. It received three bailout loans from the International Monetary Fund (IMF), the Eurozone, and the European Central Bank of a total of 332 billion euros, a 50% "haircut" on its debt. Greece was the first Eurozone country that defaulted and the first developed country that failed to make an IMF loan repayment. The Greek Debt Crisis coincides with significant political instability. During the last 14 years, there were six snap parliamentary elections (2007/9, 2009/10, 2012/5 2012/6, 2015/1, and 2015/9) and a bailout referendum on 5 July 2015.

The dispute among policymakers about which measures were the most effective to restore the financial stability in Greece during the last decade was followed by the unprecedented capital injections into financial institutions. If the Greek government has acted on time by resolving the

[52] https://www.newyorker.com/magazine/2015/08/03/the-greek-warrior.

uncertainty, the impacts would not have been so severe. [53] The market interventions have significant fiscal costs, and therefore, it is crucial to investigate whether the unclear and timeless[54] policy decisions are related to the expected capital shortage that a firm face. This chapter examines the relationship between economic policy uncertainty and the financial stability empirically by using two risk measures: distance-to-default, and firm's expected capital needs in the event of a future crisis, which are publicly available. [55]

Greece has a long history of defaults. Prior the recent default, Greece has defaulted on its external debt five times (1826–1842, 1843–1859, 1860–1878, 1894–1897, 1932–1964) [56, 57]:

1. 1826: The Greek War of Independence from the Ottoman Empire.
2. 1843: Greece stopped making payments of the loans that took in 1832 in order to improve its military.
3. 1860: British and French occupied Piraeus to ensure payment on the old loan.
4. 1894: The cost of borrowing increased to unsustainable levels, and the government suspended payments in 1893.
5. 1932: The Great Depression.

Therefore, Greece was in default, almost for 90 years out of 200 years of its modern history! The default incidents emphasize the importance to study the effect of policy uncertainty on several

[53] International Monetary Fund (2012, pp 53) points that "by implementing bold and timely measures, policymakers can reduce policy uncertainty and help kick-start economic growth."
[54] The gross domestic product declined 25% and the unemployment rate reached to 28%.
[55] There is an ongoing debate whether the credit ratings are public good or not (Duan and Van Laere, 2012). The Credit Research Initiative and the Volatility Laboratory provide timely estimates of default risk and capital need, which could have been used by the Greek authorities as an early warning system of the upcoming economic crisis.
[56] The first default of Greek-city states occurred during the fourth century B.C., since 13 Greek-city states repaid only 20% of principal to the Temple of Delos.
[57] There is a special period in the Greek economic history, that of the World War II and afterwards when hyperinflation emerged in the Greek economy due to excessive reliance of the local government on the inflation tax. Stabilization efforts have been made without significant results.

measures of default. This chapter examines the relationship between policy-related uncertainty and Greek firm's Distance-to-Default and expected capital needs in the event of a future crisis. To achieve this goal, we use Greek Economic Policy Uncertainty Indices, based on the work of Baker, Bloom, and Davis (2016), one of them of our own construction, and the Distance-to-Default and the expected capital shortfall of Greek firms in the event of a new crisis.

We show that Greek Economic Policy Uncertainty forecasts a decrease (increase) of Distance-to-Default (Capital Shortfall), while its prediction power remains intact when we introduce financial and economic variables that are related to the main independent variables. The short-lived effect is important for most of the Greek sectors. The indiosyncratic Economic Policy Uncertainty mainly drives the financial stability of Greek firms, and the effect is not due to the uncertainty that arises from the economic conditions.

Our work is related to the research of Fountas, Karatasi and Tzika (2018) and Hardouvelis, Karalas, Karanastasis, and Samartzis (2018) who, in independent works develop an Economic Policy Uncertainty index for Greece. We provide further empirical evidence and extend the recently published studies.

Specifically, Fountas, Karatasi, and Tzika (2018) show that the peaks of their index are associated with major economic and political events in Greece, and they argue that the relationship between economic policy uncertainty in Greece and Europe is weaker during the periods of the crises. We also document that our index peaks during periods of elevated uncertainty and the relation with the overall European economic uncertainty is weaker after 2010. However, we also show that economic policy uncertainty is related to the financial instability of firms as both the probability of default and the capital needs increase.

Hardouvelis, Karalas, Karanastasis, and Samartzis (2018) conduct a more thorough analysis of the effect of economic policy uncertainty on economic activity. They construct an overall and category-specific Economic Policy Uncertainty indices, and they show that the positive relationship with the global indices declined during the Greek crisis. Most importantly, they demonstrate that an increase of policy uncertainty affects the economic activity in Greece negatively (i.e. industrial production, gross domestic product, employment, e.t.c.). Our work complements and extends theirs as we examine how policy uncertainty affects the financial vulnerability of firms and the capital shortage of a firm if a financial crisis occurs, and focuses on the micro-level of the economy.

Furthermore, our work is also related to the research of Eichler and Sobański (2016) who study the relationship between national politics and the Distance-to-Default for a sample of 123 banks from seven eurozone countries. Our work complements and extends theirs in several ways. First, the Economic Policy Uncertainty index captures not only the uncertainty that arises from electoral cycles, the power and the ideology of government but also global and country-specific factors (i.e. Brexit and Greek referendum, terrorist attacks, Global/European crisis) that affect the stability of the financial system. Second, we use not only the Distance-to-Default but also the SRISK, which is an ex-ante risk measure that quantifies the capital shortage and not only the probability of default.

Most importantly, we show that the Greek Economic Policy Uncertainty index we construct contains incremental information for the Distance-to-Default and Capital Shortfall of Greek firms over the other two indices, as their effect turns out to be insignificant when we include all the indices in the baseline model.

This chapter is structured as follows. Section 4.2 reviews the literature, while section 4.3 describes the construction of the Greek Economic Policy Uncertainty indices. Section 4.4 presents the dataset, and section 4.5 demonstrates the empirical findings. Section 4.6 discusses the possible endogeneity issues in the analysis, and finally, Section 4.7 concludes the chapter.

4.2 Literature Review

In this section, we review the literature on economic policy uncertainty, distance-to-default, and systemic risk. First, we focus on how policy uncertainty affects the economy, corporate investments, and banking stability. Second, we present the empirical findings that show the importance of the two risk measures. Finally, we link the two strands of literature to show the channel through which economic policy uncertainty may affect the distance-to-default and the capital shortfall.

4.2.1 Economic Policy Uncertainty

Policymakers determine the environment that firms and households operate. However, the discussions that are undertaken before and during the voting procedure may induce uncertainty to the economic environment and hence may affect the economic output negatively. The issue of policy uncertainty has attracted the attention of policymakers, academics, media, and firms, and therefore, the topic may further be examined in the future.

Baker, Bloom, and Davis (2016) develop Economic Policy Uncertainty (EPU) indices, which are based on newspaper coverage. The Economic Policy Uncertainty index has three components: policy uncertainty, tax uncertainty, inflation uncertainty and uncertainty that arises from the different economic forecasts. The first component measures the frequency of newspaper articles related to economic policy uncertainty. It is based on newspapers' articles in top 10 newspapers in the US and measures how often included in these newspapers are specific words related to policy and economic uncertainty. Specifically, they develop it by calculating how many articles in these newspapers contained words from three groups: “economy” (or economic), “uncertainty” (or uncertain) and policy-relevant terms (congress or deficit, Federal Reserve, legislation, regulation and White House). Their results show that the EPU index spiked in major events like presidential elections, Gulf Wars and fiscal policy disputes. The second component is based on the reports of Congressional Budget Office (CBO), measures uncertainty that arises from temporary tax measures that affect the firms and the households and counts the federal tax code provisions that are set to expire in the next ten years. The third component captures the disagreement among economic forecasters by using the Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters. They argue that the dispersion of the forecasts for the consumer price index, purchases of goods and services by state and local governments, and purchases of goods and services by the federal government are good proxies for monetary and fiscal policy uncertainty. Following their work, a significant number of papers examine the effect of economic policy uncertainty on different aspects of the economy.

Stock and Watson (2012) use the EPU index, among other variables, to explain the 2007-2009 recession and show that is correlated to monetary, productivity, liquidity and financial risk variables and therefore there are indications that policy uncertainty can be used to determine the economic uncertainty and consequently the risk banking behavior.

Krol (2014) examines the relationship between the economic and economic policy uncertainty on exchange rate volatility for ten industrial and emerging economies. He considers as a measure of policy uncertainty the EPU indices of Baker, Bloom and Davis (2016) and shows that there is a positive relationship between the uncertainty and the volatility of exchange rates which implies that higher policy instability increases the volatility of currencies which in turn affects the output of the economy negatively.

Gulen and Ion (2016) also use the EPU index of Baker, Bloom and Davis (2016) to examine the relation with firm-level investments. They show that an increase of political uncertainty is related to a deterioration of future economic activity and specifically when the political uncertainty doubles the investments decrease by 8.7% in the next quarter. It also accounts for the one-third of the total observed decrease in the investments during the 2007-2009 period. They also perform an out-of-sample study and demonstrate that the most crucial indicator of firm-level investments is political uncertainty measured by the first component of the index while the less significant is the one that measures the inflation uncertainty.

4.2.2 Distance-to-Default and Systemic Risk

4.2.2.1 Distance-to-Default

Distance-to-Default is the core component of the Expected Default Frequency model of Moody's Analytics KMV[58] model. Following the introduction of the measure (Merton, 1974), academic research shows that it is a successful predictor of corporate failures. [59]

---

[58] KMV is the initials of Kealhofer, McQuown and Vasicek, and was a San Francisco-based quantitative risk management firm.

[59] The literature on corporate defaults is voluminous. Altman (1968) introduced the Z-score in order to examine whether the financial ratios can be used to predict corporate bankruptcy. He used a multiple discriminant statistical methodology to access the importance of financial ratios in forecasting the performance of manufacturing corporations. In a follow-up work, Altman, Haldeman and Narayanan (1977) extended the original Altman's (1968) model by analyzing profitability, coverage and other earnings relative to leverage measures, liquidity, capitalization ratios, and earnings variability variables. The analysis they conducted shows that the most important variables in order to predict corporate bankruptcy are: return on assets, stability of earnings, debt service, cumulative profitability, liquidity, capitalization, and size. Several papers have used the Z-score concept either to predict banking failures or measure banking risk and this strand of literature may be attributed to the works of Boyd and Graham (1986), Hannan and Hanweck (1988) and Boyd, Graham and Hewitt (1993).

Crosbie and Bohn (2003), based on a database of 250,000 company-years of data and over 4,700 incidents of default or bankruptcy, show that there is a relation between Distance-to Default and corporate defaults or bankruptcy which is not affected by the specific characteristics of firms (industry, size, and regions). Vassalou and Xing (2004) examine the relation between default risk and equity returns in order to investigate whether the size and the book-to-market effects are attributed to default likelihood indicators. They demonstrate that both effects, especially the size effect, are default effects. Specifically, the returns of high-default-risk firms are higher than the returns of low-default-risk firms only when these firms are small with high book-to-market ratios. Based on their work, they conclude that default risk is a systemic risk as it is priced in the cross-section of equity returns. Duffie, Saita and Wang (2007) use 390,000 firms-month data of US industrial firms over the period from 1980 to 2004, and they show that the future default probabilities are associated to firm's distance to default. The predictive power remains intact in an out-of-sample study since the average accuracy ratio of their model is close to 88% for yearly predictions. [60]

4.2.2.2 Systemic Risk

A firm is systemically important if its failure contributes to system-wide failure. Firm failures are more likely to occur during periods of elevated uncertainty since during these periods, other firms, cannot acquire the failed firm, due to the aggregate capital shortfall, and resolve the temporary instability (Acharya, Engle and Richardson, 2012). Motivated by this definition, Acharya, Engle, and Richardson (2012) and Brownlees and Engle (2016) develop the SRISK

[60] Contrary to the reported findings, Hillegeist, Keating, Cram, and Lundstedt (2004), Bharath and Shumway (2004) and Campbell, Hilscher, and Szilagyi (2008), find that Distance-to-Default does not contain incremental information over other known predictors of default. However, Zou (2016) attributed their results to the inclusion of financial firms, and shows that for a sample of 12,877 US stocks for the period from 1991 to 2014 the default probabilities can forecast corporate default events.

measure which is a market-data based risk measure that calculates the expected capital shortfall conditional on a severe market downturn and is an increasing function of systemic risk and leverage.

Due to the multiple dimensions of systemic risk, it is almost impossible for just one measure to capture all its aspects. Acharya, Engle, and Pierret (2014) compare the capital shortfall that is generated by the regulatory stress tests and that generated by SRISK. They show that the rankings of financial institutions based on these two measures are correlated when the required capitalization is a function of total assets, and hence they suggest that regulatory stress tests must include a market risk component to improve their accuracy. Benoit, Hurlin and Perignon (2018) compare SRISK and other market-data based systemic risk measures with the systemic risk-scoring methodology of the Basel Committee of Banking Supervision (2013) and find that a key advantage of the former is that they can easily be implemented and compared, unlike the regulatory approach, since they are based on publicly available data.

Brownlees and Engle (2016) demonstrate that SRISK identified the financial firms with the largest capital shortfall as early as 2005. These were Fannie Mae, Freddie Mac, Morgan Stanley, BearStearns, and Lehman Brothers which faced substantial financial problems during the last crisis, and thus, they show the importance of their measure as an early warning indicator. With the beginning of the subprime crisis in 2007, large commercial banks, such as Citigroup, Bank of America, and JP Morgan, join the list of the most important systemic risk controbutors. As the crisis deepens (August 2008), this list is extended to include AIG, Merill Lynch and Walchovia Bank. Between 2007 and 2009, the Federal Reserve carried out several recapitalization programs, the most notable and extensive one being the Troubled Asset Relief Program (TARP). The majority of the financial firms identified above as major systemic risk contributors received government aid. For example, Freddie Mac and Fannie Mae were seized by the US government and put under conservatorship, while Wachovia Bank was sold to Citigroup with the help of FDIC, which absorbed losses. Citigroup, Bank of America (which acquired Merrill Lynch), AIG, JP Morgan (which purchased Bear Sterns) and Morgan Stanley received aid via TARP. Lehman Brothers was the only systemic firm that filed for bankruptcy in September 2008. Overall, during the last financial crisis, the large financial firms with severe capital shortfall (as proxied by SRISK) were eventually bailed out by the govenrments due to being ‘too big to fail’.

Systemic Risk (SRISK) indicator is a risk measure that captures common shocks that affect the whole financial system (through beta coefficient), and it is similar in spirit with the stress tests that central banks implement. However, SRISK is available daily and hence, is a timely mark-to-market risk measure. Acharya, Engle, and Pierret (2014) compare the capital shortfall that is generated by the regulatory stress tests with SRISK. They show that the ranking of financial institutions based on these two measures are correlated when the required capitalization is a function of total assets, and hence they suggest that the regulatory stress tests should incorporate the market risk to improve their accuracy.

Brownlees and Engle (2016) demonstrate that the financial firms with the largest SRISK before the 2007-2008 Great Recession were Fannie Mae, Freddie Mac, Morgan Stanley, BearStearns, and Lehman Brothers which faced substantial financial problems during the last crisis, and thus they show the importance of their measure as an early warning indicator. Engle, Jondeau, and Rockinger (2015) compare the ranking of the most systemic European financial firms to identify the global systemically important financial institutions. Their analysis was based on two measures: SRISK and the methodology proposed by the Basel Committee on Banking Supervision (2011). In November 2011, the ranking based on SRISK identified 16 out of 18

European systemically important banks. Similarly, high accuracy was demonstrated for insurance companies. Therefore, SRISK identifies the systemic important financial firms accurately and is easily calculated based on the available public information. These two properties of SRISK make it the perfect systemic risk measure to examine the relationship between economic policy uncertainty and capital shortfall. Both variables that we are investigating in our study (EPU, and SRISK) are publicly available, and hence it would be quite easy for policymakers to identify the beginning of a crisis (an increase of EPU) and quantify firm's capital shortfall by calculating SRISK.

4.2.3 The Channel

Why may an increase in policy uncertainty be related to a decrease (increase) of future Distance-to-Default (Capital shortfall)? According to the literature, policy uncertainty affects negatively the economic environment in which firms operate. An increase of policy uncertainty reduces the revenues of firms since (1) households consume less, and (2) firms invest less, and therefore, their profitability is affected negatively. If the increase in policy uncertainty is significant or unexpected, the effect will be more pronounced and most likely, the firms will report losses that will have to cover by increasing their capital. Furthermore, during periods of policy uncertainty, firms cannot refinance their debt quickly, since the cost of borrowing is higher, and they may need additional capital to meet their debt obligations. Finally, the increasing number of bank failures during periods of high policy uncertainty will force the financial institutions to raise new capital either to increase the low levels of their equity or to acquire the defaulted banks. Under this economic environment, a firm's probability of default will be higher, and hence the Distance-to-Default (Capital shortfall) will be lower (higher).

4.3 Greek Economic Policy Uncertainty Indices

In this section, we will describe the methodology we followed to construct the Greek Economic Policy Uncertainty Index. Furthermore, since two other independent research teams (Hardouvelis, Karalas, Karanastasis, and Samartzis, 2018 and Fountas, Karatasi and Tzika, 2018) developed Greek Economic Policy Uncertainty Indices, we will briefly present their methodology to construct the indices and discuss the main similarities and differences between them.

*4.3.1 Greek Economic Policy Uncertainty Index **

Following the work of Baker, Bloom, and Davis (2016), we develop an index of Economic Policy Uncertainty in Greece. Specifically, the index counts the frequency of newspaper articles that contain specific terms related to the economy (E), policy (P) and uncertainty (U) for the period from June 2001 to September 2017. The data source to construct the index is the "Kathimerini" newspaper webpage, which covers mainly political and economic stories and is regarded as the most reliable newspaper in Greece. [61]

For an article to be characterized as an eligible EPU article, it must contain at least one term from each of the three categories: Economy, Policy, and Uncertainty. Table 4.1 presents the terms for these categories. Most terms for the Economy, Policy, and Uncertainty component of the index are straightforward.[62] For the Economy category, we use two terms: Economy and Economic. For the Policy category, we use five terms: Government, Bank of Greece, European Central Bank, Politics, and Minister. We use the term "Minister" since in the Greek political reality, the politicians determine the policies that are implemented, and there are long discussions before and after the implementation of a law. For the Uncertainty category, besides the apparent

[61] We have also used the webpage of another major newspaper in Greece ("To Vima") in order to construct the Greek Economic Policy Uncertainty index. The two indices are quite similar, but we choose to use only the index based on Kathimerini's webpage since for some months Vima's the webpage did not provide accurate counts of the articles.

