Review of Quantitative Finance and Accounting (2022) 58:795–845
https://doi.org/10.1007/s11156-021-01010-2

ORIGINAL RESEARCH

Does economic policy uncertainty matter for financial reporting quality? Evidence from the United States

Theodora Bermpei[1] · Antonios Nikolaos Kalyvas[2] · Lorenzo Neri[3] · Antonella Russo[4]

Accepted: 25 July 2021 / Published online: 9 August 2021

Abstract
We examine the effect of economic policy uncertainty (EPU) on the financial reporting quality of US firms over 1999–2015. We use accruals-based earnings management as a proxy for financial reporting quality and the index of Baker et al. (Quart J Econ 131:1539–1636, 2016) as an EPU measure to show that they exhibit a positive and significant association. We also find a causal effect by employing three political polarization instruments for EPU. In a cross-sectional analysis, we further show that the positive relationship between EPU and earnings management strengthens for firms operating in politically sensitive industries, for firms in more financial distress, and during recessionary periods. We also provide evidence that increased financial constraints facilitate the positive relationship between EPU and earnings management. These findings are robust to the use of alternative measures of economic policy uncertainty and when we employ real earnings management as a dependent variable. These results indicate that managers aim to provide outsiders with an improved financial position of the company when EPU is high. Our findings suggest that investors, analysts, creditors, and regulators should be wary of firms' financial reporting quality in periods of high economic policy uncertainty.

Keywords Earnings management · Economic policy uncertainty (EPU) · Financial reporting quality · Political sensitivity

JEL Classifications E44 · G14 · M41

✉ Lorenzo Neri
l.neri@bbk.ac.uk

Theodora Bermpei
t.bermpei@essex.ac.uk

Antonios Nikolaos Kalyvas
N.A.Kalyvas@soton.ac.uk

Antonella Russo
a.russo@greenwich.ac.uk

[1] Finance Centre, Essex Business School, University of Essex, Colchester, UK

[2] Department of Banking and Finance, Southampton Business School, University of Southampton, Southampton, UK

[3] Department of Management, Birkbeck University of London, London, UK

[4] Department of Accounting and Finance, Greenwich Business School, University of Greenwich, London, UK

1 Introduction

The recent political developments around the world have led to a sharp rise in economic policy uncertainty. Events such as the Brexit referendum result and the trade war between the US and China demonstrate the rising global economic policy uncertainty. The US, in particular, has experienced a turbulent period of economic policy uncertainty since 2000 also because of the structure of its political system that frequently leads to fragmentation. The US government shutdowns in October 2013 and in December 2018 regarding the federal budget are just two examples of events that give rise to economic policy uncertainty (The New York Times 2019).

Uncertainty around major economic policies such as regulation, taxation, monetary policy, and the government budget exert an influence on business activities (Baker et al. 2016). As a result, a growing body of literature investigates the effect of uncertainty about the economic policy on firm outcomes. Some papers investigate the effects of economic policy uncertainty on firm investment (Gulen and Ion 2016), cash holdings (Wang et al. 2014), and stock market performance (Liu and Zhang 2015). Yet, research on the relationship between macroeconomic factors, such as economic policy uncertainty and financial reporting quality, is comparatively scarce, and there is a general call for more investigation in this field (Dechow et al. 2010). We address part of this gap by answering the question: *Does economic policy uncertainty affect US firms' earnings management behavior?*

Financial reporting quality plays a vital role in enhancing the quality of investors' economic decisions. The extant literature finds that financial reporting quality can alleviate information asymmetry and adverse selection problems. Consequently, it affects the capital market (Leuz and Wysocki 2016) by increasing market liquidity (Verrecchia 2001; Lang and Maffett 2011) and decreasing the cost of capital (Lang et al. 2012; Shroff et al. 2013). Other studies consider the real effects of financial reporting quality in terms of investment and the use of resources (Leuz and Wysocki 2016). In this case, financial reporting feeds back to the corporate decision-making process. Thus, its quality can improve managerial decisions (Bushman and Smith 2001; Lambert et al. 2007), increase investment efficiency (e.g., Biddle et al. 2009; Badertscher et al. 2013) and contribute to better economic outcomes. For these reasons, a burgeoning stream of literature explores the determinants of financial reporting quality. Most of this research uses earnings manipulation as a proxy for financial reporting quality (Bhattacharya et al. 2003; Dechow et al. 2010). Economic policy uncertainty affects firms' operations and performance (Julio and Yook 2016) and induces information asymmetry (Nagar et al. 2019). This could affect firms' financial reporting quality (Dye 1988; Trueman and Titman 1988). Hence, it is rational to investigate the effect of uncertainty-related issues on earnings manipulation.

The extant literature identifies two general types of uncertainty–*political* uncertainty and *economic* uncertainty (Bloom 2014). Political uncertainty is the lack of certainty in politics (Drake et al. 2018; Kang and Wang 2018). Economic uncertainty refers to the uncertainty that stems from the general economic conditions and the business cycle (Bloom 2009; Baker and Bloom 2013). Although related to political and economic uncertainty, economic policy uncertainty is the insecurity about the government's economic policies (Pastor and Veronesi 2012). We posit that investigating the effect of economic policy uncertainty on earnings management could provide us with new insights into what

drives financial reporting quality. This is because economic policy uncertainty focuses specifically on the uncertainty about economic policies. Therefore, it represents the aspects of political uncertainty that are most relevant to corporations. For example, Baker et al. (2016) provide evidence that politically tumultuous episodes that do not relate strongly to the economy exhibit a weak relationship with economic policy uncertainty. Furthermore, economic policy uncertainty—driven by a focus on government economic policy—is distinct from the general economic uncertainty that stems merely from the business cycle. Baker et al. (2016) show that the adverse effects of economic policy uncertainty on corporate performance are more evident in sectors highly exposed to government economic policy. The authors posit that this finding enhances the evidence in favor of a distinct economic policy uncertainty channel.

Additionally, economic policy uncertainty relates to but is also distinct from the financial uncertainty measures that other studies use (see, e.g., Arif et al. 2016; Stein and Wang 2016). Baker et al. (2016) compare economic policy uncertainty with financial uncertainty indices, such as the option-implied volatility of stocks. They show that, although economic policy uncertainty and financial uncertainty move together, they also display distinct variation.[1] This is a manifestation of an important difference between economic policy uncertainty and financial uncertainty. Financial uncertainty reflects uncertainty about stock returns, while economic policy uncertainty represents a broader concern about government economic policy (Baker et al. 2016; Xu 2020). Pastor and Veronesi (2017) also argue that another feature of economic policy uncertainty that renders it distinct from financial uncertainty is that investors find it harder to interpret the former's signals. Furthermore, financial uncertainty indices such as those based on the option-implied volatility reflect short-term uncertainty concerns (e.g., a 30- or 90-days forward period). However, economic policy uncertainty does not display a specific time horizon (Baker et al. 2016).

Economic policy uncertainty affects all firms since it relates to the economic and regulatory frameworks in which they operate. Therefore, the risks stemming from economic policy uncertainty are market-wide (Pastor and Veronesi 2012, 2013). Several studies show that economic policy uncertainty exerts a dampening effect on stock prices (e.g., Brogaard and Detzel 2015; Ko and Lee 2015; Arouri et al. 2016; Jin et al. 2019). Hence, increased economic policy uncertainty denotes periods of stock undervaluation. There is ambiguity in the earnings management behavior of firms' managers during periods of undervaluation. In such periods, managers could have the incentive to show an improved financial position by engaging in upwards earnings manipulation, decreasing investors', creditors', and analysts' concerns. This represents the "*lean against the wind"* view of earnings management behavior (Hirshleifer et al. 2009). The opposing view is that managers are less motivated to manage earnings upwards during periods of undervaluation. The rationale is that, in such periods, outsiders will assign the deterioration in firms' financial to unfavorable economic conditions. This is the "*lean with the wind"* view of earnings management behavior (Cohen and Zarowin 2011). We posit that economic policy uncertainty is more likely to motivate managers to engage in upwards earnings manipulation that is consistent with the *"lean against the wind*" view. Economic policy uncertainty represents an increased probability of policy and regulation changes. Such changes involve significant adjustment and compliance costs (Pindyck

[1] In more detail, Baker et al. (2016) show that economic policy uncertainty reacts more strongly than financial uncertainty to incidents that involve major policy concerns such as political battles over government spending and taxation.

1982; Bloom 2009; Ryan 2012). An improved financial position could signal to outsiders such as investors, creditors, and analysts that the firm has positive prospects in the face of the increased probability of adjustment cost and will be able to handle such adjustment costs more easily. Therefore, we hypothesize that economic policy uncertainty will have a positive relationship with upwards earnings manipulation.

To investigate the effect of economic policy uncertainty (EPU) on earnings management, we employ the Baker et al. (2016) index as our main economic policy uncertainty measure. The Baker et al. (2016) index captures incidents of increased uncertainty about economic policies such as government policy changes, elections, and periods of political debates about economic policies. Several studies that examine the effects of economic policy uncertainty use this index (e.g., Bordo et al. 2016; Gulen and Ion 2016; Kaviani et al. 2020; Xu 2020). We also source, from Compustat, a sample of 6551 US firms that represents 40,924 firm-year observations over the period from 1999 to 2015. We then measure accruals-based earnings management with the modified Jones (1991) model to use it as the dependent variable. After controlling for several firm-level and macroeconomic variables, the baseline OLS models' results show a positive and significant relationship between economic policy uncertainty and earnings management.

To address endogeneity, we perform several tests. We employ regressions that comprise firm fixed effects to control for endogeneity stemming from omitted variable bias at the firm level. We use the US presidential elections as an alternative and plausibly exogenous proxy of economic policy uncertainty (Durnev 2010; Boutchkova et al. 2012; Julio and Yook 2012; Waisman et al. 2015). The year that US presidential elections occur is predetermined. Hence, presidential elections represent a reasonably exogenous shock to the prevailing economic policies. Our results show an increase in upwards earnings management in presidential election years. We also follow the studies of Gulen and Ion (2016) and Kaviani et al. (2020) and use a residuals-based proxy of economic policy uncertainty. In particular, we use as an alternative economic policy uncertainty proxy the residuals of a regression that uses as dependent variable the US economic policy uncertainty measure of Baker et al. (2016) and as explanatory variables the economic policy uncertainty of Canada and proxies for the US economic conditions (GDP growth and the GDP output gap) and US financial uncertainty (the VIX index). As Kaviani et al. (2020) posit, the rationale behind this residuals-based measure of economic policy uncertainty is that the US and Canada's economic conditions are highly correlated, while economic policy uncertainty in these two countries is likely less correlated. Hence, this residuals-based economic policy uncertainty measure is less likely to reflect other types of uncertainty such as economic or financial uncertainty. Using this residuals-based proxy, we continue to find a positive relationship between economic policy uncertainty and upwards earnings management. Our results continue to hold also when we use a change regression.

To further attenuate endogeneity concerns and provide evidence of causality, we also employ a two-stage least squares (2SLS) instrumental variable (IV) identification strategy. We follow previous research and use three different political polarization instruments of economic policy uncertainty (Datta et al. 2019; Xu 2020). The first is the index of partisan conflict in the US Congress (Azzimonti 2018). The second is a variable that measures the executive branch's alignment with the US government's legislative branch. The third is a measure of electoral and legislative fractionalization in the US. The intuition behind these instruments' use is that political polarization could have a strong relationship with economic policy uncertainty (i.e., the inclusion restriction). However, it is unclear why political polarization would affect earnings management in a way other than the uncertainty

about economic policy that it induces (i.e., the exclusion restriction). The results from the 2SLS-IV estimations show that economic policy uncertainty exerts a positive, significant, and causal effect on accruals-based earnings management.

These findings are consistent with our hypothesis and with the *"lean against the wind"* view. They indicate that managers try to calm outsiders, such as investors, creditors, and analysts, by providing them with an improved financial position of the firm when economic policy uncertainty is high. To enhance this interpretation, we proceed with some cross-sectional analysis to identify for which firms such effects are more prominent. We expect outsiders to worry more about economic policy uncertainty when they have an interest in firms that operate in more politically sensitive industries. Such firms are more strongly affected by economic policy uncertainty (Baker et al. 2016; Jens 2017). The findings from this cross-sectional analysis indeed reveal that the positive effect of economic policy uncertainty on upwards earnings manipulation strengthens for firms that operate in politically sensitive industries. We also expect the positive relationship between economic policy uncertainty and earnings management to be more evident for firms with higher default risk. The motive to provide an improved financial position of a firm when economic policy uncertainty is high could be more potent for riskier firms because of outsiders' elevated concerns. The results of this cross-sectional test are consistent with this argument. The positive effect of economic policy uncertainty on upwards earnings management is stronger for firms experiencing greater financial distress. In an additional analysis, we also find that the positive effect of economic policy uncertainty on upwards earnings manipulation is more evident in recessionary periods. This further enhances the *"lean against the wind"* interpretation of our findings by showing managers' increased motivation to report the firm's improved financial position in periods of undervaluation.

We also provide empirical evidence of increased financial constraints as an economic mechanism (channel), which facilitates the positive relationship between economic policy uncertainty and upwards earnings management. We show that economic policy uncertainty increases firms' financial constraints. Previous studies show that managers' incentive to manage earnings upwards is enhanced when firms face increased financial constraints (Teoh et al. 1998; Iatridis and Kadorinis 2009; Farell et al. 2014; He and Ren 2017; Bowen et al. 2018; Kurt 2018). In the case of economic policy uncertainty, increased financial constraints could provide managers with a strong incentive to report inflated earnings. In this way, managers could ease firms' access to the market of external funding that the increased probability for the adjustment and compliance costs stemming from economic policy uncertainty might require.

The findings of the baseline analysis are also robust to further alternative estimations and sensitivity tests. Previous research shows that managers prefer to manage earnings through real activities (Bruns and Merchant 1990; Graham et al. 2005). Hence, we also examine the effect of economic policy uncertainty on real earnings management. We find a negative association between economic policy uncertainty and abnormal discretionary expenditures, which corroborates our previous findings. We also find further empirical support for our initial findings when we use some additional economic policy uncertainty measures (government purchasing policy uncertainty, monetary policy uncertainty, and tax policy uncertainty).

This study makes a twofold contribution to the literature. First, we add to the studies investigating the determinants of earnings management (e.g., Dechow et al. 2010; Kim et al. 2017; Xu et al. 2019). We show that economic policy uncertainty is a significant determinant of earnings manipulation. By finding a positive relationship between economic policy uncertainty and earnings management and revealing some mediating factors

of this relationship, we also contribute to the literature that provides evidence in favor of the "*lean against the wind*" view of managerial behavior (Kang et al. 2010; Cohen and Zarowin 2011; Guo and Jiang 2011). Second, we extend the literature that examines the effects of economic policy uncertainty on firm outcomes. Several studies examine the effect of economic policy uncertainty on firm outcomes such as investment, cash holdings, stock liquidity, and others (see, e.g., Wang et al. 2014; Gulen and Ion 2016; Nagar et al. 2019; Xu 2020). We extend this stream of literature by examining the linkage between the quality of financial reporting and economic policy uncertainty in a country (i.e., the US) whose political system regularly induces economic policy uncertainty.

Additionally, our findings have some managerial and public policy implications. They inform regulatory authorities and financial market participants on the association between economic policy uncertainty and financial reporting quality. In this respect, investors, analysts, and regulators should be wary of the quality of a firm's financial reporting periods of high policy uncertainty as its performance might be overstated.

The rest of the paper is structured as follows. Section 2 discusses the theoretical considerations and introduces hypotheses. Section 3 illustrates the data and methods, Sect. 4 presents the main findings, and Sect. 5 comprises some robustness checks. Section 6 draws conclusions, and suggests future research areas.

2 Theoretical considerations and hypotheses development

2.1 Earnings management and economic policy uncertainty

Economic policy uncertainty decreases agents' capacity to forecast outcomes for regulatory, fiscal, and monetary policies and, hence, has important implications for economic activity (Baker et al. 2016). In particular, economic policy uncertainty depresses corporate investment (Kang et al. 2014; Gulen and Ion 2016; Chen et al. 2019), innovation effort (Xu 2020), and performance (Iqbal et al. 2020). It also decreases firms' access to finance and renders such access more expensive (Francis et al. 2014; Bordo et al. 2016; Xu 2020).

The adverse effects of economic policy uncertainty on corporate outcomes extend also in the stock market. The theoretical model of Pastor and Veronesi (2012) predicts a negative relationship between economic policy uncertainty and stock prices. Several empirical studies support this theoretical prediction (e.g., Brogaard and Detzel 2015; Ko and Lee 2015; Arouri et al. 2016; Jin et al. 2019). Moreover, Brogaard and Detzel (2015) show that this relationship between economic policy uncertainty and stock prices stems mainly from an increase in the discount rate. This suggests that economic policy uncertainty is an important risk factor. Furthermore, government economic policy affects all firms as it is closely linked to the economic and regulatory frameworks in which they operate. Therefore, the risks associated with economic policy uncertainty are market-wide and generally non-diversifiable (Pastor and Veronesi 2012, 2013; Brogaard and Detzel 2015). The dampening effect of economic policy uncertainty on stock prices and the fact that economic policy uncertainty affects, at least to an extent, all firms suggests that periods of high economic policy represent periods of wide stock market undervaluation.

There is a growing research stream that relates the earnings management behavior of firms' managers with market undervaluation periods which are characterized by high uncertainty. On the one hand, Hirshleifer et al. (2009) show that in periods of market undervaluation, managers tend to manipulate earnings upwards to provide investors with an improved

picture of the firm's financial position. The rationale behind this *"lean against the wind"* behavior is that managers attempt to moderate the negative projections about corporate performance in periods of weakened economic conditions by reporting higher earnings. In this way, firms could meet outsiders' expectations, such as investors, analysts, and creditors.

On other hand, some other studies provide evidence that is consistent with the *"lean against the wind"* managerial behavior (e.g., Kang et al. 2010; Guo and Jiang 2011). The competing argument is that managers engage in upwards earnings manipulation when the market conditions are favorable. This *"lean with the wind"* argument suggests that, in good market conditions, managers possess a strong incentive not to show poor earnings because, in such periods, negative news lead to a more adverse assessment about the individual firm from the firm's outsiders and, consequently, to adverse stock price effects (Conrad et al. 2002). Instead, in periods of market undervaluation, investors, analysts, creditors, and other firm outsiders assign a decrease in performance on the actual economic conditions and not to a firm's managers. Hence, according to this theoretical premise managers' incentive to manage earnings upwards during periods of market undervaluation weakens and instead enhances their downward earnings manipulation incentive.

We posit that, in periods of high economic policy uncertainty, managers' incentive to manage earnings upwards following the *"lean against the wind"* argument would dominate. Such conjecture is based on the distinct features of economic policy uncertainty compared with other types of uncertainty, such as financial uncertainty. Following Baker et al. (2016), economic policy uncertainty reflects a different type of information than financial uncertainty measures do, such as the implied volatility of options (VIX).[2] Financial uncertainty, as for example, VIX, reflects investors' expectations on the performance of financial markets for reasons not necessarily related to economic policies that could alter the way in which operate. Economic policy uncertainty instead reveals information about possible impending economic policy changes that could alter the firms' operational environment. Periods of high economic policy uncertainty are usually followed by actual economic policy changes such as changes in regulations (Baker et al. 2016). Economic policy and regulatory changes impose significant compliance and adjustment costs to corporations that could involve labor and capital adjustments (Pindyck 1982; Bloom 2009; Ryan 2012).[3]

[2] We recognize that economic policy uncertainty and financial uncertainty measures, such as the option implied volatility of stocks, exhibit correlation. However, as Baker et al. (2016) argue, economic policy uncertainty and financial uncertainty display also a distinct variation. For example, Baker et al. (2016) show that economic policy uncertainty reflects more strongly than financial uncertainty to periods of uncertainty regarding significant economic policies such as government spending and taxation. Several other studies provide empirical evidence that although economic policy uncertainty and financial uncertainty are related, they also display distinct traits (Pastor and Veronesi 2017; Tiwari et al. 2019; Bialkowski et al. 2021). We also address the correlation between economic policy uncertainty and financial uncertainty in our empirical tests regarding endogeneity in Sect. 4.3 of the paper. We thank an anonymous Referee for motivating us to carefully distinguish economic policy uncertainty from financial uncertainty theoretically (i.e., in terms of the hypotheses development) and empirically.

[3] For example, the rising uncertainty about an important economic policy, which is the trade policy regarding China, during President's Trump administration. The eventual increase in tariffs on imported goods from China to the US have led several US firms with production facilities in China to incur significant adjustment and compliance costs. Such costs comprise the costs of relocation of production from China to other countries, revamping supply chains, hire and train new employees in the new locations and investment in new machinery and equipment. As an illustration, Associated Press (2019) reports that Xcel Brands, a US-based clothing company, has moved production from China to Vietnam, Cambodia, Bangladesh and Canada in response to the increasing trade policy uncertainty and trade barriers between US and China. CNBC (2019) reports that several others US companies made similar moves as Xcel Brands incurring significant adjustment costs.

Therefore, providing an improved financial position in terms of earnings in periods of high economic policy uncertainty could signal outsiders that firms have positive prospects in the face of the increased probability of adjustment costs that economic policy uncertainty implies.

On the other hand, financial uncertainty measures such as VIX do not necessarily imply an increased probability of significant changes in the economic policy framework in which firms operate (Baker et al. 2016). Therefore, financial uncertainty is less likely to be related to an increased probability of adjustment costs stemming from changes in economic policies and the regulatory framework in which firms operate. Consequently, managers' incentive to provide an improved financial position to outsiders due to high financial uncertainty could be weaker than the incentive that stems from high economic policy uncertainty. Besides, Baker et al. (2016) argue that indices of financial uncertainty based on the implied volatility of options, such as VIX, represent more short-term uncertainty concerns (a 30- or 90-day forward period) in comparison with economic policy uncertainty. This short-term time horizon enhances managers' incentive to manage earnings downwards in the face of financial uncertainty as it is more likely that firm outsiders will consider reduced performance to be transient (Stein and Wang 2016).

Additionally, economic policy uncertainty increases information asymmetry (Nagar et al. 2019). The information asymmetry that stems from economic policy uncertainty is more severe in comparison to financial uncertainty. Pastor and Veronesi (2017) posit that it is harder for economic agents and investors to interpret economic policy uncertainty signals compared to the signals of financial uncertainty. This is because it becomes harder for investors and analysts to predict firm performance when the economic policy and regulatory environment in which firms operate is uncertain. Dye (1988) and Trueman and Titman (1988) suggest that the extent of earnings management behavior should increase with the level of information asymmetry. Given that higher economic policy uncertainty increases information asymmetry, it also enhances managers' capacity to conceal earnings management. Thus, managers' incentive to increase reported earnings is further enhanced when economic policy uncertainty is high. Based on the above discussion, we formulate our first (*H1*) hypothesis as follows:

H1 There is a positive relationship between economic policy uncertainty and earnings management.

2.2 Cross-sectional hypotheses: the conditioning effect of political sensitivity and firm risk in the relationship between economic policy uncertainty and earnings management

This section considers two factors that could condition the relationship between economic policy uncertainty and earnings management. In brief, we provide theoretical explanations and empirical justification as to why the positive relationship between economic policy uncertainty and managers' motivation to increase reported earnings would be more evident for firms belonging to politically sensitive industries and firms that display higher financial distress.

As already mentioned, economic policy affects all firms since it relates to the economic and regulatory frameworks in which they operate (Pastor and Veronesi 2013; Jens 2017). However, some firms may exhibit stronger sensitivity to uncertainty about economic policies. In particular, previous empirical studies show that the adverse

effects of economic policy uncertainty are more evident in politically sensitive industries that display more exposure to government policies (Baker et al. 2016; Jens 2017).

Firms that operate in politically sensitive industries exhibit specific characteristics that may enhance the propensity toward earnings management. First, it is rational to expect that the effect of economic policy uncertainty on earnings management behavior to be stronger for firms in politically sensitive industries, as such industries are susceptible to government economic policy changes. For example, firms belonging to politically sensitive industries, such as in the defense and petroleum sectors, could depend more on government contracts and government regulation (Dai and Ngo 2021). Rising economic policy uncertainty could increase the probability that such changes could occur. Hence, it may further enhance managers' incentive of firms belonging to politically sensitive industries to show an improved firm's financial position.

Furthermore, the information asymmetry that economic policy uncertainty prompts (Nagar et al. 2019) could be stronger for politically sensitive industries. Uncertainty about the economic policy environment renders it harder to predict firm performance. However, the uncertainty about the economic policy framework in which firms operate relates more strongly to firms belonging to politically sensitive industries (Baker et al. 2016). Hence, information asymmetry that stems from economic policy uncertainty and could help managers conceal an increase in reported earnings may be stronger for firms belonging to politically sensitive industries. Thus, we formulate the second (*H2*) hypothesis as follows:

H2 The positive relationship between economic policy uncertainty and earnings management would be more pronounced for firms belonging to politically sensitive industries.

The extant literature also evinces that firms in financial distress tend to manipulate earnings for various different reasons. This includes the softening of the adverse effects of financial distress and the achievement of their contractual obligations (DeAngelo et al. 1994; DeFond and Jiambalvo 1994; Burgstahler and Dichev 1997; Rosner 2003), and the loss of reputation and negative implications for their compensation scheme or stock options (Healy 1985; Gilson 1989). The extant literature also supports the notion that firms in higher financial distress modify earnings upwards to reduce the probability of debt covenant violations and bankruptcy (DeFond and Jiambalvo 1994; Rosner 2003).

The adverse effects of economic policy on various indicators of firm performance, such as on stock prices, may enhance the worries and further decrease investors', analysts,' and creditors' confidence about the prospects and, ultimately, the survival of firms that display higher financial distress. Consequently, economic policy uncertainty could enhance managers' incentive of more financially distressed firms to manage earnings upwards to shield their self-interests and their shareholders' interests.

The above considerations lead to the following hypothesis about the conditioning effect of firm financial distress on the relationship between economic policy uncertainty and earnings management:

H3 The positive relationship between economic policy uncertainty and earnings management would be more pronounced for financially distressed firms.