[62] We also consider the following EPU terms: Growth, recession, parliament, prime minister, deficit, reforms, bankruptcy, and strikes. The inclusion of these terms do not alter significantly the index.

terms (uncertainty, concern, and instability), we include the term "Elections" since national elections is a source of uncertainty in Greece. Since 2001, all national elections were snap elections and therefore were not expected.

We conducted a series of human audits to refine the terms in each of the above categories. The manual examination of the eligible EPU articles revealed that at least 90% of them were correctly classified.

The construction of the index involves the following three steps: (1) every month we count the EPU related articles and the total number of articles in the newspaper in order to obtain the relative EPU frequency, (2) we standardize the relative EPU frequency, and (3) normalize the series to a mean of 100 for the period from 2001 to 2017 to obtain the Greek Economic Policy Uncertainty Index (EPU^*).

Panel A of Figure 4.1 plots the overall Economic Policy Uncertainty Index for Greece for the period from June 2001 until September 2017. The index is rather volatile, moving between low and high policy uncertainty periods, with some significant spikes. There are three major spikes: (a) in May 2012 when no party or coalition of parties managed to form a government after the national elections, (b) in January 2015 reacting to the election outcome[63], and (c) in June 2015 during the Greek referendum which was about accepting or rejecting the 3rd bailout from European Union, but the real question was whether Greece would remain or exit the Eurozone.

[63] Syriza, a left oriented party, won for the first time the national elections. Even if the election outcome was expected, the implementation of a new economic stability program was highly unlikely, and hence there were concerns about whether Greece will remain in the Eurozone.

To further investigate which component of EPU^* is the most significant, we construct three more economic policy uncertainty indices by using only the terms of each category: Economy (EPU_E^*), Policy (EPU_P^*), and Uncertainty (EPU_U^*).

Panels B, C, and D of Figure 4.1 plot the three categorical indices. Their graphical representation reveals significant differences between them. The Economy index started elevating from the end of 2008 (the beginning of the Global Financial Crisis) and remained at the new levels for the following years, while the Policy index increased steadily from 2008. These increases are associated with the economic and political instability in Greece during the last ten years. On the other hand, the Uncertainty index is more volatile than the other indices and captures mainly periods of increased uncertainty (i.e., snap elections).

4.3.2 Hardouvelis, Karalas, Karanastasis, and Samartzis (2018) Economic Policy Uncertainty Index

Hardouvelis, Karalas, Karanastasis, and Samartzis (2018) also develop an Economic Policy Uncertainty index (EPU^{Har}) for Greece by following the methodology of Baker, Bloom, and Davis (2016) for the period from 1998 to 2017. They use the digital archives of four major Greek newspaper ("To Vima", "Ta Nea", "Naftemporiki", and "Kathimerini") to construct their index, and they use terms for each of the three categories which are similar to that of Table 4.1. They also construct the following category-specific indices: fiscal policy uncertainty (EPU_F^{Har}), monetary policy uncertainty (EPU_M^{Har}), currency policy uncertainty (EPU_C^{Har}), banking policy uncertainty (EPU_B^{Har}), pension policy uncertainty (EPU_P^{Har}), tax policy uncertainty (EPU_T^{Har}), debt policy uncertainty (EPU_D^{Har}), and economic uncertainty (EPU_U^{Har}). Most of the indices increased during the financial crisis and they show that an increase is associated with a subsequent decrease of investment, industrial production, gross domestic product, empoyment, household deposits, economic sentiment, and the stock market, in line with the findings of Bernanke (1983), and Gulen and Ion (2016).

Figure 4.2 displays the monthly evaluation of EPU^{Har} and the eight category-specific indices for the period from June 2011 to September 2017. [64] The indices show spikes not only during periods of global events (i.e., 2008 Global Financial Crisis, June 2016 Brexit referendum), but also during periods of Greek specific uncertainty (i.e. 2012, and 2015 elections, 2015 referendum). Most of the category-specific indices display a similar pattern but in some cases they demonstrate an indiosyncratic pattern which is due to the specific concetration of the index (i.e. the monetary policy uncertainty, EPU_M^{Har}, shows a reduced variability after the 2008).

4.3.3 Fountas, Karatasi and Tzika (2018) Economic Policy Uncertainty Index

Fountas, Karatasi, and Tzika (2018) follow the methodology of Baker, Bloom, and Davis (2016) and develop a monthly Greek Economic Policy Uncertainty Index (EPU^{Fou}) based on articles from the newspaper “Kathimerini” for the period from 1998 to 2018. They show that the Greek Economic Policy Uncertainty Index is related with the European as the correlation coefficient between is close to 0.64. They also demonstrate that the relation is stronger (weaker) for the period before (after) 2010 since the correlation is equal to 0.74 (0.39), a finding which implies that the economic policy uncertainty in Greece during the recent turbulace period is mainly idiosyncratic and may not share common characteristics with the economic policy uncertainty in Europe.

[64] We obtain the data from the Baker, Bloom and Davis’s (2016) website (http://www.policyuncertainty.com/HKKS_Monthly.html).

Figure 4.3 plots the EPU^{Fou} for the period from June 2001 to September 2017. [65] The index shows a similar pattern with the EPU^{*}. The values of the index were relative low before 2008, and they increased after the collapse of Lehman Brothers. A significant increase is also observed during the first half of 2015 when Syriza tried to renegotiate the terms of the stability program and eventually organise the referandum on July 5th of 2015. After this period, a significant reduction of uncertaity occurs since the government implemented the terms of the stability program.

4.3.4 Discussion

Table 4.2 presents summary statistics for the overall and category-specific Greek Economic Policy Uncertainty indices. The most (least) volatile index is EPU^{Fou}(EPU^{Har}) as its standard deviation equals to 62.88 (27.2). For the EPU^{*} index the minimum (maximum) value is equal to 46.41 (268.99) and occurred on February of 2006 (January of 2015) [66], while for the EPU^{Har} index the minimum (maximum) value is equal to 47.18 (188.70) and occurred on January of 2007 (November of 2011) [67]. Finally, for the EPU^{Fou} index the minimum (the second largest) value is equal to 28.63 (308.32) and occurred on July of 2007 (May of 2012). [68] Therefore, the maximum values of the three overall Greek Economic Policy Uncertainty indices occur during periods of high uncertainty (i.e. snap election or resign of a government). However, due to the different terms they use for the three categories of the index, the most uncertain periods do not coincide.

[65] We obtain the data from the Baker, Bloom and Davis's (2016) website (http://www.policyuncertainty.com/FKT_Monthly.html).
[66] The left wind political party Syriza won the snap national elections.
[67] Prime Minister Papandreou won the confidence vote and after two days, he resigned. Lucas Papademos became the new Greek Prime Minister, as the leader of a coalition government.
[68] After the snap election of May 2012, a government was not formed and an early election was called for June.

To reinforce the view that the three overall Greek Economic Policy Uncertainty indices capture common and idiosyncratic aspects of uncertainty, Table 4.3 presents the correlation coefficients between the overall and category-specific Greek Economic Policy Uncertainty indices. The average correlation between all indices is equal to 0.49, and it ranges from -0.10 (between $\text{EPU}_P^*$and EPU_M^{Har}) to 0.94 (between EPU^{Har} and EPU_U^{Har}). The average correlation between the three overall Economic Policy Uncertainty indices is equal to 0.69 and ranges from 0.60 (between EPU^* and EPU^{Har}) to 0.73 (between EPU^{Fou} and EPU^* or EPU^{Har}). Therefore, the average positive correlation indicates that they share common characteristics, but the relative low value of correlation points out that they capture also different aspects of economic policy uncertainty.

Hence, which index or category-specific index can predict subsequent levels of risk? To answer this question, in the next sections, we will examine whether these Economic Policy Uncertainty indices can forecast the distance-to-default and the Capital Shortfall in the case of a new crisis of Greek firms during the period from 2001 to 2017.

4.4 Dataset

We use the Distance-to-Default and the SRISK indicator as measures of systemic risk, and the overall and the category-specific Economic Policy Uncertainty indices to investigate whether policy uncertainty affects the viability of firms. The empirical analysis is based on two datasets. The first is a monthly panel of 378 firms for which the distance-to-default data are available. The second is a monthly panel of 12 firms for which the SRISK data are available.

4.4.1 Distance-to-Default

Distance-to-Default (DTD) is a risk measure that provides indications about the firm's probability of default and is based on the structural model of Merton (1974). The model is described in the following equation:

$$DTD_t = \frac{log\left(\frac{V_t}{L}\right) + \left(\mu - \frac{\sigma^2}{2}\right)(T-t)}{\sigma\sqrt{T-t}}, \quad (4.1)$$

where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities. $\sqrt{T-t}$ equals to 1 year.

In this chapter, we use the DTD data from Credit Research Initiative (CRI)[69], which modifies equation 4.1 in order to improve the stability of the model. Specifically, CRI applies the following modifications:[70]

1. Following the work of Duan (2010), it adds a fraction (δ) of other liability to determine the default point L.
2. It sets $\mu = \frac{\sigma^2}{2}$ to improve the stability of DTD estimation.
3. It standardizes the market value of a firm with its book value.

Therefore, CRI's DTD model is described as:

[69] The Credit Research Initiative (CRI) is a non-profit undertaking at the Risk Management Institute (RMI) of the National University of Singapore (https://www.rmicri.org/en/). As of January 2018, the coverage of the CRI has expanded to over 67,000 exchange-listed firms in 128 economies. The corporate default predictions are based on the model of Duan, Sun and Wang (2012).

[70] All the required estimations were implemented with the maximum likelihood method (Duan 1994, 2000).

$$DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}, \tag{4.2}$$

where $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities +\ \delta \times Other\ liabilities,$ and $\delta \in [0,1]$. Therefore, a firm is more likely to default when the value of assets is lower than 1 and the Distance-to-Default calculates the number of standard deviations the ratio $log\left(\frac{V_t}{L}\right)$ is needed to deviate in order a default to occur (Vassalou and Xing, 2004).

4.4.2 Capital Shortfall

Acharya, Engle, and Richardson (2012), Brownlees and Engle (2016), define $\mathrm{SRISK_{i,t}}$[71] as the capital shortfall of firm i at month t during a systemic event calculated as:

$$\mathrm{SRISK_{i,t}} = \mathrm{kDebt_{i,t}} - (1-\mathrm{k})\left(1 - \mathrm{LRMES_{i,t}}\right)\mathrm{Equity_{i,t}} \tag{4.3}$$

where k is the prudential capital ratio which is equal to 5.5% for European firms and 8% for non-European ones, $\mathrm{Debt_{i,t}}$ is the book value of debt, $\mathrm{Equity_{i,t}}$ is the current market capitalization, $\mathrm{LRMES_{i,t}}$ is the Long-Run Marginal Expected Shortfall which is equal to $1 - e^{(ln(1-d)beta_{i,t})}$, $beta_{i,t}$ is the beta coefficient with respect to the MSCI World Index, which is estimated by using a Dynamic Conditional Beta model (Engle, 2002, 2009), and d is a threshold of a six month market decline (or systemic crisis event) and its default value is set to -40%. SRISK combines two characteristics that are essential to measure the capital shortfall: (1) the liabilities and the size of

[71] We thank the V-Lab team members for making the data available on the V-Lab website (https://vlab.stern.nyu.edu/). Since we analyze the effect of economic policy uncertainty on Greek firms' capital shortage, we obtain from the GMES database of V-lab the capital shortfall for 12 Greek firms.

the financial institution and (2) the common shock that affects the financial system through the LRMES term.

4.4.3 Descriptive Statistics of DTD and SRISK

Panel A in Table 4.4 presents summary statistics of the Distance-to-Default and the positive and negative SRISK for the period from June 2001 to September 2017. SRISK is reported in millions of USD.

The average Distance-to-Default is equal to 2.35, and it ranges from -1.33 to 11.05. The median value of Distance-to-Default is close to 1.95, and there is significant variation among the firms as the 25th (75th) equals to 0.84 (3.41). Panel A of Figure 4.5 presents the average Distance-to-Default per month of all firms in our sample. The figure of Distance-to-Default reveals three distinct periods. During the first one (from 2000 to 2007) the Distance-to-Default is relatively stable and moves around 3. Then and until the end of 2012, we observe a steady decrease (from 4 to 0.7), since Greece defaulted during this period. During the last period (from 2012 to 2017) the Distance-to-Default increases continuously (except 2015 during which Syriza negotiated the stability program). Panels B to K of Figure 4.5 present the average Distance-to-Default per month of 10 industries (Energy, Material, Industrial, Consumer Discretionary, Consumer Staples, Health Care, Financials, Information Technology, Telecommunication Services, and Utilities). The Distance-to-Default of all industries reveals the same patterns. The highest (lowest) values occur during the first (second) period, while a steady increase is observed during the last period. It is worth noting that for all industries the value of Distance-to-Default at the end of 2017 is lower than the value during 2007, implying that the financial condition of Greek firms is worse than it was before the beginning of the Greek Financial Crisis.

The average capital shortfall is close to 2,517, while the average capital surplus equals to 1,158. Therefore, on average, there is a capital gap of 1,359 $(= 2{,}517 - 1{,}158)$. There is a significant variation of the capital shortfall (surplus), as it ranges from 3.78 (-7,915) to 9,967 (-0,94). Panel A of Figure 4.6 presents the average positive SRISK per month of all firms in our sample. The figure of SRISK reveals, again, three distinct periods. During the first one (from 2000 to 2007), the SRISK is relatively stable, and it ranges around 1,000. Then and until the end of 2012, it increases continuously and it reaches the level of 4,000. During the last period, it decreases but again at the end of 2017 it is almost double than the average capital shortfall in 2000. Panel B of Figure 4.6 presents the average negative SRISK per month of all firms in our sample. It depicts a similar picture. Before 2008, the Greek firms were more capitalized than during the end of our sample period.

Therefore, the graphical analysis reveals the effect of the Greek Economic Crisis. The financial stability of the Greek firms is worse than it was in 2007 since the Distance-to-Default is lower, the positive SRISK is higher and the negative SRISK is higher (less negative).

Panel B of Table 4.4 presents the correlation coefficients between the various measures of Economic Uncertainty Indices and the independent variables (Distance-to-Default, and SRISK). The average correlation between the economic uncertainty and the Distance-to-Default (SRISK) is close -0.14 (0.08), and hence an increase of uncertainty is associated with a decrease of the financial stability of the firms.

4.5 Empirical Analysis

Our baseline panel model to test the effect of economic policy uncertainty on the Distance-to-Default and the capital shortfall or surplus is similar to the specification used by Gulen and Ion

(2016) and Berger, Guedhami, Kim, and Li (2018). Specifically, we estimate the following equations[72]:

$$DTD_{\text{i,t}} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t} \quad (4.4a)$$

$$lnSRISK_{\text{i,t}}^{Positive} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t} \quad (4.4b)$$

$$lnSRISK_{\text{i,t}}^{Negative} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}, \quad (4.4c)$$

where DTD is the Distance-to-Default of firm i in month t, $lnSRISK$ is the natural logarithm of the positive or the negative arithmetic SRISK average of firm i in month t, $lnEPU$ is the natural logarithm of the different Greek Economic Policy Uncertainty Indices, $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%.

We did not include time fixed effects in equations 4.4a, 4.4b, and 4.4c since EPU index is common for every firm i in month t, and hence the time fixed effects would have absorbed mechanically the effect of EPU on Distance-to-Default and capital shortfall. However, in order to take into account that other factors may also affect Distance-to-Default and SRISK, we include in

[72] Table 4.2 reports the t-statistics of the Dickey and Fuller (1979) unit roots tests. All variables are stationary.

equations 4.4a, 4.4b, and 4.4c macroeconomic, and stock market related variables. Specifically, we use the following control variables: [73]

1. Spread ($Spread$): It is the difference between the Greek and Bud 10 year bond yield. We hypothesize that the relation should be negative (positive) with Distance-to-Default (SRISK), since higher spread values are associated with worse economic conditions, and hence higher probability of default and capital needs.
2. Term ($Term$): It is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate as an alternative proxy of the economic conditions.
3. Economic Confidence ($Conf$): It is the monthly first difference of the Greek Economic Confidence Index. We hypothesize that the relation should be positive (negative) with Distance-to-Default (SRISK), since higher spread values are associated with better economic conditions, and hence lower probability of default and capital needs.
4. Consumer Confidence ($Cons$): It is the monthly first difference of the Greek Consumer Confidence Index. We hypothesize that the relation should be positive (negative) with Distance-to-Default (SRISK), since higher spread values are associated with better economic conditions, and hence lower probability of default and capital needs.
5. Stock Market Return (Ret): It is the monthly stock return of the General Index of the Greek Stock Exchange. We hypothesize that when the conditions of the markets are positive, the Distance-to-Default (SRISK) should be higher (lower), as an increase in market capitalization of firm i is associated to an increase of its assets and less capital needs are required.

[73] The source of the control variables is Bloomberg.

6. Stock Market Volatility (Vol): It is the annualized monthly stock market volatility. The higher the market risk is, the higher (lower) the capital needs (Distance-to-Default) should be.

Panel A Table 4.5 presents summary statistics for the control variables. The average value of spread ($Spread$) is 5.30%, while the mean of term ($Term$), economic confidence ($Conf$), consumer confidence ($Cons$), stock market return (Ret), and stock market volatility (Vol) equals to 5.02%, -0.05, -0.13, -1%, and 27.26%, respectively. There is a significant variation. The minimum (maximum) values of the control variables are -0.25% (34.30%), -0.05% (31.48%), -9.20 (7.80), -11.90 (18.70), -33% (20%), and 9.99% (80.95%), respectively.

Panel B of Table 4.5 presents the correlation coefficients between the explanatory variables and the Greek Economic Policy Uncertainty Indices. For all variables (with the exception of the correlation coefficient between consumer confidence and EPU^{*}) the sign of the correlation coefficient between the control variables and the Economic Policy Uncertainty indices is the same across the indices, implying that they move in tandem. The indices are more correlated with $Spread$ (the average correlation across the three indices is equal to 0.39), $Term$ (the average correlation across the three indices is equal to 0.34), and Vol (the average correlation across the three indices is equal to 0.46). It is worth noting that the EPU^{*} index is more correlated with the $Election$ dummy variable (correlation coefficient of 0.44), since the average correlation coefficient for the other two indices is close to 0.11. Therefore the EPU^{*} index captures more the uncertainty that arises from election outcome than the other Greek Economic Policy Uncertainty Indices.

4.5.1 The Effect of Greek Economic Policy Uncertainty on DTD

The results of our baseline model for the DTD period are presented in Table 4.6. We consider ten specifications of Equation (4.4a) to examine whether policy uncertainty contains incremental information over the control variables. Overall, the results of the regressions demonstrate that policy uncertainty is negatively and statistically significantly related to the future level of DTD.

As columns 1 to 3 show, when policy uncertainty increases the DTD decreases, since the coefficients of EPU^{*}, EPU^{Har}, and EPU^{Fou} are statistically significant and equal to -1.323, -1.366, and -0.691, respectively. When all indices, however, are included in Equation 4.4a, the EPU^{Fou} does not differ from zero statistically (column 4 of Table 4.6).

Columns 5 and 6 present the relation between the control variables and the future levels of DTD. An increase (decrease) of $Spread$ ($Term$) is associated with a decrease of DTD, while an increase of Vol is related to a decrease of DTD. As it is expected, the coefficient of $Recession$ is negative and statistictically significant, and hence when economic conditions deteriorate the firms are more likely to default.

In columns 7, 8, and 9, we include the three Greek Economic Policy Uncertainty Indices and all control variables. The predictive power of policy uncertainty remains intact since the three coefficients are negative and statistically significant. However, there are some differences. The significance of EPU^{*}, EPU^{Har}, and EPU^{Fou} is at 1%, 10%, and 5%, implying that the relation between DTD and policy uncertainty is stronger when EPU^{*} is included in Equation 4.4a. This evidence is also confirmed in column 10, as the inclusion of all Greek Economic Policy

Uncertainty Indices reveals that only the EPU^* is negatively and statistically significant releated to subsequent level of DTD.

Overall, the effect of policy uncertainty remains intact after the inclusion of the other control variables. The results show that DTD is negatively related to the lagged level of policy uncertainty, which is generated by ambiguous or delayed or indecisive actions of policymakers and politicians. Furthermore, there are strong indications that the three Greek Economic Policy Uncertainty Indices do not capture the same characteristics of policy uncertainty, since (a) the average correlation between them equals to 0.69 and most importantly (b) the EPU^* contains information about the future level of DTD which, is not contained in the two others as when we included all of them in the baseline specification their coefficients do not differ from zero statistically.

4.5.2 The Effect of the Components of the Greek Economic Policy Uncertainty on DTD

The EPU^* index measures the relative frequency of articles in newspapers that discuss issues about economy (E), policy (P), and uncertainty (U). But which component is the most important? To answer this question, we estimate Equation 4.4a by including the three components of EPU^*. Table 4.7 presents the detailed results.

All components are negatively and statistical significantly related to the subsequent level of DTD. Specifically, the coefficients of economy (EPU_E^*), policy (EPU_P^*), and uncertainty (EPU_U^*) are equal to -1.692, -1.926, and -0.276, respectively. The less important component of EPU^* is EPU_U^* since it is statistically significant at 10% level of confidence. In column 4 of Table 4.7. We include simultaneously the three components. The coefficients for two components have the same signs and their significance remains intact only for EPU_E^* and EPU_P^*. Therefore, it is the uncertainty that arises from economic or political news that affects the DTD.

We repeat the same analysis with the eight components of EPU^{Har}, namely the fiscal policy uncertainty (EPU_F^{Har}), monetary policy uncertainty (EPU_M^{Har}), currency policy uncertainty (EPU_C^{Har}), banking policy uncertainty (EPU_B^{Har}), pension policy uncertainty (EPU_P^{Har}), tax policy uncertainty (EPU_T^{Har}), debt policy uncertainty (EPU_D^{Har}), and economic uncertainty (EPU_U^{Har}). Future level of DTD is onlly affected by the fiscal policy uncertainty, debt policy uncertainty, and tax policy uncertainty, since their coefficients are negative and statistically significant. Table 4.8 presents the detailed results.

Overall, we show that the economic and political uncertainty affects the DTD, and specifically the news about fiscal, debt, and tax policy causes the changes of DTD, since they are mainly related to the economic stability of the country and consequently the financial stability of the firms.

4.5.3 The Effect of Greek Economic Policy Uncertainty on DTD of Financial Sectors

As Figure 4.5 shows, there is a common pattern in evolution of Distance-to-Default per sector. However, a closer look reveals that there are some slight differences across sectors. Do these differences alter the negative relation between Economic Policy Uncertainty and Distance-to-Default? Table 4.9 answers this question.

We use the Global Industry Classification Standard to examine if policy uncertainty affects the DTD equally for all financial sectors (Energy, Materials, Industrials, Consumer Discretionary, Consumer Staples, Health Care, Financials, Information Technology, Telecommunication Services, and Utilities). For each sector, we estimate the Equation 4.4a by including only the firms that belong to the specific sectors. The average coefficient of EPU^{*} is equal to -0.58 and ranges from -1.08 (Energy) to -0.293 (Industrials), while it is only statistically significant only for 5 sectors (Consumer Discretionary, Consumer Straples, Helath Casre, Financials, and Information Technology).

We repeat (Table 4.17) the analysis for the EPU^{Har}. The average coefficient is equal to -0.33 and ranges from -0.919 (Financials) to -0.125 (Energy), and it is statistically significant only for the financial firms.

To summarize, the sector analysis confirms the main result of the chapter. There is a negative relation between Economic Policy Uncertainty and Distance-to-Default, as for all sectors and indices, the coefficient is negative. However, there are indications that only some specific sectors are affected by Economic Policy Uncertainty.

4.5.4 The Effect of Greek Economic Policy Uncertainty on Different Levels of DTD

So far, we presented evidence in favor of the view that Economic Policy Uncertainty affects the average level of Distance-to-Default negatively. Does the relation remain intact for lower or higher levels of Distance-to-Default? Alternatively, does the relation occur only for the average level of Distance-to-Default? The answer to these questions is important since if the relation holds for different levels of Distance-to-Default, the uncertainty that arises from policy will affect Distance-to-Default during periods of recession (lower levels of Distance-to-Default) and during periods of expansions (higher levels of Distance-to-Default) and its importance will be significant across the business cycle of Greece.

In order to examine the effect of policy uncertainty on Distance-to-Default for different quantiles (20^{th}, 40^{th}, 50^{th}, 60^{th}, and 80^{th}), we estimate a quantile regression of Equation 4.4a by using the qreg2 module of STATA (Machado, Parente, and Santos, 2011). Table 4.10 presents the detailed results. For all quantiles, the coefficient of EPU^{*} is negative and statistically significant. For the median quantile the coefficient is equal to -0.406, and is very close to the coefficient of our baseline model (-0.435, Table 4.6, column 7). The coefficients increase monotonically (from -0.504 to -0.278), implying that at the low (high) levels of Distance-to-Default the importance of Economic Policy Uncertainty is higher (lower). Therefore, policymakers should be extremely carefull during periods of economic instability as the uncertainty they induce into the system will affect more firm's stability. [74]

4.5.5 The Lasting Effect of Greek Economic Policy Uncertainty on DTD

How long the impact of Economic Policy Uncertainty on Distance-to-Default lasts? Is the impact short or long-lived? In order to explore the short and the long-term relation, we estimate the following regression:

$$DTD_{\mathrm{i,t}} = a_i + \beta_1 lnEPU_{t-\mathrm{p}} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-\mathrm{p}} + \varepsilon_{i,t} \qquad (4.5)$$

where $p =$ 1, 3, 6, 9, 12, 18, and 24 months. There are indications that the effect is short-lived, as after six months the coefficient of EPU^{*} is insignificant (with the exception of $p =$12). The detailed results are presented in Table 4.11.

4.5.6 The Effect of Greek Economic Policy Uncertainty on SRISK

So far, we provide convincing evidence in favor of the view that Economic Policy Uncertainty affects the Distance-to-Default of Greek firms negatively, and hence an increase of Economic policy Uncertainty deteriorates firms' financial conditions. To reinforce the main

[74] Table 4.18 presents the quantile regression results by using the EPU^{Har}. The coefficient of EPU^{Har} is negative and statistically significant for four quantiles (20^{th}, 40^{th}, 50^{th}, and 60^{th}).

conclusion of the chapter, we use the capital shortfall and surplus to examine whether an increase of Economic Policy Uncertainty also deteriorates the financial health of Greek firms.

The results of Equation 4.4b are presented in Panel A of Table 4.12. Overall, the results of the regressions demonstrate that economic policy uncertainty is positively and statistically significantly related to the future level of capital shortfall. As column 1 of Table 4.4, when policy uncertainty increases by 100%, SRISK increases by 54.4%. The effect of policy uncertainty is also economically significant as the 54.4% increase in SRISK is equivalent to 1,369.63 $(= 2{,}517{,}71 \times 0.544)$ million dollars capital shortfall per firm in case of a new crisis! Columns 2 to 4 of Panel A, presents the effect of the category-specific uncertainty indices of EPU^{*}: Economy (EPU_{E}^{*}), Policy (EPU_{P}^{*}), and Uncertainty (EPU_{U}^{*}). All kind of uncertainty affects positively the subsequent capital shortfall.

Therefore, the presented evidence suggest that the under-capitalized firms, the ones with positive SRISK, need additional capital when economic policy uncertainty increases. Does policy uncertainty, however, also affect the well-capitalized firms defined as the ones with negative SRISK values? [75] The results of our baseline model (Equation 4.4c) for the well-capitalized firms are presented in Panel B of Table 4.12. Overall, the results of the regressions show that the relationship is negative and statistically significant. The coefficient of EPU^{*} is negative (-0.832), and hence an increase of Economic Policy Uncertainty decreases the capital surplus. The relation remains intact when we include the three category-specific indices.

[75] Under this set-up, we use the absolute value of SRISK of the well-capitalized firms to estimate Equation (4.4c), since SRISK is negative for these firms.

How long the impact of Economic Policy Uncertainty SRISK lasts? Is the impact short or long-lived? In order to explore the short and the long-term relation, we estimate the following regressions:

$$lnSRISK_{\mathrm{i,t}}^{Positive} = a_i + \beta_1 lnEPU_{t-\mathrm{p}} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-\mathrm{p}} + \varepsilon_{i,t} \quad (4.6a)$$

$$lnSRISK_{\mathrm{i,t}}^{Negative} = a_i + \beta_1 lnEPU_{t-\mathrm{p}} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-\mathrm{p}} + \varepsilon_{i,t} \quad (4.6a)$$

where $p = 1, 3, 6, 9,$ and months. There are indications that the effect is short-lived for the under-capitalized firms, as after three months the coefficient of EPU^* is insignificant. Howerver, the effect lasts more than 12 months for the well-capitalized firms, since all the lagged coefficients of EPU^* are negative and statistically significant. The detailed results are presented in Panels A and B of Table 4.13. [76]

4.6 Discussion

A significant concern about the analysis we conducted is whether Economic policy Uncertainty truly captures the uncertainty that arises from policy and not the uncertainty that arises from economic conditions, since Economic Policy Uncertainty, especially in the US, is countercyclical. [77] Therefore, in order to alleviate the endogeneity concerns, we follow two approaches: first we subtract the economic conditions from the Economic Policy Uncertainty index to create a "pure" policy related index. Second, we implement an instrumental variable analysis to alleviate the possibility that the Distance-to-Default and the Economic Policy Uncertainty are jointly determined by using the nominate scores of McCarty, Poole, and Rosenthal (1997), which

[76] The corresponding analysis of SRISK by using the EPU^{Har} is presented in Table 4.19.
[77] Bloom, Floetotto, Jaimovich, Saporta-Eksten, and Terry (2018).

measure the political polarization in the United States House of Representatives and the United States Senate as instrumental variables.

Greece economy is highly linked to the economic conditions in Europe since it is a member of the eurozone. Therefore, an economic effect in Eurozone will also affect the Greek economy. In order to examine whether the Economic Policy Uncertainty is "pure" policy related index, we subtract from the Greek index the European Economic Policy Uncertainty by estimating the following equation:

$$lnEPU_t^* = a + \beta lnEPU_t^{Europe} + e_t, \tag{4.7}$$

where EPU_t^{Europe} is the European Policy Uncertainty Index. [78] Then, we use the residual from Equation 4.7, which are a "pure" measure of Greek Economic Policy Uncertainty (or Greek Idiosyncratic Economic Policy Uncertainty), to re-estimate Equation 4.4. The results are presented in Panel A of Table 4.14. The coefficient of "pure" measure of Greek Economic Policy Uncertainty, e_t, is negative and statistically significant. It equals to -0.324 and its economic magnitude is lower than that of EPU^* in Table 4.6 (-0.435), implying that some of the variability of the Greek Economic policy Uncertainty is due to the variability of the European Economic Policy Uncertainty. We reach to the same conclusion when we examine the effect of the Greek Idiosyncratic Economic Policy Uncertainty index on the sectoral Distance-to-Default (Panel B in Table 4.14). In all cases the effect is negative with an average value of the coefficients is close to -0.471. The relation is significant for five sectors (Energy, Consumer Discretionary, Health Care, Financials, and Information Technology).

[78] We obtain the data from the Baker, Bloom and Davis's (2016) website (http://www.policyuncertainty.com/europe_monthly.html). Figure 4.4 plots the European Economic Policy Uncertainty Index.

The second approach is based on instrumental variable analysis. An economic variable can be deemed as an instrument if it is related to Economic Policy Uncertainty and affects Distance-to-Default only through this relation. Therefore, in this section, we follow the work of Bonaime, Gulen, and Ion's (2018) and Gulen and Ion (2016) to implement the instrumental variable analysis. Specifically, we use the nominate scores of McCarty, Poole, and Rosenthal (1997), which measure the political polarization in the United States House of Representatives and the United States Senate. Since the United States economy is the largest and the most influential economy in the world, we believe that the political polarization in the United States will affect policy uncertainty in Europe and consequently in Greece, and hence the first condition of revelence will be satisfied.

To address the endogeneity concerns, we implement a two-stage instrumental variable approach with a time series regression in the first stage and a panel regression in the second. The first stage regression (Table 4.15) is described as:

$$lnEPU_t^* = a + \beta_1 Nominate\ Score_t^{House\ or\ Senate} + Control\ Variables_t + \varepsilon_t. \tag{4.8}$$

The β_1 coefficient for the $Nominate\ Score^{House}$ $\left(Nominate\ Score^{Senate}\right)$ is positive and equals to 405.443 (276.103). The positive and statistically significant coefficient reinfoces our conjucture that the political polarization in the United States affects the economic policy uncertainty in Greece. The F-statistic of the first (second) regression equals to 11.95 (12.80).

In the second-stage regression, we re-estimate the Equation 4.4a by using the fitted values of EPU^* $\left(\widehat{EPU^*}\right)$ from Equation 4.8 in order to capture the exogenous variation in Greek Economic Policy Uncertainty and establish that the uncertainty that arises from policy affects a firm's Distance-to-Default. In Table 4.16, we present the results of the second-stage-regression. For both nominates scores (House and Senate) the coefficients are negative and differs from zero statistically. Therefore, the instrumental variable analysis reinforces the view that it is the economic policy uncertainty in Greece that affects the Distance-to-Default and not the general economic conditions in Greece.

4.7 Conclusions

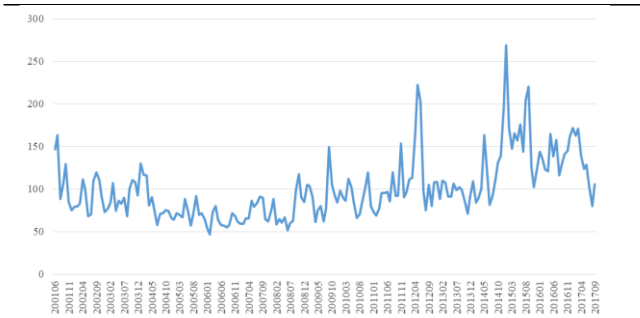
Policy uncertainty has attracted the interest of academics and policymakers. The recent Greek debt crisis revealed that unclear policy decisions affect the real economy. In this chapter, we investigate the effect of Greek Economic Policy Uncertainty on Distance-to-Default and capital shortfall of Greek firms. We construct a Greek Economic Policy Uncertainty Index and compare it with the other two Greek Economic Policy Uncertainty indices. We provide evidence in favor of the view that policy uncertainty affects negatively (positively) the Distance-to-Default (Capital Shortfall) of Greek firms. We also demonstrate that the index of policy uncertainty we constructed is better in forecasting the stability of the Greek firms than the other two. Finally, in order to alleviate any concerns about the causal relation, we implement an instrumental variable analysis and show that it is the uncertainty that arises from policy that affects the Distance-to-Default negatively.

4.8 Figures

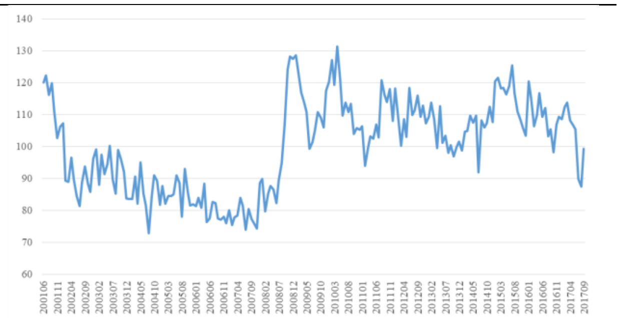
Figure 4.1. Greek Economic Policy Uncertainty Indices (EPU^*)

Panel A plots the monthly Greek Economic Policy Uncertainty Index (EPU^*), while Panels B, C, and D, plots the Economic (EPU_E^*), Policy (EPU_P^*), and Uncertainty (EPU_U^*) category-specific indices. The sample period is from June 2001 to September 2017.