3 Data and methods

3.1 Data

3.1.1 Earnings management measure

We employ a dataset of 6551 firms in the US over the 1999–2015 period from Compustat. This results in 40,924 firm-year observations. We measure firm engagement in earnings manipulation by employing the firms' discretionary or abnormal accruals. Normal accruals reflect performance, while the discretionary accruals capture distortions due to earnings misreporting and inappropriate application of accounting rules (Leuz et al. 2003). Market participants tend to distinguish between discretionary and normal accruals. However, they do not always incorporate information about discretionary accruals in their decision-making process (DeFond and Park 2001).

To estimate discretionary accruals, we follow other studies and opt for the modified Jones (1991) model developed by Dechow et al. (1995). We use a cross-section specification to estimate discretionary accruals for time unit (i.e., year) and each sector (i.e., industry) at the two-digit SIC level. This measure considers industry-level changes that might affect accruals and allows for time-varying coefficients. We measure discretionary accruals as

$$\frac{TA_{it}}{Assets_{i,t-1}} = k_1 \frac{1}{Assets_{i,t-1}} + k_2 \frac{\Delta SALES_{it}}{Assets_{i,t-1}} + k_3 \frac{PPE_{it}}{Assets_{i,t-1}} + \varepsilon_{it}, \tag{1}$$

where t denotes the year and i the firm, TA_{it} are the total accruals defined as $TA_{it} = EBXI_{it} - CFO_{it}$, where EBXI presents the earnings of the firm before taking into account items that are extraordinary and operations that are discontinued, while CFO stands for the operational cash flows as are reported in the cash flow statement. Furthermore, we use lagged total assets ($Assets_{i,t-1}$) to deflate our variables while $\Delta SALES_{it}$ is the revenues change. Finally, PPE_{it} represents the value, in gross terms, of equipment, plant, and property.

We use the estimated coefficients from Eq. (1) to calculate the normal accruals (NA_{it}) for each firm.

$$NA_{it} = \hat{k}_1 \frac{1}{Assets_{i,t-1}} + \hat{k}_2 \frac{(\Delta SALES_{it} - \Delta REC_{it})}{Assets_{i,t-1}} + \hat{k}_3 \frac{PPE_{it}}{Assets_{i,t-1}} \tag{2}$$

We measure the discretionary accruals for each firm as the difference between total accruals and the estimated normal accruals based on the following equation:

$$DA_{it} = \left(\frac{TA_{it}}{Assets_{i,t-1}} \right) - NA_{it} \tag{3}$$

3.1.2 Economic policy uncertainty (EPU)

We employ the index developed by Baker et al. (2016) as our main economic policy uncertainty measure. It is a novel measure of the overall level of uncertainty in terms of economic policy that displays extensive time variation. This is a news-based index and

is estimated by counting the results of a search of specific uncertainty-related terms in 10 big-sized newspapers in the US. These search results need to contain the number of articles that contain the terms' uncertainty' or 'uncertain,' 'economic' or 'economy,' and one of the following: 'legislation' 'congress,' 'regulation,' 'white house,' 'deficit,' or 'federal reserve.' To take into account the volume change in the news over time, for each newspaper the number of articles that relate to policy uncertainty is normalized by the volume of articles. This uncertainty indicator has been used extensively in the economics, finance and accounting literature (e.g., Wang et al. 2014; Liu and Zhang 2015; Bordo et al. 2016; Gulen and Ion 2016; Nagar et al. 2019). Following previous research, we employ economic policy uncertainty at an annual frequency (Datta et al. 2019; Xu 2020).

An advantage of the economic policy uncertainty index of Baker et al. (2016) in comparison with election-based proxies is that it represents a continuous measure of uncertainty. The Baker et al. (2016) index's continuous nature is useful in exploring the dynamics of the relationship between economic policy uncertainty and firm outcomes (Xu 2020). Election-based economic policy uncertainty measures do not capture the level of economic policy uncertainty between the years of elections. Brogaard and Detzel (2015) posit that an election does not necessarily imply the complete resolution of uncertainty about economic policies. From a measurement standpoint, this represents an important limitation of election-based measures of economic policy uncertainty. There could be various events, such as discussions on stimulus packages and political debates about regulatory changes, during non-election years that could induce uncertainty around economic policies (Gulen and Ion 2016; Baker et al. 2016).

3.2 Methods

To test our main hypothesis *H1*– i.e., the positive association of US economic policy uncertainty (*lnEPU*) and the earnings management behavior of US firms–we rely initially on an OLS regression model of the following form:

$$(DA)_{i,t} = \left[c + a_1(lnEPU)_t + a_2(FirmControls)_{i,t} + a_3(Macros)_t + u_{i,t}\right]. \quad (4)$$

In Eq. (4), $(DA)_{i,t}$ are the discretionary accruals that we obtain from estimating the modified Jones (1991) model. The variable $(lnEPU)_t$ is the contemporaneous economic policy uncertainty measure from Baker et al. (2016) in its natural logarithm form. Anecdotal evidence shows that managers use contemporaneous information on economic policies to devise strategies and make adjustments that would contribute positively to the financial position of their firms.[4] Thus, it is rational to expect that contemporaneous economic

[4] There is anecdotal evidence on the prompt response of managers to uncertainty around future economic policies. For example, in response to the result of the 2016 UK "Brexit" referendum, the CEO of JP Morgan Jamie Dimon suggests that *'If the EU imposes new conditions on Britain … the worst-case scenario is we would have to move some thousands of employees to other branches in the euro zone'* (Reuters 2016). This shows that managers respond promptly and look at the most recent information available to devise their strategies to adapt to the rising uncertainty. As another example, the tariffs on China imposed by President Trump's administration in 2018 has increased economic policy uncertainty in the US and the business world. Many managers in the US have reacted to these announcements quickly, as they aim to decrease any negative effects on the profitability of firms. In that respect, the CEO of Primex Family of Companies, Mr Paul Shekoski examines the option of relocating all his production activities in Mexico to avoid the increased costs due to tariffs (Fortune 2019). Such anecdotal evidence supports the use of contemporaneous economic policy uncertainty measures in academic research about the effects of such uncertainty on firm outcomes.

policy uncertainty $(lnEPU)_t$ is more relevant to yearly adjustments of accruals compared to lagged EPU values. In that respect, several studies examine the contemporaneous effect of economic policy uncertainty measures on firm disclosure and other outcomes (Bird et al. 2017; Boone et al. 2018; Datta et al. 2019; Nagar et al. 2019; Xu 2020). This reinforces the argument about the relationship between the contemporaneous relationship of lnEPU and managerial decision-making. The anticipation of new economic policies or changes in the economic policies that are going to affect the environment in which firms operate and, ultimately, firm performance would drive managers to manipulate their earnings.

The vector $(FirmControls)_{i,t}$ comprises several firm-level control variables employed in studies that investigate the determinants of earnings management. These include the natural log of the equity market value as a measure of size (*lnMV*) and the long-term debt and short-term debt that we deflate by the equity market value (*LEV*) as a leverage measure. We apply the inverse (i.e. multiply by minus one) of Altman's z-score (*INVZ*) as the measure of a firm's risk. Altman's Z-score is largely adopted as a measure to capture financial distress (Charitou et al. 2011). It is an indicator of the overall financial health of the firm but, in recent years, Altman's Z-score has also been used as a tool that permits the detection of possible earnings manipulation (Pustylnick 2016). In general, a lower value of the score indicates a greater level of financial distress while higher values imply a lower level of distress. We also use the return on assets (*ROA*) as profitability proxy and the cash flow from operations deflated by lagged assets (*CFOA*). Our firm-level control variables also include the cash flow volatility (*CASH VOL*) and the sales volatility (*SALES VOL*) as measured by the standard deviation of cash flows over assets and sales over assets in the last five years. We also control for capital investment (*CAP INV*) by using the ratio of total capital expenditures to lagged total assets. We source the firm control variables from Compustat.

The vector $(Macros)_t$ comprises macroeconomic control variables. We employ the GDP growth measure at the federal level (*GDPgr*) and the VIX index (*VIX*). The VIX index is a measure of uncertainty that is specific to the financial markets. It is based on the market expectation of near-term volatility as conveyed by the option prices of the stock index. We source both the GDP growth and the VIX variables from the Federal Reserve Bank of St Louis (FRED database). Baker et al. (2016) show that economic policy uncertainty displays a relationship with general economic uncertainty and uncertainty in the financial markets. Hence, it is important to control for these two macro variables so as not to attribute the effects of economic uncertainty that relates to the business cycle or the effects of financial uncertainty to economic policy uncertainty. Finally, $u_{i,t}$ in Eq. (4) is the error term. We cluster standard errors at the firm level following previous earnings management research (Bergstresser and Philippon 2006; Jiang et al. 2010; Lel 2019) and previous studies on the effects of economic policy uncertainty on corporate outcomes in the US (e.g., Duong et al. 2020; Xu 2020).

The estimations that we can obtain from the OLS model in Eq. (4) could be biased because of unobserved firm heterogeneity. Therefore, we also take advantage of our data's panel nature and provide estimations from fixed-effects models. For the fixed effects estimations, we employ the following equation:

$$(DA)_{i,t} = \left[c + a_1(EPU)_t + a_2(FirmControls)_{i,t} + a_3(Macros)_t + v_i + u_{i,t}\right] \quad (5)$$

In Eq. (5), v_i represents the firm fixed effects. The inclusion of fixed effects at the firm level controls for firms' characteristics that are time-invariant and could affect earnings management (e.g., firm location, firm industry membership, etc.). In Tables 1, 2, and 3,

we provide the variables' definitions, the descriptive statistics, and the correlation matrix, respectively.

4 Empirical findings

4.1 Simple OLS and OLS with firm fixed-effects estimations

The results from the simple OLS estimations that we obtain from Eq. (4) are available in Table 4.

We start our analysis with a simple model that includes just the dependent variable (*DA*) and the main explanatory variable, the economic policy uncertainty measure (*lnEPU*). This estimation is available in model 1 of Table 4. We observe that the effect of lnEPU on accruals-based earnings management is positive and significant at the 1% level. In model 2 of Table 4, we introduce the firm control variables. The effect of lnEPU on earnings management remains positive while it is significant at the 1% level. In model 3 of Table 4, we introduce the macroeconomic controls. We observe that the impact of lnEPU on earnings management is still positive and significant at the 1% level. The simple OLS estimations available in the first three models of Table 4 show that economic policy uncertainty positively affects the accruals-based earnings management of firms in the US over the 1999–2015 period. These findings lend empirical support to hypothesis *H1* about the positive relationship between economic policy uncertainty and earnings management. This finding is consistent with the *"lean against the wind view"*, which holds that in periods of undervaluation, the incentive of firms' managers to manage earnings upwards to provide investors and analysts with an improved financial position of the firm is enhanced. This incentive is further enhanced in periods of undervaluation stemming from economic policy uncertainty. The adjustment costs from the potential changes in the economic policies and regulations (Pindyck 1982; Bloom 2009; Ryan 2012), which usually follow economic policy uncertainty periods, enhance managers' incentive to show an improved financial position. This will signal that the firm has positive prospects in the face of adjustment costs, and thus be able to cope with them. Furthermore, the information asymmetry stemming from economic policy uncertainty (Nagar et al. 2019) renders such earnings manipulation easier to conceal.

Nevertheless, the estimations that we obtain from the simple OLS models could be biased because of unobserved firm heterogeneity issues. Although we have used several firm controls, there could still be unobserved firm characteristics that might affect the earnings management decisions of firms. For example, accruals-based earnings management could relate to a firm's geographic location or the industry in which a firm operates in. For this reason, we proceed to estimations that include fixed effects at the firm-level. The results from the firm fixed-effects specification–i.e. Equation (5) –are available in model 4 of Table 4. These findings show that economic policy uncertainty continues to have a positive and significant association with discretionary accruals at the 1% level. Therefore, the estimations from the firm fixed-effects model lend further support to *H1*, which posits that economic policy uncertainty induces firm managers to increase reported earnings.