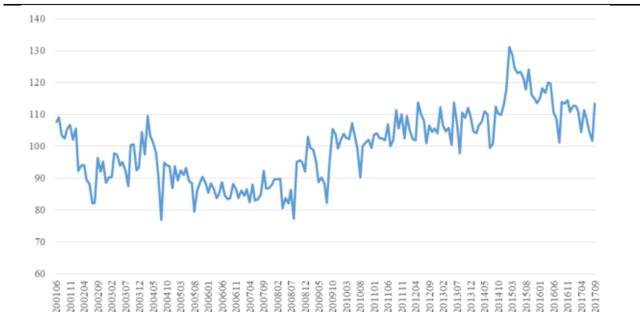
Panel A. Overall Economic Policy Uncertainty Index



Panel B. Economic Index



Panel C. Policy Index



Panel D. Uncertainty Index

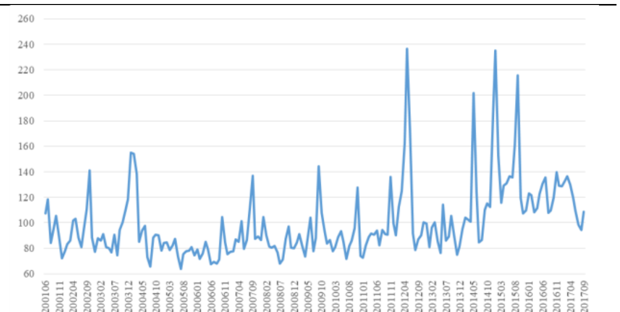
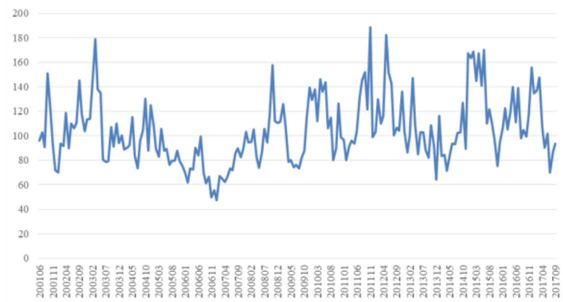


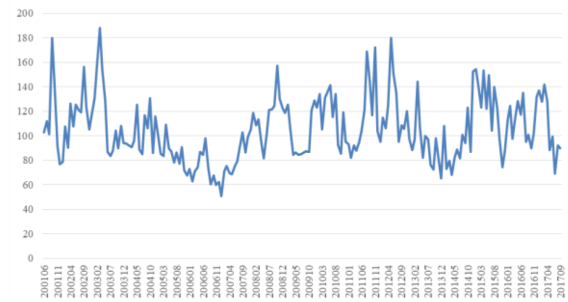
Figure 4.2. Greek Economic Policy Uncertainty Indices (EPU^{Har})

Panel A plots the monthly Greek Economic Policy Uncertainty Index (EPU^{Har}), while Panels B, C, D, E, F, G, H, and we plot the economic uncertainty (EPU_U^{Har}), currency policy uncertainty (EPU_C^{Har}), banking policy uncertainty (EPU_B^{Har}), fiscal policy uncertainty (EPU_F^{Har}), debt policy uncertainty (EPU_D^{Har}), tax policy uncertainty (EPU_T^{Har}), monetary policy uncertainty (EPU_M^{Har}), and pension policy uncertainty (EPU_P^{Har}). The sample period is from June 2001 to September 2017.

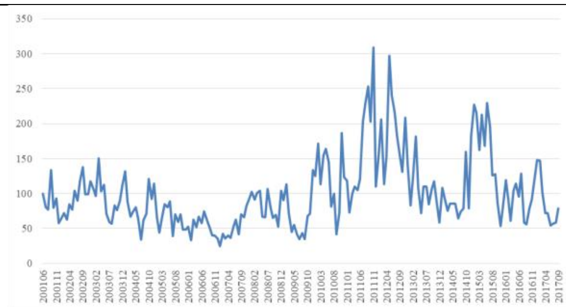
Panel A. Economic Policy Uncertainty



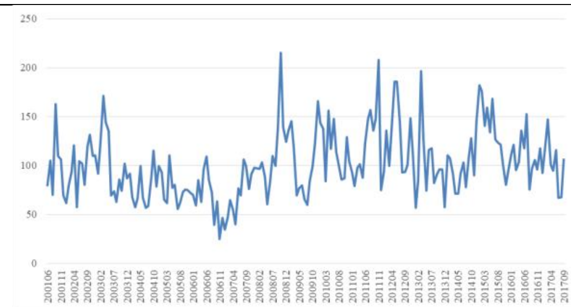
Panel B. Economic Uncertainty



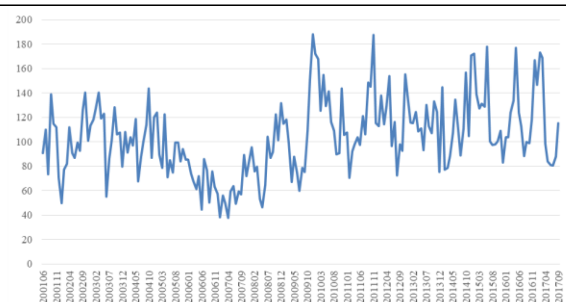
Panel C. Currency Policy Uncertainty



Panel D. Banking Policy Uncertainty



Panel E. Fiscal Policy Uncertainty



Panel F. Debt Policy Uncertainty

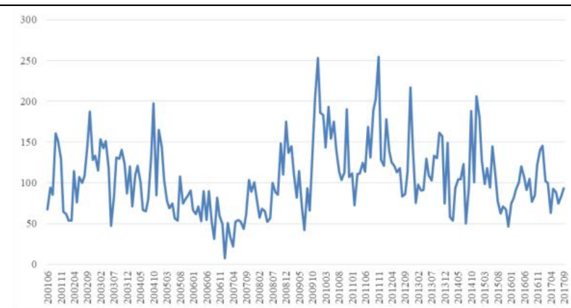
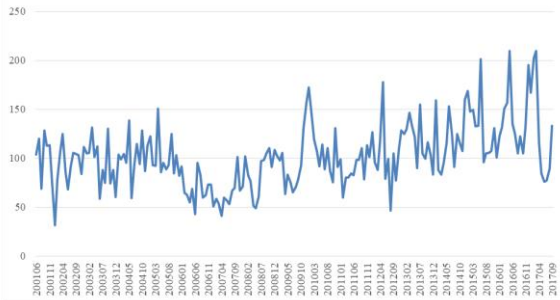
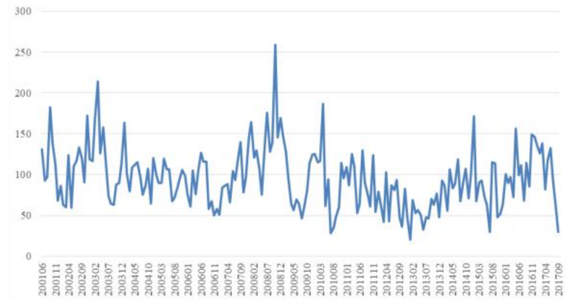


Figure 4.2 (cont.) Greek Economic Policy Uncertainty Indices (EPU^{Har})

Panel G. Tax Policy Uncertainty



Panel H. Monetary Policy Uncertainty



Panel I. Pension Policy Uncertainty

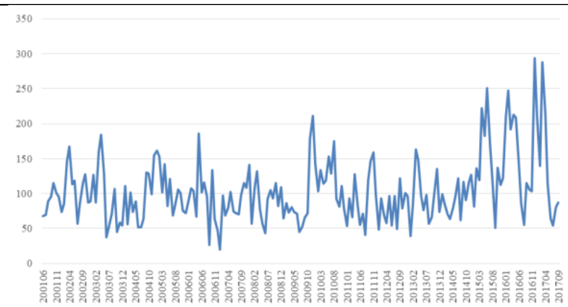


Figure 4.3. Greek Economic Policy Uncertainty Index (EPU^{Fou})

The figure plots the monthly Greek Economic Policy Uncertainty Index (EPU^{Fou}) of Fountas, Karatasi and Tzika (2018). The sample period is from June 2001 to September 2017.

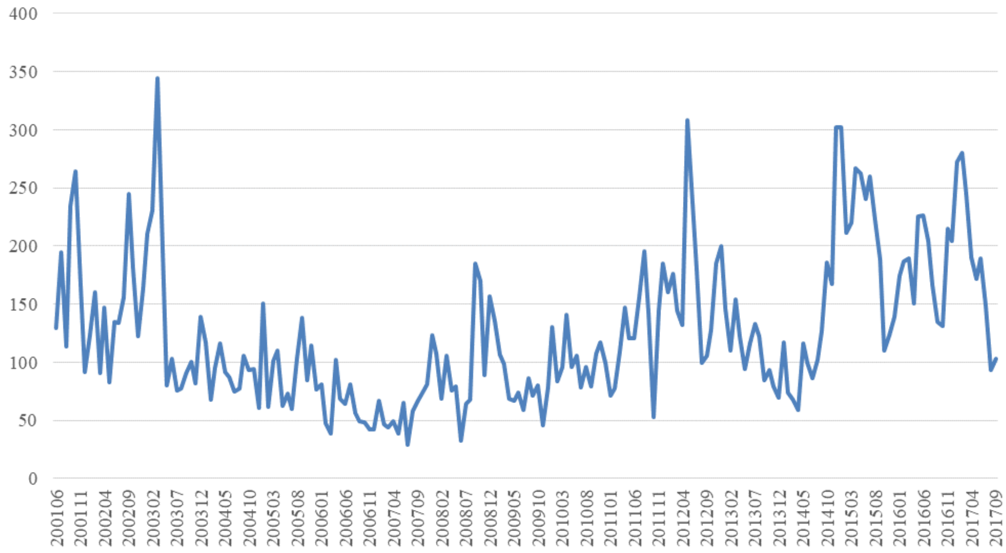


Figure 4.4. European Economic Policy Uncertainty Index

The figure plots the European Economic Policy Uncertainty Index. The European index of Economic Policy Uncertainty is an equally weighted across 10 European newspapers Each country-specific index measures the relative frequency of articles in newspapers that discuss issues about the economy (E), policy (P), and uncertainty (U). The sample period is from June 2001 to September 2017.

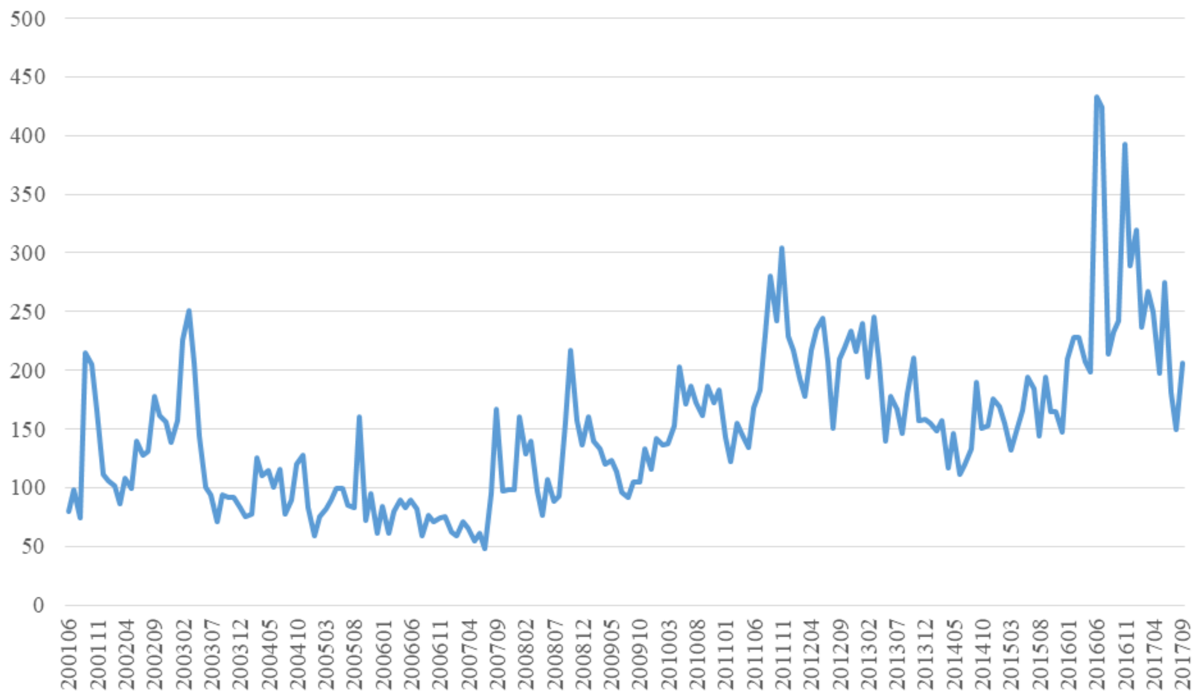
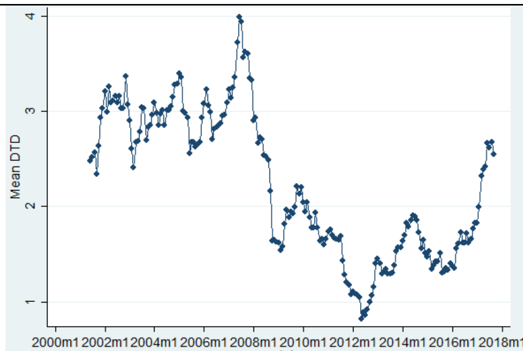


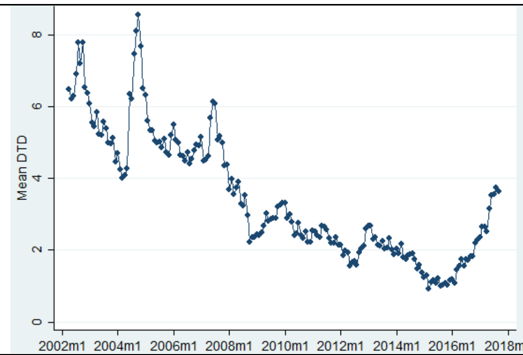
Figure 4.5. Average Distance-to-Default

Panel A plots the monthly overall Distance-to-Default. The Distance-to-Default is defined as: $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities + \ \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year. Panels B to K of Figure 5 present the average Distance-to-Default per month of 10 industries (Energy, Meterial. Industrial, Consumer Discretionary, Consumer Staples, Helath Care, Financials, Information Technology, Telecommunication Services, and Utilities). The sample period is from June 2001 to September 2017.

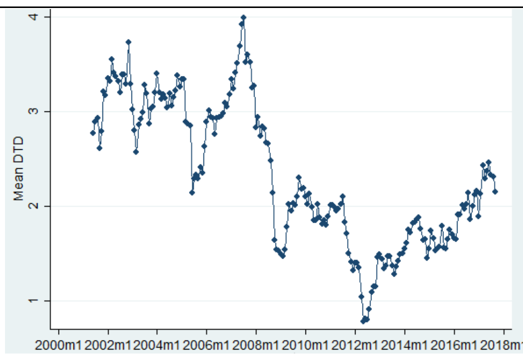
Panel A. Overall Distance-to-Default



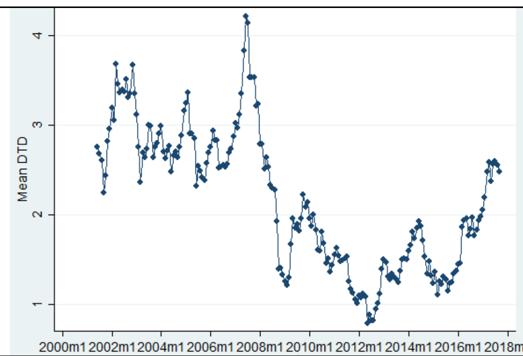
Panel B. Energy Distance-to-Default



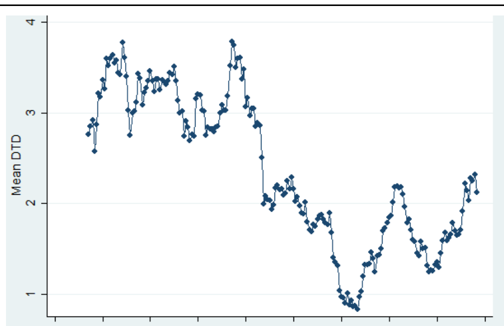
Panel C. Material Distance-to-Default



Panel D. Industrial Distance-to-Default



Panel E. Consumer Discretionary Distance-to-Default



Panel F. Consumer Staples Distance-to-Default

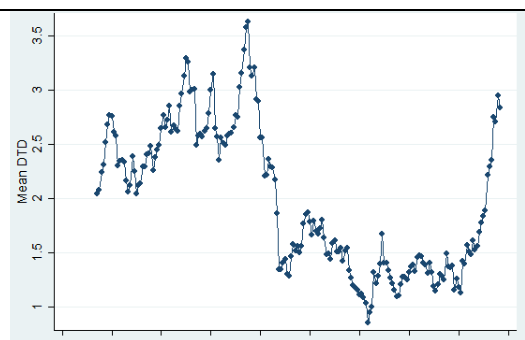
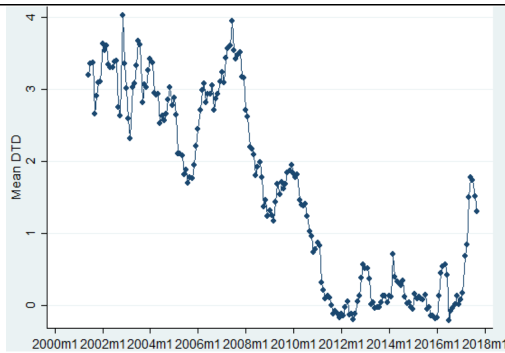
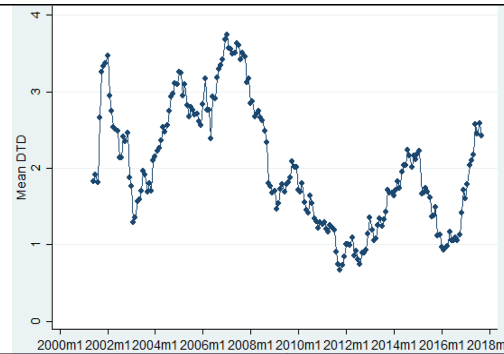


Figure 4.5 (cont.). Average Distance-to-Default

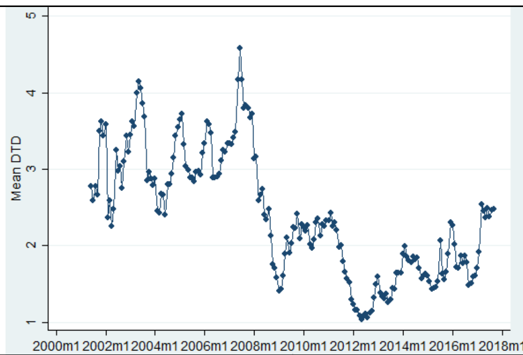
Panel G. Health Care Distance-to-Default



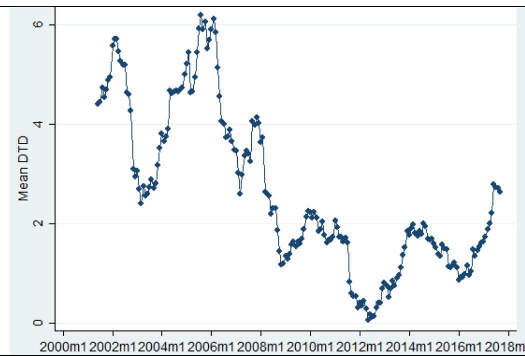
Panel H. Financials Distance-to-Default



Panel I. Information Technology Distance-to-Default



Panel J. Telecommunication Services Distance-to-Default



Panel K. Utilities Distance-to-Default

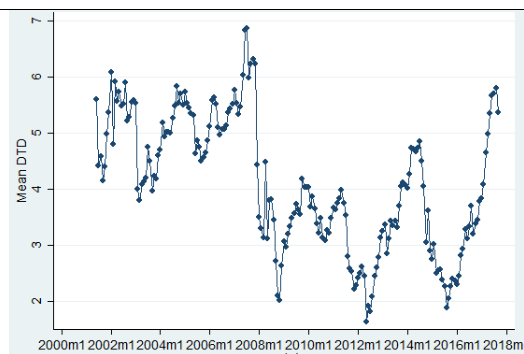
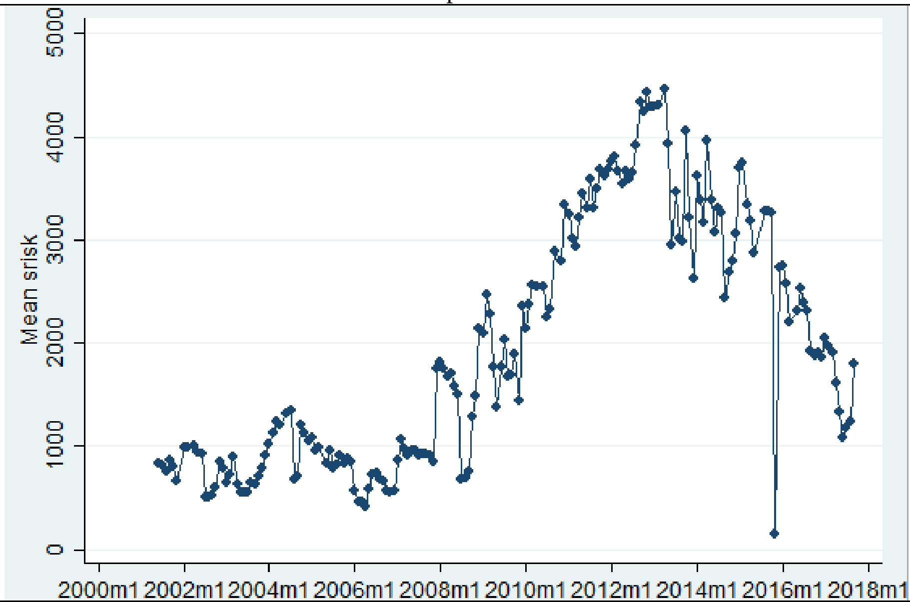


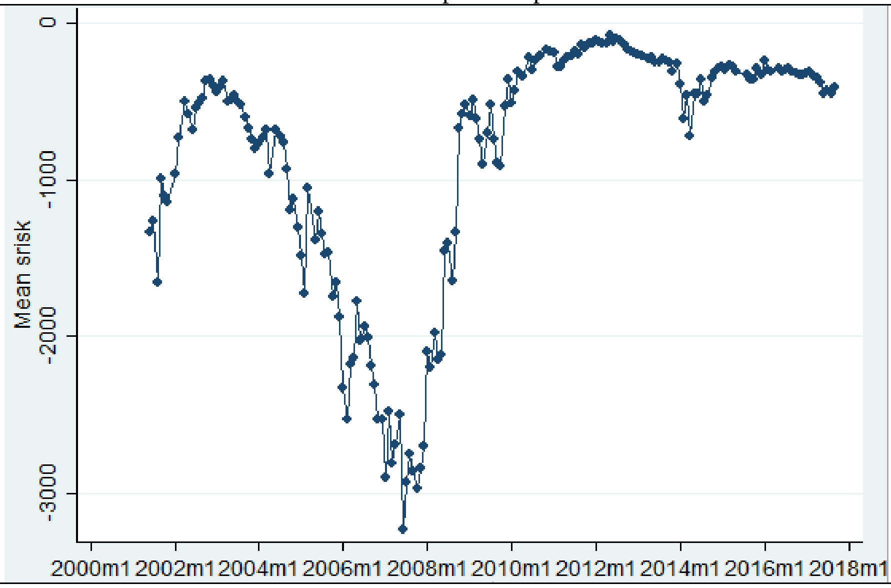
Figure 4.6. Average Capital Shortfall

Panel A (B) plots the average SRISK with positive (negative) values. SRISK is defined as $\mathrm{SRISK}_{i,t} = \mathrm{kDebt}_{i,t} - (1-\mathrm{k})(1-\mathrm{LRMES}_{i,t})\mathrm{Equity}_{i,t}$, where k is the prudential capital ratio which is equal to 5.5% for European firms and 8% for non-European ones, $\mathrm{Debt}_{i,t}$ is the book value of debt, $\mathrm{Equity}_{i,t}$ is the current market capitalization, $\mathrm{LRMES}_{i,t}$ is the Long-Run Marginal Expected Shortfall which is equal to $1 - e^{(ln(1-d)beta_{i,t})}$, $beta_{i,t}$ is the beta coefficient with respect to the MSCI World Index, which is estimated by using a Dynamic Conditional Beta model (Engle, 2002, 2009), and d is a threshold of a six month market decline (or systemic crisis event) and its default value is set to -40%. The sample period is from June 2001 to September 2017.

Panel A. Capital Shortfall



Panel B. Capital Surplus



4.9 Tables

Table 4.1. Terms for the Greek Economic Policy Uncertainty Index

Greek term	English term
A. Economy terms	
Οικονομία	Economy
Οικονομικός	Economic
B. Policy terms	
Κυβέρνηση	Government
Κεντρική Τράπεζα Ελλάδος (ΤτΕ)	Bank of Greece (BoG)
Ευρωπαϊκή Κεντρική Τράπεζα (ΕΚΤ)	European Central Bank (ECB)
Πολιτική	Politics
Υπουργός	Minister
C. Uncertainty terms	
Αβεβαιότητα	Uncertainty
Ανησυχία	Concern
Αστάθεια	Instability
Εκλογές	Elections

Table 4.2. Descriptive Statistics of the Greek Economic Policy Uncertainty Indices

The table presents the descriptive statistics of the overall Greek Economic Policy Uncertainty Indices and the category-specific Indices. Panel A presents the EPU^{*} and the three category-specific indices about Economy (EPU_E^*), Policy (EPU_P^*), and Uncertainty (EPU_U^*). Panel B presents the Hardouvelis, Karalas, Karanastasis, and Samartzis (2018) Economic Policy Uncertainty index (EPU^{Har}) and the category-specific indices: economic uncertainty (EPU_U^{Har}), currency policy uncertainty (EPU_C^{Har}), banking policy uncertainty (EPU_B^{Har}), fiscal policy uncertainty (EPU_F^{Har}), debt policy uncertainty (EPU_D^{Har}), tax policy uncertainty (EPU_T^{Har}), monetary policy uncertainty (EPU_M^{Har}), and pension policy uncertainty (EPU_P^{Har}). Panel C presents the Fountas, Karatasi and Tzika (2018) Economic Policy Uncertainty Index (EPU^{Fou}). The sample period is from June 2001 to September 2017.

	Panel A. EPU^{*}				Panel B. EPU^{Har}									Panel C. EPU^{Fou}
	EPU^{*}	EPU_E^*	EPU_P^*	EPU_U^*	EPU^{Har}	EPU_U^{Har}	EPU_C^{Har}	EPU_B^{Har}	EPU_F^{Har}	EPU_D^{Har}	EPU_T^{Har}	EPU_M^{Har}	EPU_P^{Har}	EPU
mean	100.00	100.00	100.00	100.00	103.88	104.90	99.53	101.08	103.87	105.82	102.34	95.22	104.02	125.52
sd	36.41	14.35	11.24	28.49	27.20	26.00	51.35	34.01	31.00	43.34	32.62	36.96	46.83	62.88
min	46.41	72.75	76.91	63.99	47.18	50.52	24.59	24.63	37.91	7.26	31.60	20.46	19.70	28.63
max	268.99	131.34	131.07	236.39	188.70	188.32	309.32	215.50	187.91	254.55	210.10	259.20	293.46	344.23
skewness	1.46	-0.05	0.19	2.12	0.72	0.66	1.43	0.71	0.39	0.73	0.78	0.79	1.34	1.00
kurtosis	5.74	1.95	2.42	9.01	3.27	3.21	5.27	3.56	2.98	3.60	4.05	4.48	5.39	3.59
p1	51.43	74.00	77.31	65.61	49.70	60.08	33.03	34.28	38.15	22.00	40.89	28.21	26.17	32.79
p25	74.25	87.67	90.00	81.51	84.79	86.47	65.31	75.75	83.29	74.36	81.05	66.45	71.27	78.21
p50	90.89	102.56	101.00	90.42	100.28	100.16	85.21	96.63	100.97	100.87	99.65	92.52	96.17	108.23
p75	114.75	110.72	107.78	109.96	116.63	122.64	117.91	120.85	122.94	129.94	120.94	117.04	121.68	160.11
p99	222.62	128.54	128.76	235.11	182.11	179.92	297.13	208.08	187.64	252.91	209.67	213.90	287.57	308.32
N	196.00	196.00	196.00	196.00	196.00	196.00	196.00	196.00	196.00	196.00	196.00	196.00	196.00	196.00
Dickey-Fuller Stat.	-5.359	-3.647	-3.549	-6.375	-6.705	-6.726	-5.699	-7.489	-6.906	-7.050	-7.546	-8.286	-7.949	-5.402

Table 4.3. Correlation Analysis of the Greek Economic Policy Uncertainty Indices

The table presents the correlation between the Greek Economic Policy Uncertainty Indices and the category-specific Indices. Specifically the EPU^* and the three category-specific indices about Economy (EPU_E^*), Policy (EPU_P^*), and Uncertainty (EPU_U^*). The Hardouvelis, Karalas, Karanastasis, and Samartzis (2018) Economic Policy Uncertainty index (EPU^{Har}) and the category-specific indices: the economic uncertainty (EPU_U^{Har}), currency policy uncertainty (EPU_C^{Har}), banking policy uncertainty (EPU_B^{Har}), fiscal policy uncertainty (EPU_F^{Har}), debt policy uncertainty (EPU_D^{Har}), tax policy uncertainty (EPU_T^{Har}), monetary policy uncertainty (EPU_M^{Har}), and pension policy uncertainty (EPU_P^{Har}). The Fountas, Karatasi and Tzika (2018) Economic Policy Uncertainty Index (EPU^{Fou}). The sample period is from June 2001 to September 2017.

	EPU^*	EPU_E^*	EPU_P^*	EPU_U^*	EPU^{Har}	EPU_U^{Har}	EPU_C^{Har}	EPU_B^{Har}	EPU_F^{Har}	EPU_D^{Har}	EPU_T^{Har}	EPU_M^{Har}	EPU_P^{Har}	EPU^{Fou}
EPU^*	1.00													
EPU_E^*	0.57	1.00												
EPU_P^*	0.74	0.71	1.00											
EPU_U^*	0.89	0.32	0.59	1.00										
EPU^{Har}	0.60	0.56	0.50	0.44	1.00									
EPU_U^{Har}	0.52	0.49	0.34	0.38	0.94	1.00								
EPU_C^{Har}	0.55	0.52	0.52	0.46	0.81	0.71	1.00							
EPU_B^{Har}	0.55	0.59	0.48	0.41	0.90	0.84	0.75	1.00						
EPU_F^{Har}	0.53	0.57	0.54	0.37	0.81	0.69	0.66	0.70	1.00					
EPU_D^{Har}	0.27	0.45	0.31	0.17	0.69	0.59	0.61	0.63	0.83	1.00				
EPU_T^{Har}	0.59	0.47	0.57	0.42	0.66	0.55	0.44	0.54	0.85	0.47	1.00			
EPU_M^{Har}	0.12	0.04	-0.10	0.05	0.38	0.43	0.09	0.39	0.22	0.24	0.16	1.00		
EPU_P^{Har}	0.28	0.24	0.34	0.17	0.50	0.43	0.26	0.41	0.52	0.31	0.59	0.15	1.00	
EPU^{Fou}	0.73	0.49	0.59	0.57	0.73	0.69	0.58	0.61	0.58	0.36	0.60	0.25	0.38	1.00

Table 4.4. Descriptive statistics of the Dependent Variables and Correlation with the Economic Policy Uncertainty Indices

Panel A presents the descriptive statistics of the Distance-to-Default, the positive (capital shortfall) and the negative (capital surplus) SRISK. The Distance-to-Default is defined as: $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities + \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year. SRISK is defined as$\mathrm{SRISK}_{i,t} = \mathrm{kDebt}_{i,t} - (1-\mathrm{k})(1-\mathrm{LRMES}_{i,t})\mathrm{Equity}_{i,t}$, where k is the prudential capital ratio which is equal to 5.5% for European firms and 8% for non-European ones, $\mathrm{Debt}_{i,t}$ is the book value of debt, $\mathrm{Equity}_{i,t}$ is the current market capitalization, $\mathrm{LRMES}_{i,t}$ is the Long-Run Marginal Expected Shortfall which is equal to $1 - e^{(ln(1-d)beta_{i,t})}$, $beta_{i,t}$ is the beta coefficient with respect to the MSCI World Index, which is estimated by using a Dynamic Conditional Beta model (Engle, 2002, 2009), and d is a threshold of a six month market decline (or systemic crisis event) and its default value is set to -40%. Panel B presents the correlation between Distance-to-Default, Capital Shortfall, Capital Surplus and the Greek Economic Policy Uncertainty Index. Specifically the EPU^* and the three category-specific indices about Economy (EPU_E^*), Policy (EPU_P^*), and Uncertainty (EPU_U^*). The Hardouvelis, Karalas, Karanastasis, and Samartzis (2018) Economic Policy Uncertainty index (EPU^{Har}) and the category-specific indices: economic uncertainty (EPU_U^{Har}), currency policy uncertainty (EPU_C^{Har}), banking policy uncertainty (EPU_B^{Har}), fiscal policy uncertainty (EPU_F^{Har}), debt policy uncertainty (EPU_D^{Har}), tax policy uncertainty (EPU_T^{Har}), monetary policy uncertainty (EPU_M^{Har}), and pension policy uncertainty (EPU_P^{Har}). The Fountas, Karatasi and Tzika (2018) Economic Policy Uncertainty Index (EPU^{Fou}). The sample period is from June 2001 to September 2017.

Panel A. Descriptive Statistics

	Mean	sd	min	max	skewness	kurtosis	p1	p25	p50	p75	p99	N	DF - stat
DTD	2.35	2.26	-1.33	11.05	1.24	5.17	-1.33	0.84	1.95	3.41	11.05	47440	-8.99
Capital Shortfall	2517.71	2625.84	3.78	9967.58	1.26	3.90	16.60	418.95	1552.18	3845.57	9967.58	763	-8.90
Capital Surplus	-1158.76	1688.20	-7915.76	-0.94	-2.35	8.32	-7915.76	-1311.54	-422.67	-183.30	-21.99	1054	-5.32

Panel B. Correlation Analysis

	EPU^*	EPU_E^*	EPU_P^*	EPU_U^*	EPU^{Har}	EPU_U^{Har}	EPU_C^{Har}	EPU_B^{Har}	EPU_F^{Har}	EPU_D^{Har}	EPU_T^{Har}	EPU_M^{Har}	EPU_P^{Har}	EPU^{Fou}
DTD	-0.17	-0.26	-0.23	-0.11	-0.15	-0.11	-0.19	-0.17	-0.16	-0.13	-0.14	0.06	-0.04	-0.13
Capital Shortfall	0.11	0.17	0.22	0.09	0.09	0.03	0.23	0.09	0.11	0.09	0.07	-0.15	-0.04	0.06
Capital Surplus	-0.27	-0.37	-0.36	-0.16	-0.31	-0.26	-0.28	-0.25	-0.36	-0.30	-0.31	0.00	-0.09	-0.29

Table 4.5. Descriptive Statistics of the Control Variables and Correlation Analysis with the Economic Policy Uncertainty Indices

Panel A presents the descriptive statistics of the control variables. Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1in month t if during that quarter the yearly gross domestic product decreased. Panel B presents the correlation between the Economic Policy Uncertainty Indices and the control variables. EPU^{Pap} is the Economic Policy Uncertainty we constructed. EPU^{Har} is the Economic Policy Uncertainty Index of Hardouvelis, Karalas, Karanastasis, and Samartzis (2018) EPU^{Fou} is Economic Policy Uncertainty of Fountas, Karatasi and Tzika (2018). The sample period is from June 2001 to September 2017.