It is important to mention that the models in Table 4 show that, while lnEPU and discretionary accruals display a positive relationship, the VIX index has a negative and significant association with the earnings management measure. This finding shows that financial uncertainty, as proxied by the VIX index, displays a negative relationship with

Table 1 Definitions of the variables used in the main analysis

Variable Name	Definition	Source
Variables used in the main analysis		
Discretionary accruals (DA)	Discretionary accruals computed using the modified Jones (1991) model	Compustat
Economic Policy Uncertainty (lnEPU)	Annual index of US economic policy uncertainty of Baker et al. (2016). In models we use the natural log	http://www.policyuncertainty.com/
Presidential elections (Elections)	It is a dummy variable that takes the value of one in the year that the presidential elections have occurred and zero otherwise. In the period of our study (1999–2015), four US presidential elections have occurred (i.e., in 2000, 2004, 2008, and 2012)	Authors' calculation
Residuals-based economic policy uncertainty measure (Residuals lnEPU)	The residuals of lnEPU when we regress the economic policy uncertainty measure on the economic policy uncertainty of Canada (lnEPUCAN) and on US macroeconomic controls (the VIX index, GDP growth, and the GDP output gap)	Authors' calculation
Partisan conflict index (lnPC)	The partisan conflict index (PC) tracks the degree of political disagreement about policy among US politicians at the federal level. In models we use the natural log	Azzimonti (2018)
Alignment dummy (ALIGN)	It is a dummy variable that takes the value of one if the party that controls the executive branch of the US government also controls the House of Representatives and the Senate, while it takes the value of zero if this is not the case	Quality of Governance Institute (QoGI) of Gothenburg University in Sweden (https://qog.pol.gu.se/)
The yearly average of the Rae (1967) indices about electoral and legislative fractionalization (RAE)	The Rae (1967) indices of political fractionalization capture the probability that two randomly chosen legislators or voters are of different parties	Quality of Governance Institute (QoGI) of Gothenburg University in Sweden (https://qog.pol.gu.se/)
Market value of equity (lnMV)	Natural log of the market value of equity	Compustat
Firm risk measure (INVZ)	Inverse of Altman's z-score. Altman`s z score calculated as follows: Z = 1.2*T1 + 1.4*T2 + 3.3*T3 + 0.6*T4 + 0.999*T5, where T1 = Working Capital/Total Assets, T2 = Retained Earnings/Total Assets, T3 = Earnings Before Interest and Taxes/ Total Assets, T4 = Market Value of Equity/Total Liabilities, T5 = Sales/Total Assets	Idem

Table 1 (continued)

Variable Name	Definition	Source
Leverage measure (LEV)	Total liabilities divided by market value of equity	Idem
Profitability measure (ROA)	Income before extraordinary items scaled by total assets at the beginning of the period	Idem
Cash flow measure (CFOA)	Cash flow from operations deflated by lagged assets	Idem
Cash volatility measure (CASH VOL)	The standard deviation of cash flows to total assets in the last five years	Idem
Sales volatility measure (SALES VOL)	The standard deviation of sales to total assets in the last five years	Idem
Capital investment measure (CAP INV)	Total capital expenditures divided by lagged assets	Idem
Firm-level financial constraints index (KZ index)	The financial constraints index is measured using the index developed by Kaplan and Zingales (1997). KZ index = 0.283Q − 1.002CF/K + 3.139Debt/Capital-39.368Div/K- 1.315Cash/K. Where CF/K = Income Before Extraordinary Items + Depreciation/ Property Plant and Equipment in the previous year, Debt/Capital = Long-term Debt + Debt in Current Liabilities/ Long-term Debt + Debt in Current Liabilities + Equity, and Cash/K = Cash Holdings and Short-term investments/ Property Plant and Equipment in the previous year	Idem
Political sensitive industry-level measure (POLSENS)	A dummy that takes the value 1 for firms that belong to political sensitive industries (tobacco products, pharmaceuticals, health care, defense, petroleum and natural gas, telecommunications, and transportation) and 0 otherwise	Herron et al. (1999)
Gross Domestic Product growth (GDP gr)	The yearly percentage change of GDP in the US economy	FRED St. Louis
Gross Domestic Product output gap (GDP gap)	The difference between the real GDP and the potential GDP	Idem
Volatility implied index (VIX)	Yearly estimates of the implied volatility of US stocks as provided by the Chicago Board Options Exchange (CBOE)	Idem
Variables used in the robustness analysis		
Abnormal Discretionary expenses (ADE)	Abnormal discretionary expenses computed following the study of Cohen et al. (2008)	Compustat

Table 1 (continued)

Variable Name	Definition	Source
Accruals quality (AQ)	Accruals quality measure computed using the Francis et al. (2005) model	Compustat
Government Spending Uncertainty (lnEPU-PUR)	This index uses data from the FED's Survey of Professional Forecasters of the Philadelphia Federal Reserve Bank. It estimates the dispersion of the forecast related to the procurement of goods and services for all government branches (i.e., local, state, and federal governments). In models we use the natural log	http://www.policyuncertainty.com/
Monetary Policy Uncertainty (lnEPU- CPI)	This index also employs data from the FED's Survey of Professional Forecasters and is based on the dispersion of the consumer price index's forecasts (CPI). In models we use the natural log	http://www.policyuncertainty.com/
Tax Policy Uncertainty (lnEPU-TAX)	This index employs data from the Congressional Budget Office. It relates to the uncertainty regarding the expiration of the tax code provisions in the future. In models we use the natural log	http://www.policyuncertainty.com/

Table 2 Descriptive Statistics of the variables used in the main analysis

Variables	N	Mean	Std. Dev	Median
DA	40,924	−0.108	0.774	−0.070
lnEPU	40,924	4.710	0.286	4.851
Elections	40,924	0.213	0.409	0
Residuals lnEPU	40,924	−0.013	0.090	−0.024
lnPC	40,924	4.637	0.256	4.494
ALLIGN	40,924	0.466	0.498	0
RAE	40,924	0.515	0.003	0.515
lnMV	40,924	5.867	2.340	5.981
INVZ	40,924	−5.170	2.108	−5.257
LEV	40,924	0.280	0.319	0.234
ROA	40,924	−0.105	1.311	0.028
CFOA	40,924	0.034	0.213	0.072
CASH VOL	40,924	0.086	0.232	0.015
SALES VOL	40,924	0.411	1.114	0.066
CAP INV	40,924	0.064	0.096	0.035
KZ index	40,924	1.438	4.137	.203
POLSENS	40,924	0.190	0.392	0
GDPgr	40,924	1.935	1.584	2.500
GDP gap	40,924	−2.113	1.640	−2.048
VIX	40,924	20.254	6.505	17.800

The table presents the number (N), mean, standard deviation and median of the variables included in the tests of the main analysis. The definitions of all the variables are in Table 1

earnings management. This implies that when financial uncertainty is high, managers manipulate earnings downwards. This finding is consistent with the *"lean with the wind*" view in the context of financial uncertainty. A potential reason behind this negative association is that investors anticipate decreased firm performance in periods of high financial uncertainty. Thus, managers have an incentive to manage earnings downwards because it is likely that investors will attribute this decreased performance to bad times and bad luck rather than to managerial skills and effort (Stein and Wang 2016). The heterogeneity in our findings regarding the effects of economic policy uncertainty and financial uncertainty on earnings management underlines the differences between these two types of uncertainty. As opposed to economic policy uncertainty, financial uncertainty does not necessarily suggest an increased probability of changes in economic policies and regulations. Thus, financial uncertainty does not necessarily involve an increased probability of adjustment and compliance costs as economic policy uncertainty does. Hence, it is more likely that the managers' incentive to show an improved financial position of the firm is comparatively stronger when economic policy uncertainty is high than when financial uncertainty is high. Furthermore, the VIX index of financial uncertainty represents more short-term uncertainty concerns (a 30- or 90-day forward period) comparison with economic policy uncertainty measures (Baker et al. 2016). Therefore, investors may perceive that the adverse effects of financial uncertainty on corporate performance to be transient (Stein and Wang 2016).

Table 3 Correlation Matrix of the variables used in the main analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1) DA	1																			
(2) lnEPU	−0.055	1																		
(3) Elections	0.013	0.173	1																	
(4) Residuals lnEPU	0.011	0.305	0.133	1																
(5) lnPC	−0.047	0.433	−0.021	0.101	1															
(6) ALLIGN	0.006	−0.343	−0.083	0.129	−0.393	1														
(7) RAE	0.026	−0.146	0.108	0.579	0.211	0.140	1													
(8) lnMV	−0.018	−0.014	−0.023	−0.012	0.186	−0.049	0.019	1												
(9) INVZ	0.022	−0.039	−0.002	0.022	−0.138	0.070	0.018	−0.801	1											
(10) LEV	0.008	0.016	−0.002	−0.026	0.030	−0.042	−0.020	−0.035	0.023	1										
(11) ROA	0.287	0.006	−0.003	−0.003	0.004	−0.003	−0.008	0.019	−0.029	0.003	1									
(12) CFOA	−0.004	0.032	−0.003	0.016	0.004	0.008	−0.012	0.248	−0.255	−0.255	0.054	1								
(13) CASH VOL	−0.004	0.051	−0.003	−0.011	0.121	−0.057	−0.010	0.507	−0.474	−0.001	0.009	0.100	1							
(14) SALES VOL	−0.005	0.022	0.004	−0.005	0.066	−0.039	−0.010	0.487	−0.473	−0.001	0.009	0.103	0.68	1						
(15) CAP INV	−0.014	−0.058	0.022	−0.007	−0.003	−0.023	0.027	0.058	0.060	0.034	−0.126	0.071	−0.030	−0.017	1					
(16) KZ index	0.022	0.021	−0.013	−0.017	0.128	−0.066	0.003	0.537	−0.470	0.031	0.039	0.120	0.796	0.715	−0.010	1				
(17) POLSENS	−0.016	−0.009	0.001	−0.021	0.036	−0.022	−0.016	0.034	0.028	0.043	0.005	−0.119	0.028	0.020	0.232	0.031	1			
(18) GDPgr	0.011	−0.393	0.017	0.000	0.155	0.131	0.618	0.026	0.026	−0.008	−0.009	−0.031	−0.018	−0.021	0.039	0.005	0.008	1		
(19) GDP gap	0.056	−0.774	0.045	0.000	−0.462	0.073	0.306	−0.043	0.067	−0.006	−0.006	−0.040	−0.070	−0.034	0.069	−0.039	−0.002	0.588	1	

Table 3 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(20) VIX	−0.032	0.641	0.127	0.000	−0.283	−0.140	−0.624	−0.122	0.031	0.005	0.005	0.030	−0.017	−0.011	−0.059	−0.053	−0.022	−0.763	−0.553	1

The table presents the correlations between the variables included in the tests of the main analysis. The definitions of all the variables are in Table 1

Table 4 The effect of economic policy uncertainty on earnings management–baseline estimations

	OLS (1)	OLS (2)	OLS (3)	OLS with FE (4)
	DA	DA	DA	DA
lnEPU	.034***	.053***	.076***	.065***
	(2.858)	(4.522)	(5.432)	(4.665)
lnMV		−0.002	−0.004	−0.006
		(−0.462)	(−0.913)	(−0.704)
LEV		−0.118	−0.12	−0.192*
		(−1.524)	(−1.548)	(−1.835)
ROA		−0.091***	−0.09***	−0.043
		(−3.278)	(−3.271)	(−1.099)
CFOA		−0.701***	−0.7***	−0.722***
		(-9.672)	(-9.627)	(-7.573)
INVZ		−0.016***	−0.016***	−0.039**
		(−3.491)	(−3.503)	(−2.535)
SALES VOL		.009***	.009***	−0.007
		(2.909)	(3.022)	(−1.128)
CASH VOL		−0.058***	−0.06***	.045
		(−3.294)	(−3.407)	(1.435)
CAP INV		−0.165*	−0.163*	−0.242*
		(−1.754)	(−1.726)	(−1.947)
GDP gr			−0.038***	−0.033***
			(−10.929)	(-9.683)
VIX			−0.007***	−0.005***
			(-6.176)	(−4.025)
Constant	−0.268***	−0.369***	−0.244***	−0.329***
	(−4.737)	(−5.622)	(−3.674)	(−2.951)
Observations	40,924	40,924	40,924	40,924
R-squared	0.025	.074	.076	.025
Firm FE	NO	NO	NO	YES

The table observes the effect of economic policy uncertainty on earnings management (DA). Models 1–4 include simple OLS and OLS with fixed effect estimations. In all models we cluster standards errors within firm-level. The definitions of all the variables included in the regressions are in Table 1. Significance at the 10%, 5%, and 1% levels is represented by *, **and *** respectively. T-values are in parentheses

4.2 The relationship between economic policy uncertainty and earnings management during different phases of the business cycle

This section aims to reinforce the baseline findings by conducting an analysis that examines the differential impact of economic policy uncertainty on earnings management during different phases of the business cycle. In our baseline estimations in Table 4, we find, in support of *H1*, that economic policy uncertainty has a positive association with discretionary accruals. Previous evidence shows that periods of increased economic policy uncertainty represent undervaluation periods (see, e.g., Brogaard and Detzel 2015).

Hence, the baseline models' results are consistent with the *"lean against the wind"* view of earnings management behavior. This finding implies that managers are eager to report increased earnings to show an improved firm's financial position during periods of undervaluation. To further reinforce the evidence that our baseline results are consistent with the *"lean against the wind"* view of earnings management behavior, we perform estimations that comprise interaction terms between economic policy uncertainty and variables that capture periods of US economic booms and recessions (i.e., periods of overvaluation and undervaluation). The rationale behind this test is the following: if the positive association between economic policy uncertainty and upwards earnings manipulation stems from a *"lean against the wind"* behavior of firms' managers, then one could expect this relationship to grow stronger in unfavorable (i.e., recessionary) economic conditions. Hence, in this test, we expect the positive relationship between economic policy uncertainty and accruals to be pronounced (moderated) during recessionary periods (favorable economic periods). The results of this exercise are available in Table 5.

In model 1 of Table 5, we add in our OLS baseline model an interaction term between gross domestic growth (*GDP gr*) and economic policy uncertainty (*lnEPU*). The effect of this interaction (*lnEPU*GDP gr*) on accruals is negative and significant at the 1% level. Model 3, which comprises firm-fixed effects provides similar results. We also employ another proxy of economic conditions. This is the GDP output gap (*GDP gap*). This gap is the difference between the real GDP and the potential GDP with higher values denoting better economic conditions. The results from the specifications that comprise the GDP output gap are available in models 2 (simple OLS) and 4 (OLS with firm-fixed effects) of Table 5. In these models, the interaction between economic policy uncertainty and the GDP output gap variable (*lnEPU*GDP gap*) is negative and significant at the 1% level. The models in Table 5 further evince that our findings are consistent with the *'lean against the wind'* view of earnings management. This is because we find that the positive effect of economic policy uncertainty on accruals is moderated (pronounced) during favorable (recessionary) economic conditions. These results suggest that firms' managers have a stronger incentive to inflate earnings in recessionary undervaluation periods compared to periods of favorable economic conditions.

4.3 Addressing endogeneity

4.3.1 Endogeneity issues

The simple OLS and the OLS with firm fixed-effects estimations in Sect. 4.1 assume that economic policy uncertainty is exogenous to the managerial decisions about earnings management. It is not very likely that reverse causality (i.e., a feedback effect from corporate earnings management to economic policy uncertainty) could be an issue in our estimations. This is because earnings management is a firm-level variable while economic policy uncertainty is a country-level variable. Nagar et al. (2019) posit that it is not likely that individual firm managers can significantly affect economic policy uncertainty. Moreover, other studies model economic policy uncertainty as a variable outside of managers' control (Pastor and Veronesi 2012; 2013).

Endogeneity issues, however, may stem from omitted variables. Our baseline estimations control for financial uncertainty (*VIX*) and the general economic conditions through the GDP growth (*GDP gr*) variable. Yet, an issue of concern could be the presence of unobserved factors that relate to financial uncertainty and the economic conditions that our

Table 5 The effect of economic policy uncertainty on earnings management- differential impact between booms and recessions

	OLS	OLS	OLS with FE	OLS with FE
	(1)	(2)	(3)	(4)
	DA	DA	DA	DA
lnEPU	.325***	.224***	.318***	.222***
	(5.688)	(7.572)	(6.994)	(7.48)
lnEPU* GDP gr	−0.095***		−0.098***	
	(−4.591)		(−5.731)	
GDP gap		.467***		.495***
		(6.005)		(6.40)
lnEPU* GDP gap		−0.094***		−0.101***
		(−5.956)		(-6.34)
lnMV	−0.003	−0.003	−0.005	−0.004
	(−0.824)	(−0.738)	(−0.76)	(−0.634)
LEV	−0.119	−0.117	−0.17*	−0.165*
	(−1.535)	(−1.51)	(−1.86)	(−1.79)
ROA	−0.09***	−0.091***	−0.077***	−0.078***
	(−3.271)	(−3.282)	(−2.68)	(−2.70)
CFOA	−0.7***	−0.699***	−0.78***	−0.777***
	(-9.617)	(-9.571)	(-9.11)	(-9.07)
INVZ	−0.015***	−0.015***	−0.027***	−0.026***
	(−3.45)	(−3.369)	(−2.79)	(−2.70)
SALES VOL	.009***	.009***	−0.007	−0.008
	(2.942)	(2.825)	(−1.25)	(−1.38)
CASH VOL	−0.059***	−0.057***	.026	.032
	(−3.387)	(−3.262)	(.91)	(1.11)
CAP INV	−0.164*	−0.181*	−0.293**	−0.328***
	(−1.737)	(−1.917)	(−2.43)	(−2.73)
GDP gr	.418***	−0.045***	.42***	−0.042***
	(4.203)	(-9.768)	(5.07)	(−10.25)
VIX	−0.008***	−0.007***	−0.007***	−0.006***
	(-6.647)	(−5.85)	(−5.76)	(−5.00)
Constant	−1.434***	−0.959***	−1.555***	−0.998***
	(−5.258)	(-6.662)	(-7.279)	(-6.36)
Observations	40,924	40,924	40,924	40,924
R-squared	.077	.078	.101	.102
Firm FE	NO	NO	YES	YES

The table observes the differential effect of economic policy uncertainty on earnings management during periods of economic growth and periods of recession. In all models we cluster standards errors within firm-level. The definitions of all the variables included in the regressions are in Table 1. Significance at the 10%, 5%, and 1% levels is represented by *, **, and ***, respectively. T-values are in parentheses

control variables do not capture (Kaviani et al. 2020). Such unobserved factors could drive both economic policy uncertainty and earnings management. An additional related concern is that the Baker et al. (2016) measure of economic policy uncertainty may capture other things such as financial uncertainty or uncertainty about the economic conditions (Kaviani et al. 2020). For example, high economic policy uncertainty may increase financial uncertainty (*VIX*) and adversely affect the economic conditions. Similarly, when financial uncertainty (*VIX*) is high or when the economic conditions worsen, policymakers may be incentivized to review and eventually change economic policies and regulations, resulting in higher economic policy uncertainty. To illustrate this concern, the correlation between VIX and our economic policy uncertainty measure (*lnEPU*) is 0.64 showing that economic policy uncertainty and financial uncertainty display a fairly strong positive relationship.[5]

To address the above issues, we proceed to additional empirical tests. The first set of these exercises comprises the use of presidential elections as an alternative economic policy uncertainty measure, the use of a residuals-based economic policy uncertainty proxy, and a change regression. The second set of these tests comprises two-stage least squares instrumental variable (2SLS-IV) estimations.

4.3.2 Presidential elections, residual economic policy uncertainty, and change regression

Firstly, we employ US presidential elections as a proxy for a shock to the existing economic policies. Several studies use elections as a proxy of economic policy uncertainty (Durnev 2010; Boutchkova et al. 2012; Julio and Yook 2012; Waisman et al. 2015). The advantage of this measure in the US context is that it is a plausibly exogenous measure of economic policy uncertainty because the election year is predetermined and not driven by the economic and financial conditions. Therefore, using presidential elections as an economic policy uncertainty shock eases endogeneity concerns. We construct a binary variable that takes the value of one for the years that a US presidential elections occurs and zero otherwise (*Elections*).[6] Then, we replicate the baseline model with firm fixed effects (i.e., model 4 of Table 4). We depict the results in model 1 of Panel A in Table 6. We find that the Elections variable has positive and significant at the 1% level association with earnings management (*DA*). This finding lends further support to our *H1* hypothesis, suggesting that there is a stronger inclination of managers to report higher earnings to provide outsiders with an improved financial position of the firm in periods of higher economic policy uncertainty.

As a second test, we use a residual-based economic policy uncertainty measure. Following an approach similar to other studies (Gulen and Ion 2016; Kaviani et al. 2020), we regress the economic policy uncertainty measure (*lnEPU*) on the economic policy uncertainty of Canada (*lnEPUCAN*) and on US macroeconomic controls (the VIX index, GDP growth, and the GDP output gap).[7]

[5] We thank an anonymous Referee for pointing out these issues and motivating us to perform additional test to address these concerns.

[6] During the period of the study (1999–2015), four US presidential elections have occurred (i.e., in 2000, 2004, 2008, and 2012).

[7] We estimate Eq. (6) using data with just the time dimension (i.e. the 17 observations that represent the 17 years of the study). This is because the variables that we use in Eq. (6) are macroeconomic variables. Results are similar when we estimate Eq. (6) with the firm level dataset (i.e., by assigning the macroeconomic variables at each firm-year data point).

Table 6 The effect of economic policy uncertainty on earnings management–addressing endogeneity

	Panel A			Panel B					
	Presidential Elections	Residuals lnEPU	Change Regression	2SLS IV	2SLS IV	2SLS IV	2SLS IV	2SLS IV	2SLS IV
	(1)	(2)	(3)	(1)	(2)	(3)	(4)	(5)	(6)
	DA	DA	Δ DA	DA	DA	DA	DA	DA	DA
Elections	.039***								
	(5.297)								
Residuals lnEPU		.215***							
		(3.873)							
Δ ln *EPU*			.141***						
			(4.969)						
Predicted lnEPU				.071***	.126*	.242***	.071***	.104***	.217***
				(3.84)	(1.716)	(7.326)	(3.84)	(6.502)	(8.181)
First stage									
LnPC				.826***			0.841***		0.768***
				(434.85)			(485.52)		(670.65)
ALIGN					−0.103***		−0.150***	−0.105***	
					(−57.99)		(−211.59)	(-62.76)	
RAE						36.66***		36.88***	25.78***
						(968.90)		(77.82)	(122.52)
Observations	40,924	40,924	34,359	39,844	39,844	39,844	39,844	39,844	39,844
R-squared	−0.087	0.026	0.01	.025	.025	.022	.025	.025	.023
UIT p-value	-	-	-	0.000	0.000	0.000	0.000	0.000	0.000
WIT	-	-	-	2329.14	1247.48	2562.87	2796.79	2564.40	2691.48
with critical value	-	-	-	16.38	16.38	16.38	19.93	19.93	19.93
OIT p-value	-	-	-	-	-	-	0.411	0.192	0.000
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 6 (continued)

	Panel A			Panel B					
	Presidential Elections	Residuals lnEPU	Change Regression	2SLS IV	2SLS IV	2SLS IV	2SLS IV	2SLS IV	2SLS IV
	(1)	(2)	(3)	(1)	(2)	(3)	(4)	(5)	(6)
	DA	DA	Δ DA	DA	DA	DA	DA	DA	DA
Firm FE	YES	YES	NO	YES	YES	YES	YES	YES	YES

The table observes the effect of economic policy uncertainty on earnings management controlling for the endogeneity issue. In Model 1 and 2 of Panel A include estimations with alternative measures (Elections and Residuals lnEPU) of economic policy uncertainty. In Model 3 of Panel A we run a change regression. Models 1–6 of Panel B we include two-stage least squares (2SLS) Instrumental Variable (IV) estimations. In all models we cluster standards errors within firm-level. UIT is the under-identification LM test by Kleibergen and Paap, WIT is the Wald F-statistic of the weak identification test, which must be higher than its critical value to reject the null. OIT is the p-value of the over-identification test by Hansen, which should be insignificant. Control variables include all the variables used in the baseline regressions the definitions of which are in Table 1. Significance at the 10%, 5%, and 1% levels is represented by *, **, and ***, respectively. T-values are in parentheses

$$(lnEPU)_t = \left[c + a_1(lnEPUCAN)_t + a_2(VIX)_t + a_3(GDPgr)_t + a_4(GDPgap)_t + u_t\right] \quad (6)$$

We then use this regression's residuals in our baseline model as an alternative proxy for the US economic policy uncertainty (*Residuals lnEPU*). The rationale is that the economies of Canada and the US are closely linked. The US being a much larger economy renders it more likely that US economic shocks will spill over to the Canadian economy than vice-versa. However, economic policy uncertainty shocks are more likely to be contained within each country's borders. As Kaviani et al. (2020) argue, this provides an opportunity to regress the US economic policy uncertainty index on the Canadian economic policy uncertainty in order to remove the portion of US economic policy uncertainty that captures economic uncertainty not related to policy. Furthermore, the use of US macroeconomic controls further ensures that the residuals from this regression are by construction not correlated with US financial uncertainty (*VIX*) and the general US economic conditions (*GDP gr* and *GDP gap*). In model 2 of Panel A in Table 6, we find, in support of hypothesis *H1*, that the residuals-based measure of US economic policy uncertainty (*Residuals lnEPU*) has a positive and significant at the 1% level relationship with the earnings management measure (*DA*).

The last exercise in this set of tests entails replicating the baseline model 4 of Table 4 by employing a change regression. The use of a change regression further eases concerns about omitted variables. The results from this test provide additional empirical evidence in favor of hypothesis *H1*. In model 3 of Panel A in Table 6, we find that increases in economic policy uncertainty are positively and significantly at the 1% level related to increases in discretionary accruals.[8]

4.3.3 Two-stage least squares instrumental variable (2SL-IV) estimations

To further enrich the validity of our estimations and eliminate the presence of endogeneity in our estimation, we resort to a two-stage least squares (2SLS) instrumental variable (IV) estimation. This identification strategy requires the use of appropriate instruments that would significantly affect economic policy uncertainty (the inclusion restriction) but, at the same time, they would not have an effect on accruals-based earnings management in a way other than through their effect on economic policy uncertainty (the exclusion restriction).

Baker et al. (2016) suggest that political polarization is the main reason for increases in US economic policy uncertainty. Hence, political polarization variables could satisfy the inclusion restriction. Regarding the exclusion restriction, it is unclear why political polarization would affect earnings management through reasons other than the uncertainty about economic policies that it induces. Furthermore, political polarization variables as instruments of economic policy uncertainty are common in the literature (see, e.g., Datta et al. 2019; Xu 2020). As our main political polarization instrumental variable, we employ the partisan conflict index developed by Azzimonti (2018). This index measures partisan conflict in the US Congress about policy and is based on media news. In particular, the partisan

[8] In the change regression (model 3 of Panel A in Table 6) we do not include firm fixed effects as these are wiped out by construction in such a regression. Ho et al. (2018) posit that the change regression is also a good robustness test for the firm fixed effects regression because the former is free from bias stemming from firm-level omitted variables that are constant over time. In the other specifications of Panel A in Table 6 (models 1 and 2) we include firm fixed effects. We report the results from the fixed effects specifications in order to economize space, but the results are similar when we do not use firm fixed effects.

conflict variable tracks the degree of political disagreement over policy among US politicians at the federal level and is estimated using a method similar to Baker et al. (2016). We expect that partisan conflict–i.e., the level of disagreement between US politicians at the federal level–would be an important determinant of economic policy uncertainty in the US but, at the same time, it is also rational to expect that partisan conflict would not affect earnings management in a way other than through the uncertainty about economic policy that it induces. Hence, we proceed with the 2SLS-IV estimation by instrumenting economic policy uncertainty with the partisan conflict variable. To economize space, we report the 2SLS-IV specification with firm fixed-effects in the model.[9] The results of this 2SLS-IV estimation are available in model 1 of Panel B in Table 6.