	$Spread$	$Term$	$Conf$	$Cons$	Ret	Vol	$Election$	$Recession$
Panel A. Descriptive Statistics								
mean	5.30	5.02	-0.05	-0.13	-0.01	27.26	0.10	0.43
sd	6.92	5.68	2.34	4.42	0.09	13.73	0.30	0.50
min	0.25	-0.05	-9.20	-11.90	-0.33	9.99	0.00	0.00
max	34.30	31.48	7.80	18.70	0.20	80.95	1.00	1.00
skewness	1.95	2.52	-0.33	0.28	-0.67	1.21	2.72	0.29
kurtosis	7.22	10.03	4.60	4.59	3.94	4.56	8.42	1.08
p1	-0.18	0.06	-8.00	-10.80	-0.29	10.10	0.00	0.00
p25	0.32	1.57	-1.40	-3.05	-0.05	16.41	0.00	0.00
p50	2.01	3.40	0.00	0.00	0.00	24.34	0.00	0.00
p75	8.13	6.32	1.40	2.55	0.05	34.81	0.00	1.00
p99	32.50	29.67	6.00	13.80	0.20	76.26	1.00	1.00
N	196	196	196	196	196	196	196	196
Panel B. Correlation with the Economic policy Uncertainty Indices								
EPU^{Pap}	0.41	0.34	-0.05	0.04	-0.16	0.44	0.44	0.19
EPU^{Har}	0.39	0.37	-0.24	-0.13	-0.35	0.55	0.07	0.21
EPU^{Fou}	0.36	0.31	-0.22	-0.09	-0.21	0.39	0.15	0.12

Table 4.6. Economic Policy Uncertainty and Distance-to-Default

The table presents the results of the baseline model: $DTD_{i,t} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$, where DTD is the Distance-to-Default of firm i in month t: $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities + \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year $lnEPU$ is the natural logarithm of the different Greek Economic Policy Uncertainty Indices: EPU^* is the Economic Policy Uncertainty we constructed. EPU^{Har} is the Economic Policy Uncertainty Index of Hardouvelis, Karalas, Karanastasis, and Samartzis (2018), EPU^{Fou} is Economic Policy Uncertainty of Fountas, Karatasi and Tzika (2018). $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	1	2	3	4	5	6	7	8	9	10
$lnEPU^*$	-1.323***			-0.961***			-0.435***			-0.419***
$lnEPU^{Har}$		-1.366***		-0.635***				-0.250*		0.057
$lnEPU^{Fou}$			-0.691***	-0.051					-0.169**	-0.04
$Spread$					-0.242***		-0.175***	-0.202***	-0.188***	-0.173***
$Term$					0.207***		0.150***	0.177***	0.164***	0.148***
$Conf$					-0.016		-0.014	-0.017	-0.018	-0.014
$Cons$					0.008		0.004	0.002	0.003	0.004
Ret					-0.219		-0.258	-0.267	-0.222	-0.243
Vol					-0.022***		-0.014***	-0.015***	-0.016***	-0.014***
$Election$						-0.058	0.139	0.016	0.028	0.137
$Recession$						-1.227***	-0.517***	-0.474***	-0.500***	-0.521***
obs	47042	47042	47042	47042	46938	47439	46938	46938	46938	46938
Firms	378	378	378	378	378	378	378	378	378	378
Time	195	195	195	195	195	196	195	195	195	195
Adj-Rsq (Within)	6.64%	4.98%	4.56%	7.47%	20.46%	13.35%	22.10%	21.73%	21.83%	22.11%

Table 4.7. Category-Specific Economic Policy Uncertainty Indices and Distance-to-Default

The table presents the results of the baseline model by using the category-specific Economic Policy Uncertainty Indices: $DTD_{\text{i,t}} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$, where DTD is the Distance-to-Default of firm i in month t: $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities + \ \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year $lnEPU$ is the natural logarithm of the three Greek Economic Policy Uncertainty Indices of EPU^*: Economy (EPU_E^*), Policy (EPU_P^*), and Uncertainty (EPU_U^*) . $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, We winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	1	2	3	4
$ln\text{EPU}_E^*$	-1.692***			-1.190***
lnEPU_P^*		-1.926***		-1.229***
$ln\text{EPU}_U^*$			-0.276*	0.176
$Spread$	-0.192***	-0.155***	-0.191***	-0.172***
$Term$	0.169***	0.132***	0.164***	0.150***
$Conf$	-0.018	-0.013	-0.012	-0.017
$Cons$	0	0.004	0.004	0.001
Ret	0.028	0.016	-0.211	0.127
Vol	-0.007**	-0.011***	-0.016***	-0.007**
$Election$	-0.05	0.02	0.11	-0.083
$Recession$	-0.355***	-0.521***	-0.493***	-0.404***
obs	46938	46938	46938	46938
Firms	378	378	378	378
Time	195	195	195	195
Adj-Rsq (Within)	22.81%	22.58%	21.73%	22.99%

Table 4.8. Category-Specific Economic Policy Uncertainty Indices (Hardouvelis, Karalas, Karanastasis, and Samartzis, 2018) and Distance-to-Default

The table presents the results of the baseline model by using the category-specific Economic Policy Uncertainty Indices: $DTD_{\text{i,t}} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$, where DTD is the Distance-to-Default of firm i in month t: $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities +\ \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year $lnEPU$ is the natural logarithm of the eight Greek Economic Policy Uncertainty Indices of EPU^{Har}: economic uncertainty (EPU_U^{Har}), currency policy uncertainty (EPU_C^{Har}), banking policy uncertainty (EPU_B^{Har}), fiscal policy uncertainty (EPU_F^{Har}), debt policy uncertainty (EPU_D^{Har}), tax policy uncertainty (EPU_T^{Har}), monetary policy uncertainty (EPU_M^{Har}), and pension policy uncertainty (EPU_P^{Har}). $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. . *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	1	2	3	4	5	6	7	8
$lnEPU_U^{Har}$	-0.038							
$lnEPU_B^{Har}$		-0.126						
$lnEPU_C^{Har}$			-0.051					
$lnEPU_F^{Har}$				-0.452***				
$lnEPU_D^{Har}$					-0.174**			
$lnEPU_T^{Har}$						-0.482***		
$lnEPU_M^{Har}$							0.074	
$lnEPU_P^{Har}$								-0.046
$Spread$	-0.202***	-0.201***	-0.200***	-0.203***	-0.212***	-0.184***	-0.200***	-0.201***
$Term$	0.175***	0.174***	0.175***	0.183***	0.190***	0.157***	0.174***	0.173***
$Conf$	-0.014	-0.014	-0.014	-0.018	-0.018	-0.021	-0.012	-0.014
$Cons$	0.003	0.002	0.002	0.002	0.004	0.003	0.003	0.002
Ret	-0.153	-0.206	-0.17	-0.333	-0.228	-0.254	-0.075	-0.131
Vol	-0.017***	-0.015***	-0.016***	-0.014***	-0.015***	-0.014***	-0.017***	-0.017***
$Election$	0.031	0.027	0.028	-0.026	-0.008	-0.01	0.039	0.025
$Recession$	-0.463***	-0.463***	-0.469***	-0.473***	-0.449***	-0.501***	-0.454***	-0.467***
obs	46938	46938	46938	46938	46938	46938	46938	46938
Firms	378	378	378	378	378	378	378	378
Time	195	195	195	195	195	195	195	195
Adj-Rsq (Within)	21.62%	21.67%	21.63%	22.27%	21.83%	22.43%	21.65%	21.64%

Table 4.9. Economic Policy Uncertainty and Distance-to-Default: Sectoral Analysis

The table presents the results of the baseline model for 10 industries ((Energy, Meterial. Industrial, Consumer Discretionary, Consumer Staples, Helath Care, Financials, Information Technology, Telecommunication Services, and Utilities)): $DTD_{\mathrm{i,t}} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$, where DTD is the Distance-to-Default of firm i in month t: $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities + \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year. $lnEPU$ is the natural logarithm of the EPU^* which we constructed. $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Sectors									
	Energy	Materials	Industrials	Consumer Discretionary	Consumer Staples	Health Care	Financials	Information Technology	Telecommunication Services	Utilities
	1	2	3	4	5	6	7	8	9	10
$lnEPU^*$	-1.08	-0.303	-0.293	-0.468***	-0.411**	-0.717***	-0.953**	-0.600*	-0.562	-0.405
$Spread$	-0.356**	-0.141**	-0.171***	-0.219***	-0.07	-0.379***	-0.160**	-0.168*	-0.409	-0.056
$Term$	0.379*	0.122*	0.152**	0.183***	0.049	0.354***	0.128	0.149	0.39	0.027
$Conf$	-0.071	-0.002	0.001	-0.027**	-0.009	-0.021	-0.050**	-0.005	-0.057	-0.008
$Cons$	0.015	0	0	0.006	0.005	0.007	0.014*	-0.006	0.001	0.021**
Ret	-0.732	-0.275	-0.268	-0.508*	-0.059	-0.193	-0.399	0.158	-0.481	0.279
Vol	-0.038**	-0.014***	-0.017***	-0.012***	-0.014***	-0.012	-0.010*	-0.009*	-0.032**	-0.032***
$Election$	-0.135	0.098	0.089	0.118	0.2	0.15	0.343**	0.088	-0.273	0.089
$Recession$	-0.633*	-0.465**	-0.553***	-0.455***	-0.517***	-0.520*	-0.549***	-0.415**	-1.477***	-0.826*
obs	668	6115	9269	10643	5202	1385	4373	2928	630	681
Firms	4	35	56	72	33	8	32	18	4	4
Time	184	195	195	195	195	195	195	195	195	195
Adj-Rsq (Within)	52.15%	19.66%	26.49%	23.86%	18.81%	52.78%	20.81%	18.66%	57.31%	39.41%

Table 4.10. Economic Policy Uncertainty and Distance-to-Default: Quantile Regression Analysis

The tables examines whether the relation between Economic Policy Uncertainty and Distance-to-Default remains intact for lower and higher levels of Distance-to-Default. For five quantiles (20th, 40th, 50th, 60th, and 80th) the table presents the estimation results of a a quantile regression of Equation 2.4a ($DTD_{i,t} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t},$) by using the qreg2 module of STATA (Machado, Parente, and Santos, 2011). where DTD is the Distance-to-Default of firm i in month t: $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities + \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year. $lnEPU$ is the natural logarithm of the EPU^* which we constructed. $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Quantiles				
	20	40	50	60	80
$lnEPU^*$	-0.504***	-0.456***	-0.406***	-0.355***	-0.278**
$Spread$	-0.188***	-0.128***	-0.098***	-0.067**	-0.003
$Term$	0.167***	0.099***	0.070**	0.037	-0.034
$Conf$	-0.021***	-0.003	0.005	0.008	0.002
$Cons$	0.007***	0	-0.002	-0.003	-0.005**
Ret	-0.371***	-0.001	0.087	0.119	-0.063
Vol	-0.006***	-0.009***	-0.010***	-0.012***	-0.020***
$Election$	0.158***	0.236***	0.254***	0.273***	0.186***
$Recession$	-0.251***	-0.444***	-0.540***	-0.667***	-1.006***
Constant	3.273***	4.049***	4.297***	4.659***	6.039***
obs	46939	46939	46939	46939	46939
Adj-Rsq	8.65%	9.21%	9.27%	9.20%	8.75%

Table 4.11. Economic Policy Uncertainty and Distance-to-Default: The Lasting Effect

The table presents the results of the baseline model: $DTD_{\mathrm{i,t}} = a_i + \beta_1 lnEPU_{t-\mathrm{p}} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-\mathrm{p}} + \varepsilon_{i,t}$, where p = 1, 3,6, 9, 12, 18, and 24. DTD is the Distance-to-Default of firm i in month t: $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities +\ \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year. $lnEPU$ is the natural logarithm of the Greek Economic Policy Uncertainty Index of EPU^*. $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Lags						
	I	3	6	9	12	18	24
$lnEPU^*$	-0.435***	-0.296**	-0.294**	-0.063	-0.261*	-0.21	-0.099
$Spread$	-0.175***	-0.177***	-0.164***	-0.171***	-0.188***	-0.212***	-0.159***
$Term$	0.150***	0.151***	0.136***	0.149***	0.176***	0.208***	0.140***
$Conf$	-0.014	-0.023	-0.026*	-0.039***	-0.017	-0.018	-0.046***
$Cons$	0.004	0.005	0.012	0.014*	0.008	0	0.018**
Ret	-0.258	-0.092	-0.125	-0.117	-0.17	-0.389	-0.316
Vol	-0.014***	-0.015***	-0.012***	-0.012***	-0.005	-0.008**	-0.010**
$Election$	0.139	0.038	0.08	0.086	-0.032	0.062	0.014
$Recession$	-0.517***	-0.485***	-0.567***	-0.639***	-0.808***	-0.898***	-1.006***
obs	46938	46169	45033	43932	42846	40724	38669
Firms	378	372	364	358	354	341	338
Time	195	193	190	187	184	178	172
Adj-Rsq (Within)	22.10%	21.84%	20.83%	20.05%	19.84%	20.46%	20.53%

Table 4.12. Economic Policy Uncertainty Capital Shortfall / Surplus

The table presents the results of the baseline model for Capital Shortfall (Panel A) and Capital Surplus (Panel B): $lnSRISK_{i,t}^{Positive} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$ and $lnSRISK_{i,t}^{Negative} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_2 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$, where $lnSRISK$ is the natural logarithm of the positive or the negative arithmetic SRISK average of firm i in month t. SRISK is defined as $\mathrm{SRISK}_{i,t} = \mathrm{kDebt}_{i,t} - (1 - k)(1 - \mathrm{LRMES}_{i,t})\mathrm{Equity}_{i,t}$, where k is the prudential capital ratio which is equal to 5.5% for European firms and 8% for non-European ones, $\mathrm{Debt}_{i,t}$ is the book value of debt, $\mathrm{Equity}_{i,t}$ is the current market capitalization, $\mathrm{LRMES}_{i,t}$ is the Long-Run Marginal Expected Shortfall which is equal to $1 - e^{(ln(1-d)beta_{i,t})}$, $beta_{i,t}$ is the beta coefficient with respect to the MSCI World Index, which is estimated by using a Dynamic Conditional Beta model (Engle, 2002, 2009), and d is a threshold of a six month market decline (or systemic crisis event) and its default value is set to -40%. $lnEPU$ is the natural logarithm of the EPU^* which we constructed and the three category specific indices of EPU^*: Economy (EPU_E^*), Policy (EPU_P^*), and Uncertainty (EPU_U^*). $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Panel A. Capital shortfall				Panel B. Capital Surplus			
	1	2	3	4	1	2	3	4
$lnEPU^*$	0.544**				-0.832**			
lnEPU_E^*		3.239***				-2.478***		
$ln\mathrm{EPU}_P^*$			3.474***				-2.898**	
lnEPU_U^*				0.494**				-0.594*
$Spread$	0.152**	0.181***	0.098*	0.168**	0.128*	0.089	0.147**	0.11
$Term$	-0.132*	-0.161***	-0.079	-0.149**	-0.205**	-0.163**	-0.218**	-0.193**
$Conf$	0.03	0.043**	0.026	0.026	0.012	0.006	0.011	0.017
$Cons$	-0.012	-0.008	-0.008	-0.013	-0.001	-0.008	0	0
Ret	0.018	-0.548	-0.407	0.016	0.591	1.125**	1.014**	0.639
Vol	0.013***	0.002	0.008**	0.015***	0	0.009**	0.003	-0.003
$Election$	-0.062	0.183	0.083	-0.067	0.550***	0.247	0.317**	0.503**
$Recession$	0.424**	0.236	0.468**	0.401*	-0.207	0.026	-0.202	-0.166
obs	762	762	762	762	1047	1047	1047	1047
Firms	9	9	9	9	11	11	11	11
Time	185	185	185	185	185	185	185	185
Adj-Rsq (Within)	42.74%	49.09%	47.90%	41.69%	22.09%	24.43%	23.36%	18.05%

Table 4.13. Economic Policy Uncertainty and Capital Shortfall/Surplus: The Lasting Effect

The table presents the results of the baseline model for Capital Shortfall (Panel A) and Capital Surplus (Panel B): $lnSRISK_{i,t}^{Positive} = a_i + \beta_1 lnEPU_{t-p} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$ and $lnSRISK_{i,t}^{Negative} = a_i + \beta_1 lnEPU_{t-p} + \beta_2 Election_t + \beta_2 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$, where p = 1, 3,6, 9, 12, 18, and 24. $lnSRISK$ is the natural logarithm of the positive or the negative arithmetic SRISK average of firm i in month t. SRISK is defined as $\text{SRISK}_{i,t} = \text{kDebt}_{i,t} - (1-\text{k})(1-\text{LRMES}_{i,t})\text{Equity}_{i,t}$, where k is the prudential capital ratio which is equal to 5.5% for European firms and 8% for non-European ones, $\text{Debt}_{i,t}$ is the book value of debt, $\text{Equity}_{i,t}$ is the current market capitalization, $\text{LRMES}_{i,t}$ is the Long-Run Marginal Expected Shortfall which is equal to $1 - e^{(ln(1-d)beta_{i,t})}$, $beta_{i,t}$ is the beta coefficient with respect to the MSCI World Index, which is estimated by using a Dynamic Conditional Beta model (Engle, 2002, 2009), and d is a threshold of a six month market decline (or systemic crisis event) and its default value is set to -40%. $lnEPU$ is the natural logarithm of the EPU^* which we constructed. $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Panel A. Capital Shortfall				Panel B. Capital Surplus			
	Lags				Lags			
	I	3	6	12	1	3	6	12
$lnEPU^*$	0.544**	0.386*	0.115	0.013	-0.832**	-0.666**	-0.757*	-0.760**
$Spread$	0.152**	0.156**	0.148**	0.151**	0.128*	0.119	0.108	0.081
$Term$	-0.132*	-0.140*	-0.127*	-0.144*	-0.205**	-0.192**	-0.169**	-0.123*
$Conf$	0.03	0.029	0.040*	0.034	0.012	0.006	-0.006	0.005
$Cons$	-0.012	-0.006	-0.009	-0.013	-0.001	0.002	0	0.004
Ret	0.018	0.211	0.285	0.336	0.591	0.285	0.46	0.128
Vol	0.013***	0.014***	0.009*	0.013*	0	-0.004	-0.003	-0.015***
$Election$	-0.062	0.077	0.063	0.276	0.550***	0.376**	0.163	-0.001
$Recession$	0.424**	0.415*	0.437*	0.629**	-0.207	-0.179	-0.217	-0.141
obs	762	760	757	753	1047	1036	1017	968
Firms	9	9	9	9	11	11	11	11
Time	185	183	180	176	185	183	180	176
Adj-Rsq (Within)	42.74%	38.58%	30.74%	28.48%	22.09%	19.31%	17.97%	15.86%

Table 4.14. Idiosyncratic Greek Economic Policy Uncertainty and Distance-to-Default