The first-stage results show that the effect of the natural log of partisan conflict (*lnPC*) on policy uncertainty (*lnEPU*) is positive and significant at the 1% level (see the lower part of model 1 of Panel B in Table 6). This supports the notion that partisan conflict is a significant determinant of economic policy uncertainty and, thus, a suitable instrument. This instrument's validity is further supported by the weak identification test Wald F-test (WIT) and the under-identification LM test (UIT). The second-stage results show that the instrumented policy uncertainty variable (*Predicted lnEPU*) exerts a significant and positive effect on discretionary accruals at the 1% level (see the upper part of model 1 of Panel B in Table 6). Thus, the results of the 2SLS-IV specification that addresses potential endogeneity issues still support that economic policy uncertainty positively affects firms' accruals-based earnings management. Note that, in the 2SLS-IV estimations, the constant term is suppressed.

In models 2 and 3 of Panel B in Table 6, we perform a 2SLS-IV estimation with two alternative instrumental variables that relate to political polarization in the US. The first alternative instrumental variable (*ALIGN*) is a dummy variable that in a given year takes the value of one if the party that controls the executive branch of the US government also controls the House of Representatives and the Senate, and zero otherwise. We source data to construct this variable from the Quality of Governance Institute (QoGI) of Gothenburg University in Sweden (https://qog.pol.gu.se/). We expect the alignment between the executive and the legislative branches of the US government to decrease economic policy uncertainty (i.e., the inclusion restriction). However, it is not likely that such an alignment would affect earnings management in any way other than its relationship with economic policy uncertainty (i.e., the exclusion restriction). In model 2 of Panel B in Table 6, we find that the alignment dummy (*ALIGN*) displays a negative and significant relationship with economic policy uncertainty (see the lower part of model 2 of Panel B in Table 6). The second-stage results (see the upper part of model 2 of Panel B) show that the instrumented economic policy uncertainty variable continues to exert a positive and significant effect on discretionary accruals (*DA*) at the 10% level.

The second alternative instrumental variable (*RAE*) is the yearly average of the Rae (1967) indices about electoral and legislative fractionalization. The Rae (1967) indices of political fractionalization measure the probability that two randomly chosen legislators (Rae index of legislative fractionalization) or voters (Rae index of electoral fractionalization) are of different parties. The Rae indices can take values between one (maximal fractionalization) and zero (minimal fractionalization). We expect political fractionalization to display a positive relationship with economic policy uncertainty (i.e., the inclusion

[9] The 2SLS-IV estimation results are similar when we do not use firm fixed effects.

restriction). On the other hand, it is not clear how political fractionalization could affect earnings management in a way other than the increase in economic policy uncertainty that it prompts (i.e., the exclusion restriction). We source data for the fractionalization instrumental variable from the Quality of Governance Institute (QoGI) of Gothenburg University in Sweden (https://qog.pol.gu.se/). The results of the 2SLS-IV model 3 of Panel B in Table 6 show that the political fractionalization instrument (*RAE*) exhibits a positive and significant relationship with economic policy uncertainty (see the lower part of model 3 of Panel B). The second-stage results (see the upper part of model 3 of Panel B) show that the instrumented economic policy uncertainty variable has a positive and significant effect at the 1% level on the earnings management measure.

Next, we perform 2SLS-IV estimations that use combinations of our three political polarization instruments. This exercise is useful because by using more than one instrument in the same 2SLS-IV specification we can also test for Hansen's over-identification test (OIT). The results from these estimations are available in models 4–6 of Panel B in Table 6. The first-stage results (see the lower parts of models 4–6 of Panel B) show that all the combinations of instruments display a significant association with economic policy uncertainty. The second-stage results (see the upper parts of models 4–6 of Panel B) provide further evidence about the positive and significant effect of economic policy uncertainty on earnings management. Furthermore, the insignificant p-value of the over-identification test of Hansen (OIT) in two of the three models that use combinations of the instrumental variables (models 4 and 5 of Panel B) provides further support to the validity of the instruments. The findings from the 2SLS-IV analysis continue to provide evidence in favor of hypothesis *H1* about the positive relationship between economic policy uncertainty and earnings management.[10]

4.4 Channel analysis: the role of financial constraints

As we discuss when we develop the main hypothesis *H1* (Sect. 2.1), economic policy uncertainty may motivate managers to inflate earnings to signal outsiders that a firm has positive prospects in the face of the increased probability of the adjustment costs that economic policy uncertainty implies. The baseline findings provide empirical evidence supporting the main hypothesis (*H1*), which suggests a positive relationship between economic policy uncertainty and firms' upwards earnings management. This section aims to identify an important economic mechanism (channel) through which economic policy uncertainty facilitates managers' incentive to inflate earnings during periods of increased economic policy uncertainty.

Economic policy uncertainty renders uncertain the policy and regulatory framework in which firms operate. Consequently, economic policy uncertainty exerts adverse effects on several performance indicators and renders firms' cash flows uncertain (Brogaard and Detzel 2015; Li 2019; Iqbal et al. 2020; Xu 2020). Moreover, the uncertainty in the firms' operational framework, which economic policy uncertainty involves, increases external financing costs. Several empirical studies show that in periods of economic policy uncertainty, external finance providers, as banks, bond investors, and the stock market, increase

[10] As an additional test to address endogeneity concerns, we use the two-step system generalized method of moments (GMM) estimator. The analysis using this estimator is available in the internet appendix and the results are available in Table IA.1 of the internet appendix. The results continue to lend support to hypothesis *H1*.

the cost of such funding (Francis et al. 2014; Gungoraydinoglu et al. 2017; Ashraf and Shen 2019; Kaviani et al. 2020; Xu, 2020; Chan et al. 2021; Tran 2021). Therefore, economic policy could increase firms' financial constraints (i.e., increase the barriers in raising external financing).

Concurrently, economic policy uncertainty by increasing the probability of changes in the policy and regulatory framework also increases the probability that firms will incur significant adjustment and compliance costs (Pindyck 1982; Bloom 2009; Ryan 2012). Hence, economic policy uncertainty might increase firms' need for external finance to cover the costs from these adjustments in a period where external financing becomes expensive and firms face increased financial constraints.

Increased financial constraints could enhance managers' incentive to manage earnings upwards. By inflating earnings, managers could attempt to signal that the firm has positive prospects in the face of the increased probability for the adjustment and compliance costs that economic policy uncertainty implies and ease the financial constraints that firms confront in the market for external funding. This argument is consistent with previous empirical evidence showing financial constraints to positively affect upwards earnings management, especially in periods when firms face an increased probability of needing external financing (Teoh et al. 1998; Iatridis and Kadorinis 2009; Farell et al. 2014; He and Ren 2017; Bowen et al. 2018; Kurt 2018). Therefore, we posit that financial constraints could be an important economic mechanism (channel) through which economic policy uncertainty incentivizes managers to manage earnings upwards.

To test the role of financial constraints as an economic mechanism (channel) through which economic policy uncertainty (*lnEPU*) could increase discretionary accruals, we adopt the following process. First, we calculate firm-level financial constraints using the KZ index developed by Kaplan & Zingales (1997).[11] The KZ index is the financial constraints measure that decision-makers and investors consider the most relevant when analyzing firms' financials (Brown et al. 2019). Then, we conduct an economic mechanism (channel) analysis using a three-step procedure as suggested by (MacKinnon and Dwyer 1993). Many studies about earnings management apply this type of channel analysis (see, e.g., Ding et al. 2018; Cai et al. 2020). Furthermore, we use the Sobel (1982) test, similarly with other accounting studies (Ding et al. 2018; Cai et al. 2020), to confirm the channel effect statistically.

$$\text{Step 1}: (DA)_{i,t} = \left[c + a_1(EPU)_t + a_2(FirmControls)_{i,t} + a_3(Macros)_t + v_i + u_{i,t}\right] \quad (7)$$

$$Step\,2(KZindex)_{i,t} = \left[c + a_1(EPU)_t + a_2(FirmControls)_{i,t} + a_3(Macros)_t + v_i + u_{i,t}\right] \quad (8)$$

$$Step3: (DA)_{i,t} = \left[c + a_1(EPU)_t + a_2(KZindex)_{i,t} + a_3(FirmControls)_{i,t} + a_4(Macros)_t + v_i + +u_{i,t}\right] \quad (9)$$

This process provides empirical evidence in favor of an economic mechanism (channel) effect when (i) Step 1—lnEPU positively and significantly affects earnings management, (ii) Step 2—lnEPU positively and significantly affects firms' financial constraints (iii) Step 3—financial constraints exert a positive and significant effect on earnings management variable, and the (iv) positive effect of lnEPU on earnings management decreases with the

[11] Higher values of the KZ index imply increased financial constraints. See Table 1 for the formula we use to calculate the KZ index.

Table 7 The Effect of Economic Policy Uncertainty on Earnings Management: Channel Analysis of financial constraints

	OLS with FE (1)	OLS with FE (2)	OLS with FE (3)
	DA	KZ index	DA
lnEPU	.065***	.572***	.053***
	(4.665)	(9.911)	(3.362)
KZ index			.011**
			(2.176)
lnMV	−0.006	.258***	.004
	(−0.704)	(10.232)	(.641)
LEV	−0.192*	.56***	−0.021
	(−1.835)	(6.778)	(−0.697)
ROA	−0.043	−0.017	−0.028
	(−1.099)	(−1.154)	(−0.803)
CFOA	−0.722***	−0.345***	−0.795***
	(-7.573)	(−2.831)	(-8.052)
INVZ	−0.039**	−0.146***	−0.036**
	(−2.535)	(−5.331)	(−2.35)
SALES VOL	−0.007	.597***	−0.005
	(−1.128)	(5.29)	(−0.731)
CASH VOL	.045	5.538***	.062*
	(1.435)	(10.592)	(1.892)
CAP INV	−0.242*	−0.473***	−0.206*
	(−1.947)	(−4.292)	(−1.776)
GDP gr	−0.033***	−0.084***	−0.031***
	(-9.683)	(-8.655)	(-9.67)
VIX	−0.005***	−0.05***	−0.004***
	(−4.025)	(−12.313)	(−3.642)
Constant	−0.329***	−3.201***	−0.394***
	(−2.951)	(−10.381)	(−3.935)
Observations	40,924	40,924	40,924
R-squared	.025	.292	.025
Firm FE	YES	YES	YES
Sobel z-statistic			2.12
Sobel p-value			0.034

The table observes the mediating role of firms' financial constraints (KZ index) in the relationship between economic policy uncertainty and earnings management. The Sobel (1982) test has to be significant (i.e., p-value < 0.10) in order to reject the null of no channel effect. In all models we cluster standards errors within firm-level. The definitions of all the variables included in the regressions are in Table 1. Significance at the 10%, 5%, and 1% levels is represented by *, **, and ***, respectively. T-values are in parentheses

addition of the financial constraints variable. We present the findings of this analysis in Table 7.

In model 1 of Table 7, which is our baseline specification and Step 1 in the economic mechanism (channel) analysis, we find a positive and significant at the 1% level effect of

economic policy uncertainty (*lnEPU*) on the earnings management measure (*DA*). In model 2 of Table 7, which represents Step 2, we regress economic policy uncertainty (*lnEPU*) on the financial constraints proxy (*KZ index*). We find that lnEPU exerts a positive and significant effect at the 1% level on the KZ index. This result implies that economic policy uncertainty increases firms' financial constraints. In Step 3, we include the economic mechanism variable (i.e., the KZ index) in the baseline model. We observe that the KZ financial constraints index's coefficient (0.011) is positive and significant at the 5% level (see model 3 of Table 7). Moreover, in model 3, we find that the coefficient and the *t*-statistic of economic policy uncertainty (*lnEPU*) is smaller (coefficient: 0.053, *t*-statistic: 3.362) as compared to the corresponding coefficient value in model 1 of Table 7, which represents Step 1 (coefficient: 0.065, *t*-statistic: 4.665). The Sobel (1982) test confirms the statistical significance of the economic mechanism (channel) effect (z-statistic = 2.12, p-value = 0.034).[12] These results provide empirical evidence about the role of increased financial constraints as an economic mechanism (channel) that enhances managers' incentive to inflate reported earnings when economic policy uncertainty is high.

4.5 Cross-sectional analysis: Tests for hypotheses H2 and H3

Next, we test for the additional hypotheses *H2* and *H3*. Hypothesis *H2* posits that the positive effect of economic policy uncertainty on accruals-based earnings management would be more evident for firms in politically sensitive industries. To this end, we use models that include the interaction term between the economic policy uncertainty variable (*lnEPU*) with a dummy variable (*POLSENS*) that takes the value of one if a firm belongs to a politically sensitive industry and zero otherwise. To construct the political sensitivity dummy (*POLSENS*), we follow Herron et al. (1999) and identify as politically sensitive the firms belonging to the following Fama and French 48 industry classification: tobacco products, pharmaceuticals, health care services, defense, petroleum, and natural gas, telecommunications, and transportation. Hypothesis *H3* suggests that the positive effect of economic policy uncertainty on earnings management would strengthen for firms that display higher financial distress (i.e., default risk). To test *H3*, we employ models that include the interaction term between the economic policy uncertainty measure and the measure of firms' financial distress, which is the inverse of Altman's z-score (*lnEPU*INVZ*). The findings from the models that test *H2* and *H3* are available in Table 8.