Panel A (B) presents the results of the following model for all firms (sectors): $DTD_{i,t} = a_i + \beta_1 e_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$, e are the residuals of the regression $EPU_t^{Pap} = a + bEPU_t^{Europe} + e_t$, where EPU_t^{Europe} is the European Policy Uncertainty Index. DTD is the Distance-to-Default of firm i in month t: $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities + \ \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year EPU is the natural logarithm of the Greek Economic Policy Uncertainty Indices, EPU^*, which we constructed.. $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Panel A. All	Panel B. Sectors									
		Energy	Materials	Industrials	Consumer Discretionary	Consumer Staples	Health Care	Financials	Information Technology	Telecommunication Services	Utilities
Idiosyncratic EPU^* (e)	-0.324**	-1.157*	-0.217	-0.246	-0.404**	-0.275	-0.577**	-0.576*	-0.553*	-0.339	-0.367
$Spread$	-0.198***	-0.426*	-0.157**	-0.186***	-0.241***	-0.093	-0.422***	-0.215**	-0.201*	-0.448	-0.081
$Term$	0.170***	0.445*	0.137*	0.166***	0.201***	0.07	0.394***	0.179*	0.179	0.426	0.051
$Conf$	-0.013	-0.073*	-0.002	0.001	-0.025*	-0.008	-0.021	-0.050***	-0.005	-0.057	-0.008
$Cons$	0.004	0.018	0	0.001	0.006	0.005	0.008	0.015*	-0.005	0.002	0.021**
Ret	-0.178	-0.683	-0.217	-0.219	-0.425	0.017	-0.082	-0.228	0.248	-0.386	0.326
Vol	-0.015***	-0.040**	-0.015***	-0.018***	-0.013***	-0.016***	-0.014*	-0.013**	-0.010*	-0.034**	-0.033***
$Election$	0.145	-0.033	0.098	0.101	0.145	0.192	0.168	0.308*	0.125	-0.295	0.109
$Recession$	-0.513***	-0.690**	-0.460**	-0.554***	-0.458***	-0.508***	-0.520*	-0.522***	-0.427**	-1.460***	-0.830*
obs	46938	668	6115	9269	10643	5202	1385	4373	2928	630	681
Firms	378	4	35	56	72	33	8	32	18	4	4
Time	195	184	195	195	195	195	195	195	195	195	195
Adj-Rsq (Within)	21.83%	51.77%	19.51%	26.38%	23.64%	18.44%	52.07%	19.50%	18.36%	56.97%	39.22%

Table 4.15. Time Series Regression (First-Stage)

The table presents the results of the time series first-stage regression: $lnEPU_t^* = a + \beta_1 Nominate\ Score_t^{House\ or\ Senate} + Control\ Variables_t + \varepsilon_t$, where $Nominate\ Score_t^{House\ or\ Senate}$ are the nominate scores of McCarty, Poole, and Rosenthal (1997) which measure the political polarization in the United States House of Representatives and the United States Senate. EPU is the Greek Economic Policy Uncertainty Indices, EPU^{Pap}, which we constructed.. $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. The standard errors of the first stage regression are adjusted following the Newey and West (1987). The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	House	Senate
Nominate Score	405.443***	276.103***
$Spread$	2.843	1.491
$Term$	-3.175	-1.187
$Conf$	0.050	-0.161
$Cons$	-0.533	-0.429
Ret	-25.026	-30.991
Vol	0.638***	0.545**
$Election$	50.008***	48.385***
$Recession$	-12.573*	-13.826**
Constant	-252.547**	-115.908**
F-stat	11.95	12.80

Table 4.16. Panel Regression (Second-Stage)

The table presents the results of the time series second-stage regression. In the first stage we estimate the regression: $lnEPU_t^* = a + \beta_1 Nominate\ Score_t^{House\ or\ Senate} + Control\ Variables_t + \varepsilon_t$, where $Nominate\ Score_t^{House\ or\ Senate}$ are the nominate scores of McCarty, Poole, and Rosenthal (1997) which measure the political polarization in the United States House of Representatives and the United States Senate. In the second stage we use the fitted values of EPU^* $(\widehat{EPU^*})$ from equation $lnEPU_t^* = a + \beta_1 Nominate\ Score_t^{House\ or\ Senate} + Control\ Variables_t + \varepsilon_t$ to estimate the base line equation: $DTD_{\mathrm{i,t}} = a_i + \beta_1 \widehat{lnEPU}_{t-1}^* + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$. $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities +\ \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year. $lnEPU$ is the Greek Economic Policy Uncertainty Indices, EPU^*, which we constructed.. $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. Spread $(Spread)$ is the difference between the Greek and Bud 10 year bond yield. Term $(Term)$ is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence $(Conf)$ is the monthly first difference of the Greek economic confidence index. Consumer confidence $(Cons)$ is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. The standard errors of the first stage regression are adjusted following the Newey and West (1987). The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	House	Senate
$\widehat{EPU^*}$	-0.881***	-1.124***
$Spread$	-0.128***	-0.113***
$Term$	0.100***	0.085**
$Conf$	-0.010	-0.008
$Cons$	0.005	0.005
Ret	-0.310	-0.384
Vol	-0.011***	-0.010***
$Election$	0.293*	0.369**
$Recession$	-0.562***	-0.578***

Table 4.17. Economic Policy Uncertainty and Distance-to-Default: Sectoral Analysis (Hardouvelis, Karalas, Karanastasis, and Samartzis,2018)

The table presents the results of the baseline model for 10 sectors (Energy, Meterial. Industrial, Consumer Discretionary, Consumer Staples, Helath Care, Financials, Information Technology, Telecommunication Services, and Utilities): $DTD_{i,t} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$, where DTD is the Distance-to-Default of firm i in month t: $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities + \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year. EPU is the natural logarithm of the EPU^{Har} (Hardouvelis, Karalas, Karanastasis, and Samartzis, 2018. $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Sectors									
	Energy	Materials	Industrials	Consumer Discretionary	Consumer Staples	Health Care	Financials	Information Technology	Telecommu nication Services	Utilities
$lnEPU^{Har}$	-0.125	-0.2	-0.141	-0.154	-0.245	-0.454	-0.919***	-0.189	-0.299	-0.589
$Spread$	-0.459*	-0.160**	-0.189***	-0.244***	-0.096	-0.429***	-0.217**	-0.210*	-0.453	-0.083
$Term$	0.483*	0.142*	0.171***	0.206***	0.076	0.406***	0.191*	0.192	0.435	0.059
$Conf$	-0.079*	-0.005	-0.001	-0.028**	-0.012	-0.028	-0.062***	-0.008	-0.062*	-0.016
$Cons$	0.014	-0.002	-0.001	0.004	0.004	0.004	0.01	-0.008	0	0.018*
Ret	-0.57	-0.296	-0.26	-0.441	-0.069	-0.243	-0.623	0.23	-0.495	0.088
Vol	-0.043**	-0.014***	-0.018***	-0.014***	-0.015***	-0.012	-0.009	-0.011*	-0.033**	-0.030**
$Election$	-0.432	0.01	0.007	-0.004	0.082	-0.059	0.049	-0.075	-0.432	-0.057
$Recession$	-0.535*	-0.434**	-0.521***	-0.406***	-0.477***	-0.453	-0.477**	-0.346*	-1.422***	-0.806*
obs	668	6115	9269	10643	5202	1385	4373	2928	630	681
Firms	4	35	56	72	33	8	32	18	4	4
Time	184	195	195	195	195	195	195	195	195	195
Adj-Rsq (Within)	49.85%	19.48%	26.29%	23.40%	18.37%	51.76%	20.06%	17.84%	56.93%	39.56%

Table 4.18. Economic Policy Uncertainty and Distance-to-Default: Quantile Regression Analysis (Hardouvelis, Karalas, Karanastasis, and Samartzis, 2018)

The tables examines whether the relation between Economic Policy Uncertainty and Distance-to-Default remains intact for lower and higher levels of Distance-to-Default. For five quantiles (20th, 40th, 50th, 60th, and 80th) the table presents the estimation results of a a quantile regression of Equation 2.4a ($DTD_{i,t} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$,) by using the qreg2 module of STATA (Machado, Parente, and Santos, 2011). where DTD is the Distance-to-Default of firm i in month t: $DTD_t = \frac{log\left(\frac{V_t}{L}\right)}{\sigma\sqrt{T-t}}$, where V_t is the asset value which follows a Brownian motion with mean μ and volatility σ. L is the default point which is equal to short-term liabilities and the half of long term liabilities, and hence $L = Current\ Liabilities + \frac{1}{2} Long\ Term\ Liabilities +\ \delta \times Other\ liabilities$, and $\delta \in [0,1]$. $\sqrt{T-t}$ equals to 1 year. $lnEPU$ is the natural logarithm of the EPU^{Har} (Hardouvelis, Karalas, Karanastasis, and Samartzis, 2018). $Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Quantiles				
	20	40	50	60	80
$lnEPU^{Har}$	-0.409***	-0.431***	-0.406***	-0.359***	-0.169
$Spread$	-0.215***	-0.151***	-0.117***	-0.083**	-0.016
$Term$	0.197***	0.124***	0.090***	0.054	-0.021
$Conf$	-0.027***	-0.007	0.002	0.003	0.002
$Cons$	0.005***	-0.002	-0.005***	-0.004**	-0.007**
Ret	-0.419***	-0.138	-0.022	-0.007	-0.171
Vol	-0.007***	-0.008***	-0.010***	-0.012***	-0.021***
$Election$	-0.011	0.101***	0.126***	0.169***	0.097*
$Recession$	-0.226***	-0.412***	-0.504***	-0.641***	-0.988***
Constant	2.880***	3.962***	4.317***	4.696***	5.583***
obs	46939	46939	46939	46939	46939
Adj-Rsq	8.60%	9.09%	9.14%	9.07%	8.61%

Table 4.19. Economic Policy Uncertainty and Capital Shortfall / Surplus (Hardouvelis, Karalas, Karanastasis, and Samartzis, 2018)

The table presents the results of the baseline model for Capital Shortfall (Panel A) and Capital Surplus (Panel B): $lnSRISK_{\mathrm{i,t}}^{Positive} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_3 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$ and $lnSRISK_{\mathrm{i,t}}^{Negative} = a_i + \beta_1 lnEPU_{t-1} + \beta_2 Election_t + \beta_2 Recession_t + \delta M_{t-1} + \varepsilon_{i,t}$, where $lnSRISK$ is the natural logarithm of the positive or the negative arithmetic SRISK average of firm i in month t. SRISK is defined as$\mathrm{SRISK_{i,t}} = \mathrm{kDebt_{i,t}} - (1 - \mathrm{k})(1 - \mathrm{LRMES_{i,t}})\mathrm{Equity_{i,t}}$, where k is the prudential capital ratio which is equal to 5.5% for European firms and 8% for non-European ones, $\mathrm{Debt_{i,t}}$ is the book value of debt, $\mathrm{Equity_{i,t}}$ is the current market capitalization, $\mathrm{LRMES_{i,t}}$ is the Long-Run Marginal Expected Shortfall which is equal to $1 - e^{(ln(1-d) beta_{i,t})}$, $beta_{i,t}$ is the beta coefficient with respect to the MSCI World Index, which is estimated by using a Dynamic Conditional Beta model (Engle, 2002, 2009), and d is a threshold of a six month market decline (or systemic crisis event) and its default value is set to -40%. $lnEPU$ is the natural logarithm of the EPU^{Har} (Hardouvelis, Karalas, Karanastasis, and Samartzis, 2018)$Election$ is a dummy variable that takes the value of 1 in month t if during that year a national election occurred, $Recession$ is a dummy variable that takes the value of 1 in month t if during that quarter the yearly gross domestic product decreased. α_i's are firm fixed effects and M is a set of control variables that includes stock market, and macroeconomic oriented variables. Specifically, we use the following variables: Spread ($Spread$) is the difference between the Greek and Bud 10 year bond yield. Term ($Term$) is the difference between the 10-Year Treasury Constant Maturity Rate and the 3-Month Treasury Constant Maturity Rate. Economic confidence ($Conf$) is the monthly first difference of the Greek economic confidence index. Consumer confidence ($Cons$) is the monthly first difference of the Greek consumer confidence index. Stock Market Return (Ret) is the monthly stock return of the General Index of the Greek Stock Exchange. Stock Market Volatility (Vol) is the annualized monthly stock market volatility. Following the work of Petersen (2009), standard errors are clustered at firm and calendar month level to take into account the potential cross-sectional and serial correlation in $\varepsilon_{i,t}$. To mitigate the effect of outliers, we winsorized all variables at the 1% and 99%. The sample period is from June 2001 to September 2017. *, **, *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Panel A. Capital shortfall	Panel A. Capital surplus
$lnEPU^{Har}$	0.132	-1.091***
$Spread$	0.188***	0.079
$Term$	-0.170**	-0.150*
$Conf$	0.031	-0.007
$Cons$	-0.011	-0.007
Ret	-0.069	0.255
Vol	0.015***	0.003
$Election$	0.086	0.269*
$Recession$	0.350*	-0.143
obs	762	1047
Firms	9	11
Time	185	185
Adj-Rsq (Within)	40.46%	23.00%

Chapter 5

Concluding Remarks

This thesis examines the impact of economic policy uncertainty on Capital Shortfall of global financial firms, the Liquidity Coverage Ratio and the the Net Stable Funding Ratio of US Bank Holding Companies, and the Distance-to-Default and the Capital Shortfall of Greek firms. The proxy for economic policy uncertainty used in this thesis is the Global Economic Policy Uncertainty index by Davis (2016), the US Economic Policy Uncertainty index by Baker, Bloom, and Davis (2016) and the Greek Economic Policy Uncertainty index of our own construction based on the methodology of Baker, Bloom and Davis (2016). Capital Shortfall is measured by the Systemic Risk indicator defined by Acharya, Engle, and Richardson (2012) and Brownlees and Engle (2016), while the proxies for the liquidity risk measures (Liquidity Coverage Ratio and Net Stable Funding Ratio) are constructed by us according to Basel III accord. Distance-to-Default is based on the Expected Default Frequency model of Moody's Analytics KMV model.

In Chapter 2, we show that the Global Economic Policy Uncertainty index is positively related to capital shortfall. We find consistent results when conducting regional analyses for North America, South America, Europe, Asia, and Africa and sector analyses for banks, capital markets, insurances, diversified financial services, real estate management & development at the global level. Furthermore, the results show that the impact of global economic policy uncertainty on capital shortfall is not conditional on the severity of market decline. Undercapitalized firms are affected more by global economic policy uncertainty than well-capitalized firms. We provide robustness checks using out-of-sample tests, an instrument variable approach, placebo tests and exogenous shocks at the end.

In Chapter 3, we examine the impact of economic policy uncertainty on the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) of U.S. Bank Holding Companies. We construct proxies for the aforementioned ratios and show that a one-standard deviation increase of economic policy uncertainty leads to a 8.60% future increase of LCR relative to its average value, while the corresponding increase of NSFR equals to 2.55%. The increase is due to a short-term decrease ability of the banks to borrow, and to a long-term decrease of the asset-related components of the ratio. Our evidence suggests that policy uncertainty has a casual effect in harming the real economy.

Finally, in Chapter 4, we construct an economic policy uncertainty index for Greece, and compare it with two other available economic policy uncertainty index. The analysis demonstrates that there are similarities between them, but the forecasting power of our index is superior than that of the other two. We show that policy uncertainty has a negative impact on the financial health of Greek firms, and it is the policy uncertainty that arises from Greece and not from Europe which drives our results. The evidence suggests that policymakers are "inducing" uncertainty that generates capital shortfalls. The finding has clear implications since rises in policy uncertainty of Greece occur often. So far, Greece has defaulted 5 times during the last 200 years and there were six snap parliamentary elections and one referendum during the last financial crisis.

The overall evidence of the thesis suggests that uncertainty that arises from policymakers and politicians plays a crusial role in the economy and hence firms and investors must adjust their actions when they anticipate changes by policymakers and regulators. Future work could investigate the impact and the transision of economy policy uncertainty on firms that operate in different countries, and hence to better understand if and how they adjust their decisions in one country relative to the other country with high economic policy uncertainty. We believe that this is an important issue in the current integrated, and interconnected global world.

As with the majority of studies, the current thesis is subject to limitations. There are two main limitations in this thesis that could be addressed in future research; data availability and relevant variables for the global instrumental variables analysis.

In the second chapter, the focus of the study is global. However, control variables that we would like to use are not available for all countries in our sample. For example, there are not country-specific indices for measuring business conditions in all countries. Therefore, we use the ADS index by Aruoba, Diebold and Scotti (2009), which measures the business conditions in the US. We believe that this has not hindered the results of our research since US is considered a global driver (Kose, Lakatos, Ohnsorge, and Stocker, 2017). Moreover, some countries in our sample have less than five firms, which made the individual country analysis prohibitive. For the instrumental variable analysis, it is difficult to find a relevant global instrument that will not affect directly capital shortfall, measured by the SRISK indicator, since SRISK is a function of stock market prices, especially on a global scale.

In Chapter 3, financial institutions are not obligated to report the LCR and NSFR ratio prior to 2017. Therefore, we construct proxies for the LCR and NSFR ratios. However, data are not publicly available for most of the countries. As time goes by, there will be sufficient data reported by financial institutions that will make a global analysis for this kind of study possible. As for Chapter 4, data are available only for a limited number of firms, especially in some industries, and the access to newspapers articles for constructing the Economic Policy Uncertainty index is limited.

There are a number of gaps in our knowledge around economic policy uncertainty in research that follow from our findings, and would benefit from further research. Some suggestions are:

- The effect of policy uncertainty on liquidity requirements of commercial banks

- The effect of economic policy uncertainty on investment and disinvestment decisions of firms

- The creation of a different index for policy uncertainty, by using measures of political polarization, and the examination of which one is a better proxy to measure the effect of policy uncertainty on business decisions.

Bibliography

Acharya, V., Engle, R. & Pierret, D., 2014. Testing macroprudential stress tests: The risk of regulatory risk weights. Journal of Monetary Economics, 65, pp.36–53.

Acharya, V., Engle, R. & Richardson, M., 2012. Capital Shortfall: A New Approach to Ranking and Regulating Systemic Risks. American Economic Review, 102(3), pp.59–64.

Acharya, V.V., Gale, D. & Yorulmazer, T., 2011. Rollover Risk and Market Freezes. The Journal of Finance, 66(4), pp.1177–1209.

Afonso, G., Kovner, A. & Schoar, A., 2011. Stressed, Not Frozen: The Federal Funds Market in the Financial Crisis. The Journal of Finance, 66(4), pp.1109–1139.

Aikman, D., Haldane, A. G., Hinterschweiger, M. & Kapadia, S., 2018. Rethinking Financial Stability. Bank of England Staff Working Paper No. 712.

Aisen, A. & Veiga, F.J., 2006. Does Political Instability Lead to Higher Inflation? A Panel Data Analysis. Journal of Money, Credit, and Banking, 38(5), pp.1379–1389.

Altman, E.I., 1968. Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. The Journal of Finance, 23(4), p.589-609.

Altman, E.I., Haldeman, R.G. & Narayanan, P., 1977. Zeta analysis: A new model to identify bankruptcy risk of corporations. Journal of Banking & Finance, 1(1), pp.29–54.

An, H., Chen, Y., Luo, D., Zhang, T., 2016. Political uncertainty and corporate investment: Evidence from China. Journal of Corporate Finance, 36, pp. 174-189.

Aruoba, S.B., Diebold, F.X. & Scotti, C., 2009. Real-Time Measurement of Business Conditions. Journal of Business & Economic Statistics, 27(4), pp.417–427.

Azzimonti, 2016. Partisan conflict, news, and investors expectations. Working Paper, Stony Brook University.

Azzimonti, M., 2018. Partisan conflict and private investment. Journal of Monetary Economics, 93, pp.114–131.

Baker, S.R., Bloom, N. & Davis, S.J., 2012. Has Economic Policy Uncertainty Hampered the Recovery? Chicago Booth Research Paper No. 12-06.

Baker, S.R., Bloom, N., & Davis, S.J., 2016. Measuring Economic Policy Uncertainty. The Quarterly Journal of Economics, 131(4), pp.1593–1636.

Baker, S.R., Bloom, N., Canes-Wrone, B., Davis, S.J., & Rodden, J., 2014. Why Has US Policy Uncertainty Risen Since 1960? American Economic Review, 104(5), pp.56–60.

Basel Committee on Banking Supervision, 2009. International Framework for Liquidity Risk Measurement, Standards, and Monitoring, Consultative Document, Bank of International Settlements.

Basel Committee on Banking Supervision, 2010a. Basel III: International Framework for Liquidity Risk Measurement, Standards, and Monitoring, Bank of International Settlements.

Basel Committee on Banking Supervision, 2010b. An Assessment of the Long-Term Economic Impact of Stronger Capital and Liquidity Requirements, Bank of International Settlements.

Basel Committee on Banking Supervision, 2011. Global systemically important banks: assessment methodology and the additional loss absorbency requirement, http://www.bis.org/publ/bcbs207.htm.

Basel Committee on Banking Supervision, 2013. Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools. Bank for International Settlements.

Basel Committee on Banking Supervision, 2013. Global Systemically Important Banks: Updated Assessment Methodology and the Higher Loss Absorbency Requirement. Report.

Basel Committee on Banking Supervision, 2014. Basel III: the net stable funding ratio. Bank for International Settlements.

Bech, M. & Keister, T., 2017. Liquidity regulation and the implementation of monetary policy. Journal of Monetary Economics, 92, pp.64–77.

Bekaert, G., Hodrick, R. J., & Zhang, X., 2009. International Stock Return Comovements. The Journal of Finance, 64, pp.2591–2626

Benoit, S., Hurlin, C., & Pérignon, C., 2018. Pitfalls in systemic-risk scoring. Journal of Financial Intermediation. Basel Committee on Banking Supervision, 2010. Guidance for national authorities operating the countercyclical capital buffer. Bank of International Settlements.

Berger, A. N., & Bouwman, C.H.S., 2009, Bank Liquidity Creation, Review of Financial Studies 22, 3779–3837.

Berger, A. N., Guedhami, O., Kim, H. H., & Li, X., 2017. Economic Policy Uncertainty and Bank Liquidity Creation. University of South Carolina Working Paper.

Berger, A.N., Guedhami, O., Kim H.H., & Xinming, L., 2018, working paper. Economic Policy Uncertainty and Bank Liquidity Creation. Available at SSRN: https://ssrn.com/abstract=3030489 or http://dx.doi.org/10.2139/ssrn.3030489

Bernanke, B.S., 1983. Irreversibility, Uncertainty, and Cyclical Investment. The Quarterly Journal of Economics, 98(1), pp.85-106.

Bharath, S.T. & Shumway, T., 2008. Forecasting Default with the Merton Distance to Default Model. Review of Financial Studies, 21(3), pp.1339–1369.

Bisias, D., Flood, M, Lo, A. W & Valavanis, S., 2012. A survey of systemic risk analytics. Annual Review of Financial Economics, 4, pp. 255-296.

Bloom, N., Floetotto, M., Jaimovich, N., Saporta-Eksten, I., & Terry, S. J., 2018. Really Uncertain Business Cycles. Econometrica, 86(3), pp.1031–1065.

Boeri, T., De Phillippis, M., Patacchini, E. & Pellizzari, M., 2015. Immigrants, residential concentration and employment in eight Italian cities. Available at: https://voxeu.org/article/immigration-residential-concentration-and-employment

Bonaime, A., Gulen, H. & Ion, M., 2018. Does policy uncertainty affect mergers and acquisitions? Journal of Financial Economics, 129(3), pp.531–558.

Bonner, C. & Eijffinger, S.C.W., 2015. The Impact of Liquidity Regulation on Bank Intermediation. Review of Finance, 20(5), pp.1945–1979.

Bonner, C., Lelyveld, I. van & Zymek, R., 2014. Banks' Liquidity Buffers and the Role of Liquidity Regulation. Journal of Financial Services Research, 48(3), pp.215–234.

Bordo, M.D., Duca, J.V. & Koch, C., 2016. Economic policy uncertainty and the credit channel: Aggregate and bank level U.S. evidence over several decades. Journal of Financial Stability, 26, pp.90–106.

Borjas, G., 2003. The labor demand curve IS downward sloping. Quarterly Journal of Economics, 118(4), pp. 1335–1374.

Boyd, J.H., Graham, S.L., 1986. Risk, regulation, and bank holding company expansion into nonbanking. Quarterly Review –Federal Reserve Bank of Minneapolis 10, pp. 2–17.

Boyd, J.H., Graham, S.L., Hewitt, R.S., 1993. Bank holding company mergers with nonbank financial firms: effects on the risk of failure. Journal of Banking & Finance 17, pp. 43–63.

Brown, C.O. & Dinc, I.S., 2005. The Politics of Bank Failures: Evidence from Emerging Markets. The Quarterly Journal of Economics, 120(4), pp.1413–1444.

Brownlees, C. & Engle, R.F., 2016. SRISK: A Conditional Capital Shortfall Measure of Systemic Risk. Review of Financial Studies, 30(1), pp.48–79.

Brunnermeier, M.K. & Oehmke, M., 2012. Bubbles, financial crises, and systemic risk. Discussion paper, National Bureau of Economic Research.

Buchanan, B.G., Xuying Cao, C., Liljeblom, E., Weihrich, S., 2017. Uncertainty and firm dividend policy—A natural experiment. Journal of Corporate Finance, 42, pp. 179-197

Campbell, Y.Y., Hilscher, J. & Szilagyi, J., 2008. In Search of Distress Risk. The Journal of Finance, 63(6), pp.2899–2939.

Card, D., 2005. Is the new immigration really so bad? The Economic Journal, 115, pp. 300–323.

Clark, T.E. & West, K.D., 2007. Approximately normal tests for equal predictive accuracy in nested models. Journal of Econometrics, 138(1), pp.291–311.

Çolak, G., Durnev, A. & Qian, Y., 2017. Political Uncertainty and IPO Activity: Evidence from U.S. Gubernatorial Elections. Journal of Financial and Quantitative Analysis, 52(6), 2523-2564.

Çolak, G., Gungoraydinoglu, A., & Öztekin, Ö., 2017. Political environment, financial intermediation costs, and financing patterns. Journal of Corporate Finance, 44, pp. 167-192

Çolak, G., Gungoraydinoglu, A., & Öztekin, Ö., 2018. Global leverage adjustments, uncertainty, and country institutional strength. Journal of Financial Intermediation, 35, pp. 41-56

Crosbie, P. & Bohn, J., 2003. Modeling Default Risk. Moody's KMV White Paper, (San Francisco: Moody's Investor Service) December 18.

Dam, L. & Koetter, M., 2012. Bank Bailouts and Moral Hazard: Evidence from Germany. Review of Financial Studies, 25(8), pp.2343–2380.

Davis, S., 2016. An Index of Global Economic Policy Uncertainty. NBER Working Paper No. 22740.

Delechat C, Henao C, Muthoora P, & Vtyurina S., 2012. The determinants of banks' liquidity buffers in Central America. IMF Working Paper Series, WP/12/301.

DeYoung, R. & Jang, K.Y., 2016. Do banks actively manage their liquidity? Journal of Banking & Finance, 66, pp.143–161.

Dickey, D.A. & Fuller, W.A., 1979. Distribution of the Estimators for Autoregressive Time Series With a Unit Root. Journal of the American Statistical Association, 74(366), pp.427-431.

Diebold, F. X. & Yilmaz, K., 2009. Measuring financial asset return and volatility spillovers, with application to global equity markets. The Economic Journal, 119(534), pp. 158–171.

Du, B., 2017, How Useful Is Basel III's Liquidity Coverage Ratio? Evidence From US Bank Holding Companies. European Financial Management, 23(5), pp. 902-919.

Duan, J. C., 1994. Maximum Likelihood Estimation Using Price Data Of The Derivative Contract. Mathematical Finance, 4(2), pp.155-167.

Duan, J. C., 2000. Correction: Maximum Likelihood Estimation Using Price Data of the Derivative Contract. Mathematical Finance, 10(4), pp.461-462.

Duan, J. C., 2010. Clustered Defaults. Risk Management Institute. Working Paper.

Duan, J. C., Sun, J., & Wang, T., 2012. Multiperiod Corporate Default Prediction – A Forward Intensity Approach. Journal of Econometrics, 179, pages pp.191-209.

Duan, J.-C. & Van Laere, E., 2012. A public good approach to credit ratings – From concept to reality. Journal of Banking & Finance, 36(12), pp.3239–3247.

Duffie, D., Saita, L. & Wang, K., 2007. Multi-period corporate default prediction with stochastic covariates. Journal of Financial Economics, 83(3), pp.635–665.

Eichler, S. & Sobański, K., 2016. National politics and bank default risk in the eurozone. Journal of Financial Stability, 26, pp.247–256.

Engle, R., 2002. Dynamic conditional correlation: A simple class of multivariate generalized autoregressive conditional heteroscedasticity models. Journal of Business & Economic Statistics, 20 pp.339–50.

Engle, R., 2009. Anticipating correlations: A new paradigm for risk management. Princeton, NJ: Princeton University Press.

Engle, R., Jondeau, E. & Rockinger, M., 2015. Systemic Risk in Europe. Review of Finance, 19(1), pp.145–190.

Fountas, S., Karatasi, P., & Tzika, P., 2018. Economic Policy Uncertainty in Greece: Measuring Uncertainty for the Greek Macroeconomy. South-Eastern Europe Journal of Economics, 1, pp. 79-92.

Francis, B.B., Hasan, I. & Zhu, Y., 2014. Political uncertainty and bank loan contracting. Journal of Empirical Finance, 29, pp.281–286.

Garcia, R., Mantilla-García, D. & Martellini, L., 2014. A Model-Free Measure of Aggregate Idiosyncratic Volatility and the Prediction of Market Returns. Journal of Financial and Quantitative Analysis, 49(5-6), pp.1133–1165.

Groseclose, T., & N. McCarty, 2000. The politics of blame: Bargaining before an Audience. American Journal of Political Science 45:100–19

Gulen, H. & Ion, M., 2016. Policy Uncertainty and Corporate Investment. Review of Financial Studies, 29(3), pp.523-564.

Hannan, T.H., Hanweck, G.A., 1988. Bank insolvency risk and the market for large certificates of deposit. Journal of Money, Credit and Banking 20, pp. 203–211.

Hansen, L.P., 2014. Challenges in Identifying and Measuring Systemic Risk. Risk Topography, pp.15–30.

Hanson, S.G., Kashyap, A.K. & Stein, J.C., 2011. A Macroprudential Approach to Financial Regulation. Journal of Economic Perspectives, 25(1), pp.3–28.

Hardouvelis, G., Karalas, G., Karanastasis, D., & Samartzis, P., 2018. Economic Policy Uncertainty, Political Uncertainty and the Greek Economic Crisis. University of Piraeus. Working Paper.

Hardy, D., & Hochreiter, P., 2014. A Simple Macroprudential Liquidity Buffer. IMF Working Papers, 14(235).

Hillegeist, S. A., Keating, E. K., Cram, D. P., & Lundstedt, K. G., 2004. Assessing the Probability of Bankruptcy. Review of Accounting Studies, 9(1), pp.5–34.

Hong, H., Huang, J.-Z. & Wu, D., 2014. The information content of Basel III liquidity risk measures. Journal of Financial Stability, 15, pp.91–111.

International Monetary Fund. Research Dept., 2012. World Economic Outlook, October 2012: Coping with High Debt and Sluggish Growth. World Economic Outlook.

Julio, B. & Yook, Y., 2012. Political Uncertainty and Corporate Investment Cycles. The Journal of Finance, 67(1), pp.45–83.

Julio, B. & Yook, Y., 2016. Policy uncertainty, irreversibility, and cross-border flows of capital. Journal of International Economics, 103, pp.13–26.

Jurado, K., Ludvigson, S.C. & Ng, S., 2015. Measuring Uncertainty. American Economic Review, 105(3), pp.1177–1216.

Kelly, B., Pástor, Ľ. & Veronesi, P., 2016. The Price of Political Uncertainty: Theory and Evidence from the Option Market. The Journal of Finance, 71(5), pp.2417–2480.

Klößner, S. & Sekkel, R., 2014. International spillovers of policy uncertainty. Economics Letters, 124(3), pp. 508–512.

Kose, A., Lakatos, C., Ohnsorge, F. L., & Stocker, M., 2017. The Global Role of the U.S. Economy: Linkages, Policies and Spillovers. Policy Research Working Papers.

Kose, M.A., Otrok, C. & Whiteman, C.H., 2003. International Business Cycles: World, Region, and Country-Specific Factors. American Economic Review, 93(4), pp.1216–1239.

Kowalik, M., 2013. Basel liquidity regulation: was it improved with the 2013 revisions?, Economic Review, Federal Reserve Bank of Kansas City, issue Q II, pages 65-87.

Krol, R., 2014. Economic Policy Uncertainty and Exchange Rate Volatility. International Finance, 17(2), pp.241–256.

Kuo, D., Skeie, D. R., Vickery, J. I., & Youle, T., 2013. Identifying Term Interbank Loans from Fedwire Payments Data. Federal Reserve Bank of New York, Staff Report No. 603.

Laeven, L., Ratnovski, L. & Tong, H., 2016. Bank size, capital, and systemic risk: Some international evidence. Journal of Banking & Finance, 69, pp.S25–S34.

Lee, C.-C., Lee, C.-C., Zeng J.-H. & Hsu, Y.-L., 2017. Peer bank behavior, economic policy uncertainty, and leverage decision of financial institutions. Journal of Financial Stability, 30, pp. 79-91.

Levin, A., Lin, C.-F. & James Chu, C.-S., 2002. Unit root tests in panel data: asymptotic and finite-sample properties. Journal of Econometrics, 108(1), pp.1–24.

Liu, W.-M. & Ngo, P.T.H., 2014. Elections, political competition and bank failure. Journal of Financial Economics, 112(2), pp.251–268.

Machado, J.A.F., Parente, P.M.D.C., & Santos Silva, J.M.C., 2011. QREG2: Stata module to perform quantile regression with robust and clustered standard errors, Statistical Software Components S457369, Boston College Department of Economics.

McCarty, N.M., 2012. The policy consequences of partisan polarization in the united states. Unpublished Manuscript, Princeton University.

McCarty, N. M., K. T. Poole, & Rosenthal, H., 1997. Income redistribution and the realignment of American politics.Washington, DC: SEI Press.

McCarty, N. M., Poole, K. T., & Rosenthal, H., 2006. Polarized America: The dance of ideology and unequal riches. Cambridge: MIT Press.

Merton, R.C., 1974. On the Pricing of Corporate Debt: The Risk Structure of Interest Rates. The Journal of Finance, 29(2), pp. 449-470.

Newey,W., & West, K., 1987. A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. Econometrica 55:703–708.

Nguyen, N.H. & Phan, H.V., 2017. Policy Uncertainty and Mergers and Acquisitions. Journal of Financial and Quantitative Analysis, 52(2), pp.613–644.

Parente, P. M. D. C. & Santos Silva, J. M. C., 2016. Quantile regression with clustered data. Journal of Econometric Methods, 5(1), pp. 1–15.

Pástor, Ľ. & Veronesi, P., 2012. Uncertainty about Government Policy and Stock Prices. The Journal of Finance, 67(4), pp.1219–1264.

Pástor, Ľ. & Veronesi, P., 2013. Political uncertainty and risk premia. Journal of Financial Economics, 110(3), pp.520–545.

Petersen, M.A., 2009. Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches. Review of Financial Studies, 22(1), pp.435–480.

Psalida E., Elsenburg, W., Jobst, A., Masaki, K. & Nowak, S., 2009. Market Interventions During the Financial Crisis: How Effective and How to Disengage. Global Financial Stability Report, IMF.

Scheffel, E.M., 2016. Accounting for the Political Uncertainty Factor. Journal of Applied Econometrics, 31(6), pp.1048–1064.

Schmitz, S.W., 2013. The Impact of the Liquidity Coverage Ratio (LCR) on the Implementation of Monetary Policy. Economic Notes, 42(2), pp.135–170.

Shin, H.-S., 2011.Macroprudential policies beyond Basel III, BIS Papers chapters,in: Bank for International Settlements (ed.), Macroprudential regulation and policy, volume 60, pages 5-15 Bank for International Settlements.

Silva, W., Kimura, H. & Sobreiro, V.A., 2017. An analysis of the literature on systemic financial risk: A survey. Journal of Financial Stability, 28, pp.91–114.

Stock, J., & Watson, M., 2012. Disentangling the Channels of the 2007–2009 Recession. Brookings Panel on Economic Activity, pp. 81–135.

Stokey, N.L., 2016. Wait-and-see: Investment options under policy uncertainty. Review of Economic Dynamics, 21, pp.246–265.

Taylor, J. B., & Williams, J.C. 2009. "A Black Swan in the Money Market." American Economic Journal: Macroeconomics, 1 (1): 58-83.

Vassalou, M. & Xing, Y., 2004. Default Risk in Equity Returns. The Journal of Finance, 59(2), pp.831–868.

Vazquez, F. & Federico, P., 2015. Bank funding structures and risk: Evidence from the global financial crisis. Journal of Banking & Finance, 61, pp.1–14.

Veronesi, P. & Zingales, L., 2010. Paulson's gift. Journal of Financial Economics, 97(3), pp. 339-368.

Waisman, M., Ye, P. & Zhu, Y., 2015. The effect of political uncertainty on the cost of corporate debt. Journal of Financial Stability, 16, pp.106–117.

Wisniewski, T.P. & Lambe, B.J., 2015. Does economic policy uncertainty drive CDS spreads? International Review of Financial Analysis, 42, pp.447–458.

Xu, N., Chen, Q., Xu, Y., Chan, K.C., 2016. Political uncertainty and cash holdings: Evidence from China. Journal of Corporate Finance, vol. 40, 276-295.

Zou, Q., 2016. Trading Noise and Default Risk. National University of Singapore. Working Paper.