The simple OLS model 1 of Table 8 shows that the effect of economic policy uncertainty (*lnEPU*) on the earnings management measure is positive and significant at the 1% level, while its interaction with the political sensitivity dummy (POLSENS) is also positive and significant at the 1% level. Hence, this finding lends empirical support to hypothesis *H2,* positing that the positive association between economic policy uncertainty and earnings management would be stronger for firms operating in politically sensitive industries. We further test for *H2* by employing firm fixed effects. The interaction term between economic policy uncertainty (*lnEPU*) and the political sensitivity dummy (*POLSENS*) remains positive and significant at the 5% level (see model 3 of Table 8). Note that in this model, the political sensitivity dummy's individual effect cannot be identified since it is a time-invariant firm characteristic that is perfectly collinear with the firm fixed effects.

[12] The Sobel (1982) test has to be significant (i.e., p-value < 0.10) to reject the null of no channel effect.

Table 8 The effect of economic policy uncertainty on earnings management: cross-sectional analysis based on political sensitivity and firm risk

	OLS (1)	OLS (2)	OLS with FE (3)	OLS with FE (4)	OLS with FE (5)	OLS with FE (6)
	DA	DA	DA	DA	DA	DA
lnEPU	.052***	.088**	.054***	.135***		
	(3.953)	(2.183)	(3.969)	(2.737)		
POLSENS	−0.516***					
	(−3.091)					
lnEPU*POLSENS	.119***		.064**		.057*	
	(3.403)		(2.033)		(1.81)	
lnEPU* INVZ		.002		.013		.02**
		(.357)		(1.56)		(2.453)
lnMV	−0.004	−0.004	−0.006	−0.005	−0.002	−0.001
	(−1.102)	(−0.916)	(−0.726)	(−0.661)	(−0.195)	(−0.097)
LEV	−0.121	−0.12	−0.192*	−0.192*	−0.187*	−0.186*
	(−1.565)	(−1.548)	(−1.841)	(−1.829)	(−1.774)	(−1.751)
ROA	−0.091***	−0.09***	−0.043	−0.043	−0.043	−0.043
	(−3.288)	(−3.271)	(−1.096)	(−1.098)	(−1.108)	(−1.11)
CFOA	−0.686***	−0.7***	−0.721***	−0.724***	−0.714***	−0.717***
	(-9.149)	(-9.623)	(-7.551)	(-7.563)	(-7.4)	(-7.42)
INVZ	−0.016***	−0.026	−0.039**	−0.1**	−0.033**	−0.13***
	(−3.706)	(−0.849)	(−2.54)	(−2.079)	(−2.024)	(−2.629)
SALES VOL	.009***	.009***	−0.007	−0.008	−0.009	−0.01
	(2.939)	(2.99)	(−1.126)	(−1.205)	(−1.409)	(−1.544)
CASH VOL	−0.062***	−0.059***	.044	.05	.036	.046
	(−3.509)	(−3.349)	(1.414)	(1.617)	(1.197)	(1.495)
CAP INV	−0.202*	−0.162*	−0.234*	−0.237*	−0.248**	−0.248**
	(−1.959)	(−1.724)	(−1.873)	(−1.902)	(−1.968)	(−1.972)
GDP gr	−0.038***	−0.039***	−0.033***	−0.033***		
	(−10.89)	(−10.966)	(-9.683)	(-9.826)		
VIX	−0.007***	−0.007***	−0.005***	−0.005***		
	(-6.128)	(-6.195)	(−4.032)	(−4.164)		
Constant	−0.138**	−0.299	−0.331***	−0.66**	−0.027	.005
	(−2.052)	(−1.544)	(−2.968)	(−2.278)	(−0.111)	(.022)
Observations	40,924	40,924	40,924	40,924	40,924	40,924
R-squared	.077	.076	.026	.026	.036	.037
Firm FE	NO	NO	YES	YES	YES	YES
Year FE	NO	NO	NO	NO	YES	YES

The table observes the cross-sectional effect of economic policy uncertainty on earnings management based on political sensitivity and firm risk. In all models we cluster standards errors within firm-level. The definitions of all the variables included in the regressions are in Table 1. Significance at the 10%, 5%, and 1% levels is represented by *, **, and ***, respectively. T-values are in parentheses

Additionally, we test *H2* in a model that includes firm and year fixed effects (see model 5 of Table 8). This specification, which includes time effects, is also important for identification purposes. In our baseline estimations, we do not use time effects. If we use time effects, then the economic policy uncertainty, which only has time variation, would be perfectly collinear with the time dummies, so the identification would not be possible. However, excluding time effects could prove challenging because the economic policy uncertainty variable could correlate with other yearly events except those reflected by the macro controls we use. Such time-related events could affect the earnings management decisions of managers. This could contaminate the findings of our baseline models. Using the interaction between firm characteristics, such as the political sensitivity dummy (*POLSENS*) and the economic policy uncertainty variable (*lnEPU*), enables the use of time effects. Including time effects in the model simultaneously with such an interaction, which can be identified in the presence of time effects, transforms this exercise into a useful cross-sectional test. Indeed, we find in model 5 of Table 8 that interaction lnEPU*POLSENS remains positive and significant at the 10% level. This finding further corroborates *H2* in a model that includes firm and time fixed effects.

We employ a similar strategy to test *H3*. The results from the simple OLS estimations, the OLS estimations with firm fixed effects, and the OLS estimations with firm and time fixed effects are available in models 2, 4, and 6 of Table 8, respectively. The interaction term between economic policy uncertainty and firm risk (*lnEPU*INVZ*) is positive in all these models. At the same time, it is also significant at the 5% level in the model that includes firm and time fixed effects (see model 6 of Table 8). These results lend some support to *H3*. This finding implies that firm managers of firms in more financial distress would be motivated to present an improved financial position of the firm when uncertainty is high to alleviate the concerns of various stakeholders such as investors and creditors.

5 Robustness checks

5.1 Replication of the main analysis using real earnings management as the dependent variable

5.1.1 Real earnings management measure

In the first robustness exercise, we replicate the main empirical analysis using real earnings management as the dependent variable. Previous studies highlight the effect of economic policy uncertainty on real corporate activities, i.e., financial decisions about investment, investment efficiency, foreign direct investment (FDI), mergers and acquisitions (M&A) activities, and lobbying initiation (Gulen and Ion 2016; Julio and Yook 2016; Jens 2017; Bonaime et al. 2018; Drobetz et al. 2018; Nguyen et al. 2018; Shang et al. 2019; Dai and Zhang, 2019; Duong et al. 2020). Furthermore, previous research finds that managers show a greater preference for managing earnings through real activities than through accounting methods (see, e.g., Bruns and Merchant 1990; Graham et al. 2005).

Following Baker et al. (2019), we employ abnormal discretionary expenditure (*ADE*) as a real earnings management proxy. To this end, we use a cross-sectional model of discretionary expenditures for each year and each industry as classified by its two-digit SIC code. We follow Cohen et al. (2008) and estimate abnormal discretionary expenditures using the following regression:

Table 9 The effect of economic policy uncertainty on real earnings management–baseline estimations

	OLS	OLS	OLS	(4) OLS with FE
	(1)	(2)	(3)	
	ADE	ADE	ADE	ADE
lnEPU	−0.095***	−0.092***	−0.509***	−0.399***
	(−5.518)	(−5.126)	(−14.837)	(−11.904)
lnMV		−0.03***	−0.011*	−0.007
		(−4.697)	(−1.745)	(−0.608)
LEV		.012	.018	−0.054
		(.293)	(.446)	(−0.819)
ROA		−0.108***	−0.109***	−0.156***
		(−4.384)	(−4.488)	(−3.666)
CFOA		.478***	.444***	−0.082
		(5.857)	(5.554)	(−0.646)
INVZ		−0.002	.005	.04**
		(−0.338)	(.837)	(2.273)
SALES VOL		.048***	.041***	.014
		(5.086)	(4.528)	(1.162)
CASH VOL		−0.261***	−0.244***	−0.131*
		(−4.011)	(−3.782)	(−1.771)
CAP INV		.6***	.603***	.421***
		(6.634)	(6.704)	(3.347)
GDP gr			.085***	.078***
			(10.32)	(10.156)
VIX			.042***	.035***
			(14.06)	(12.25)
Constant	.203**	.288***	1.169***	1.016***
	(2.572)	(3.39)	(10.919)	(7.052)
Observations	40,476	40,476	40,476	40,476
R-squared	.011	.011	.021	.014
Firm FE	NO	NO	NO	YES

The table observes the effect of economic policy uncertainty on real earnings management (ADE). Models 1–4 include simple OLS and OLS with fixed effect estimations. In all models we cluster standards errors within firm-level. Control variables include all the variables used in the baseline regressions the definitions of which are in Table 1. Significance at the 10%, 5%, and 1% levels is represented by *, **, and ***, respectively. T-values are in parentheses

$$\frac{DE_{i,t}}{TA_{i,t-1}} = \gamma_1 \frac{1}{TA_{i,t-1}} + \gamma_2 \frac{SALES_{i,t-1}}{TA_{i,t-1}} + \varepsilon_{it} \tag{10}$$

$DE_{i,t}$ is the sum of discretionary expenditures of each firm i in year t, which includes annual advertising, R&D, and SG&A expenses. $SALES_{i,t-1}$ is the net revenues in year $t-1$. All variables are scaled by $TA_{i,t-1}$ which is the sum of total assets in the previous year. The residual ε_{it} represents the deviation from the predicted discretionary

Table 10 The effect of economic policy uncertainty on real earnings management—differential impact between booms and recessions

	OLS (1)	OLS (2)	OLS with FE (3)	OLS with FE (4)
	ADE	ADE	ADE	ADE
lnEPU	−0.673***	−0.561***	−0.465*	−0.427***
	(−12.779)	(−3.481)	(−1.656)	(−4.291)
GDP gr	−0.021	.123***	−0.034*	.12***
	(−1.32)	(12.248)	(1.77)	(12.764)
lnEPU* GDP gr	.172***		.159***	
	(6.423)		(5.903)	
GDP gap		−2.817***		−2.764***
		(21.199)		(20.832)
lnEPU* GDP gap		.092***		.058***
		(21.262)		(20.866)
Constant	−0.981***	−1.007***	−0.673**	−0.867***
	(−2.886)	(−5.395)	(−1.996)	(−4.774)
Observations	40,476	40,476	40,476	40,476
R-squared	.021	.036	.096	.11
Control Variables	YES	YES	YES	YES
Firm FE	NO	NO	YES	YES

The table observes the differential effect of economic policy uncertainty on real earnings management during periods of economic growth and periods of recession. In all models we cluster standards errors within firm-level. Control variables include all the variables used in the baseline regressions the definitions of which are in Table 1. Significance at the 10%, 5%, and 1% levels is represented by *, **, and ***, respectively. T-values are in parentheses

expenditures. This deviation is our abnormal discretionary expenditure measure (*ADE*). Negative values of the abnormal discretionary expenditure measure (*ADE*) signal the reduction of discretionary expenses to increase earnings (i.e., upwards real earnings management).

5.1.2 *Replication of the baseline OLS and OLS with firm fixed effects estimations–real earnings management dependent variable*

We first run a simple OLS specification using the economic policy uncertainty (*lnEPU*) measure as a sole independent variable. Next, we expand this specification by including the firm-level control variables, and in the following model, we add the macroeconomic controls. The results from these estimations are in models 1–3 of Table 9 and show that lnEPU exerts a negative and significant effect at the 1% level on abnormal discretionary expenses (*ADE*). In model 4 of Table 9, we run the OLS model with firm fixed effects. The results of model 4 continue to show that economic policy uncertainty (*lnEPU*) exerts a negative and significant at the 1% level effect on abnormal discretionary expenses (*ADE*). These findings are consistent with our expectations and provide

support to hypothesis *H1*. Increased economic policy uncertainty induces managers to cut discretionary expenses to increase reported earnings.

5.1.3 Replication of tests for differential effects during different phases of the business cycle–real earnings management dependent variable

Table 10 replicates the analysis of the interaction between different phases of the economy and economic policy uncertainty using abnormal discretionary expenses (*ADE*) as a dependent variable. In models 1 and 2 of Table 10, we depict the simple OLS estimations that include the interaction between economic policy uncertainty and GDP growth (*lnEPU*GDPgr*) and the interaction between economic policy uncertainty and GDP output gap (*lnEPU*GDP gap*). These interactions enter the specifications as positive and significant at the 1% level. In Models 3 and 4 of Table 10, we replicate the estimations mentioned above with models that comprise firm fixed effects. The results are similar and provide further evidence that the negative effect of economic policy uncertainty on abnormal discretionary expenses (*ADE*) is less pronounced during improved economic conditions. These results are consistent with the main analysis findings, which show that the positive effect of economic policy uncertainty on upwards earnings management is less pronounced under better economic conditions.

5.1.4 *Replication of tests that address endogeneity–real earnings management dependent variable*

In this subsection, we replicate using real earnings management as a dependent variable the tests of Table 6, which address endogeneity-related concerns. The results of this replication exercise are in Table 11.

In model 1 of Panel A in Table 11, we employ the Elections variable as a proxy of economic policy uncertainty. We find that the Elections dummy has a negative and significant at the 1% level association with abnormal discretionary expenses (*ADE*). In model 2 of Panel A in Table 11, we show that the residuals-based economic policy uncertainty measure (*Residuals EPU*) has a negative and significant at the 1% level relationship with real earnings management (ADE). The results of the change regression are similar. In model 3 of Panel A in Table 11, we find that increases in economic policy uncertainty ($\Delta lnEPU$) are negatively and significantly associated with increases in abnormal discretionary expenses (ΔADE). The results of the tests that we perform in Panel A of Table 11 are consistent with the main analysis findings. We show that economic policy is associated with decreased abnormal discretionary expenses. This finding supports hypothesis *H1*, which posits that economic policy uncertainty incentivizes managers to increase reported earnings.

In Panel B of Table 11, we replicate the 2SLS-IV estimations of Table 6 of the main analysis. The first three models comprise each of the three instruments separately in the 2SLS -IV specification (models 1–3 of Panel B in Table 11). The first stage results show that the three instruments (*lnPC*, *ALIGN*, and *RAE*) display a significant effect on economic policy uncertainty (see the lower part of models 1–3 of Panel B Table 11). The second stage results show that the instrumented economic policy uncertainty (*Predicted lnEPU*) variable exerts a negative and significant at the 1% level effect on the real earnings management measure (*ADE*) across all three specifications (see the upper part of models

Table 11 The effect of economic policy uncertainty on real earnings management–addressing endogeneity

	Panel A				Panel B				
	Presidential Elections	Residuals lnEPU	Change Regression	2SLS IV	2SLS IV	2SLS IV	2SLS IV	2SLS IV	2SLS IV
	(1)	(2)	(3)	(1)	(2)	(3)	(4)	(5)	(6)
	ADE	ADE	Δ ADE	ADE	ADE	ADE	ADE	ADE	ADE
Elections	−0.202***								
	(−10.949)								
Residuals lnEPU		−0.733***							
		(-8.252)							
Δ ln *EPU*			−0.476***						
			(-7.262)						
Predicted lnEPU				−0.41***	−1.961***	−0.213***	−0.385***	−0.373***	−0.582***
				(−11.337)	(−14.508)	(−3.817)	(−10.912)	(−10.911)	(-9.827)
First stage									
LnPC				.827***			.843***		.769***
				(424.44)			(474.06)		(658.96)
ALIGN					−0.102***		−0.150***	−0.105***	
					(−57.09)		(−208.17)	(-62.76)	
RAE						36.70***		36.95***	25.86***
						(68.74)		(77.59)	(121.81)
Observations	40,476	40,476	33,907	39,401	39,401	39,401	39,401	39,401	39,401
R-squared	.014	.013	.009	.014	−0.041	.013	.014	.014	.013
UIT p-value	-	-	-	0.000	0.000	0.000	0.000	0.000	0.000
WIT	-	-	-	2305.81	1223.45	2552.34	2785.5	2554.08	2677.82
with critical value				16.38	16.38	16.38	19.93	19.93	19.93
OIT p-value				-	-	-	0.396	0.211	0.000
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 11 (continued)

	Panel A				Panel B				
	Presidential Elections	Residuals lnEPU	Change Regression	2SLS IV	2SLS IV	2SLS IV	2SLS IV	2SLS IV	2SLS IV
	(1)	(2)	(3)	(1)	(2)	(3)	(4)	(5)	(6)
	ADE	ADE	Δ ADE	ADE	ADE	ADE	ADE	ADE	ADE
Firm FE	YES	YES	NO	YES	YES	YES	YES	YES	YES

The table observes the effect of economic policy uncertainty on real earnings management controlling for the endogeneity issue. In Model 1 and 2 of Panel A include estimations with alternative measures (Elections and Residuals lnEPU) of economic policy uncertainty. In Model 3 of Panel A we run a change regression. Models 1–6 of Panel B we include two-stage least squares (2SLS) Instrumental Variable (IV) estimations. In all models we cluster standards errors within firm-level. UIT is the under-identification LM test by Kleibergen and Paap, WIT is the Wald F-statistic of the weak identification test, which must be higher than its critical value to reject the null. OIT is the p-value of the over-identification test by Hansen, which should be insignificant. Control variables include all the variables used in the baseline regressions the definitions of which are in Table 1. Significance at the 10%, 5%, and 1% levels is represented by *, **, and ***, respectively. T-values are in parentheses

1–3 of Panel B in Table 11). In models 4–6 of Panel B in Table 11, we use combinations of the three instruments. The first stage results show that the instruments employed in each of these models exhibit a significant relationship with economic policy uncertainty (see the lower part of models 4–6 of Panel B in Table 11). The second stage results show that the instrumented economic policy uncertainty (*Predicted lnEPU*) exerts a negative and significant at the 1% level effect on the real earnings management proxy (see the upper part of models 4–6 of Panel B in Table 11). The validity of the instruments is also illustrated by the insignificant p-value of the over-identification test of Hansen (OIT) in two of the three models of this analysis (models 5 & 6 of Panel B in Table 11). The above results reinforce our previous findings that economic policy uncertainty induces managers to decrease abnormal discretionary expenses to show higher earnings performance.

5.1.5 *Replication of channel analysis: the role of financial constraints–real earnings management dependent variable*

Table 12 examines the role of financial constraints as an economic mechanism (channel) that facilitates the relationship between economic policy and real earnings management.

Similarly with Sect. 4.4 about accruals-based earnings management, we use a process that provides empirical evidence in favor of an economic mechanism (channel) effect when (i) Step 1—lnEPU negatively and significantly affects abnormal discretionary expenses (*ADE*), (ii) Step 2—lnEPU positively and significantly affects firms' financial constraints (iii) Step 3—financial constraints exert a negative and significant effect on abnormal discretionary expenses (*ADE*), and the (iv) negative and significant effect of lnEPU on abnormal discretionary expenses (*ADE*) decreases in magnitude with the addition of the financial constraints variable.

In model 1 of Table 12, we replicate the baseline specification. We find that economic policy uncertainty (*lnEPU*) exerts a negative and significant at the 1% level effect on abnormal discretionary expenses (*ADE*). In model 2 of Table 12, we test whether economic policy uncertainty (*lnEPU*) increases the proxy for firms' financial constraints (i.e., the *KZ index*). We find that the relationship between economic policy uncertainty and the KZ index is positive and significant at the 1% level. In model 3 of Table 12, we add the financial constraints variable, the KZ index, in the baseline model. We show that it displays a negative and significant at the 1% level association with abnormal discretionary expenses (*ADE*). We also observe that the coefficient of economic policy uncertainty (*lnEPU*) remains negative and significant in model 3 of Table 12. However, both its magnitude and the *t*-statistic are smaller in comparison with model 1 of Table 12. These results provide evidence that financial constraints function as an economic mechanism (channel) that facilitates the negative association between economic policy uncertainty and abnormal discretionary accruals (*ADE*). The Sobel (1982) test confirms the statistical significance of the above-mentioned economic mechanism (channel) effect (z-statistic = -3.03, p-value = 0.002).

Table 12 The effect of economic policy uncertainty on real earnings management: channel analysis of financial constraints

	OLS with FE (1) ADE	OLS with FE (2) KZ index	OLS with FE (3) ADE
lnEPU	−0.399***	.572***	−0.328***
	(−11.904)	(9.911)	(-7.509)
KZ index			−0.022***
			(−3.182)
Constant	1.016***	−3.201***	.938***
	(7.052)	(−10.381)	(6.363)
Observations	40,476	40,476	40,476
R-squared	.014	.292	.014
Control Variables	YES	YES	YES
Firm FE	YES	YES	YES
Sobel z-statistic			−3.03
Sobel p-value			0.002

The table observes the mediating role of firms' financial constraints (KZ index) in the relationship between economic policy uncertainty and real earnings management. The Sobel (1982) test has to be significant (i.e., p-value < 0.10) in order to reject the null of no channel effect. In all models we cluster standards errors within firm-level. Control variables include all the variables used in the baseline regressions the definitions of which are in Table 1. Significance at the 10%, 5%, and 1% levels is represented by *, **, and ***, respectively. T-values are in parentheses

5.1.6 Replication of cross-sectional analysis: tests for hypotheses H2 and H3– real earnings management dependent variable

Table 13 provides estimations that comprise the interaction between economic policy uncertainty and political sensitivity (*lnEPU*POLSENS*) and the interaction between economic policy uncertainty and firms' financial distress (*lnEPU*INVZ*). We present results from simple OLS models (models 1 and 3), from specifications with firm-level fixed effects (models 2 and 5), and from models that comprise both firm and year fixed effects (models 4 and 6). The interactions (*lnEPU*POLSENS* and *lnEPU*INVZ*) emerge as negative and significant at the 1% level in most of the models of Table 13. These findings show that the negative effect of economic policy uncertainty on abnormal discretionary expenditures (*ADE*) becomes stronger for firms belonging to politically sensitive industries and firms with more financial distress. These results are significant and show that firms belonging to politically sensitive industries (*H2*) and displaying more default risk (*H3*) exhibit a stronger

Table 13 The effect of economic policy uncertainty on real earnings management: cross-sectional analysis based on political sensitivity and firm risk

	OLS	OLS with FE	OLS with FE	OLS	OLS with FE	OLS with FE (6)
	(1)	(2)	(3)	(4)	(5)	
	ADE	ADE	ADE	ADE	ADE	ADE
lnEPU	−0.482***	−0.431***		−0.931***	−0.84***	
	(−15.23)	(−13.87)		(−13.211)	(−11.89)	
INVZ	−0.004	.018**	.059***	−0.01*	.337***	.217***
	(−0.585)	(2.19)	(3.28)	(−1.686)	(7.20)	(3.90)
POLSENS	−0.035	.148				
	(−0.161)	(.67)				
lnEPU*POLSENS	−0.093*	−0.153***	−0.173***			
	(−1.883)	(−3.1)	(−3.52)			
lnEPU* INVZ				−0.08***	−0.069***	−0.033***
				(-8.246)	(-6.94)	(−3.12)
Constant	1.112***	.905***	.587***	3.138***	2.712***	.464***
	(10.711)	(8.42)	(3.67)	(10.756)	(9.11)	(3.00)
Observations	40,476	40,476	40,476	40,476	40,476	40,476
R-squared	.035	.025	.065	.022	.027	.065
Control Variables	YES	YES	YES	YES	YES	YES
Firm FE	NO	YES	YES	NO	YES	YES
Year FE	NO	NO	YES	NO	NO	YES

The table observes the cross-sectional effect of economic policy uncertainty on real earnings management based on political sensitivity and firm risk. In all models we cluster standards errors within firm-level. Control variables include all the variables used in the baseline regressions the definitions of which are in Table 1. Significance at the 10%, 5%, and 1% levels is represented by *, **, and ***, respectively. T-values are in parentheses

inclination to cut abnormal discretionary expenditures to report inflated earnings when economic policy uncertainty is high.

5.2 Additional economic policy uncertainty indices

This exercise entails the employment of three non-news-based proxies of economic policy uncertainty. Except for the news-based index that we have employed in the main analysis, Baker et al. (2016) have also developed some additional economic policy uncertainty indices. The first is a measure of uncertainty about government spending (*lnEPU-PUR*). This index employs data from the Survey of Professional Forecasters of the Philadelphia Federal Reserve Bank. It estimates the dispersion of the forecast related to the procurement of goods and services for all government branches (i.e., local, state, and federal governments). The second additional economic policy uncertainty measure refers to monetary policy uncertainty (*lnEPU-CPI*). This index also employs data from the FED's Survey of Professional Forecasters and is based on the dispersion of the consumer price index's forecasts (CPI). Finally, the third additional index of economic policy uncertainty employs data

from the Congressional Budget Office. It relates to the uncertainty regarding the expiration of the tax code provisions in the future (*lnEPU-TAX*).

Table 14 depicts the models that employ these additional measures of economic policy uncertainty measures. We show only the fixed effects estimations to economize on space, but the results we obtain from the simple OLS models are similar.

Overall, the specifications in Table 14 offer further corroborating evidence to the findings of the main analysis that economic policy uncertainty exerts a positive effect on accruals-based earnings management in support of hypothesis H1. More specifically, in models 2 and 3 of Table 14, we find that both monetary policy uncertainty (*lnEPU-CPI*) and tax policy uncertainty (*lnEPU-TAX*) display a positive and significant relationship at the 1% level with discretionary accruals (*DA*). In models 4–9 of Table 14, we test *H2* and *H3*. In these models, we also include year effects. Hence, we drop the macroeconomic variables (including the economic policy uncertainty variables) because they exhibit only yearly variation and cannot be identified in the presence of year effects. Model 5 lends some support in support for hypothesis *H2* as the coefficient between monetary policy uncertainty (*lnEPU-CPI*) and the political sensitivity dummy (*POLSENS*) is positive and significant at the 10% level. However, in model 6 of Table 14, we find that the interaction between tax policy uncertainty (*lnEPU-TAX*) and political sensitivity (*POLSENS*) is negative and significant at the 1% level. This finding may imply that politically sensitive firms manipulate earnings downwards in case they become targets of increased taxation when tax policy uncertainty is higher. Models 7–9 of Table 14 provide additional evidence supporting *H3,* which predicts that economic policy uncertainty would induce more financially distressed firms to manage their earnings upwards in periods of increased economic policy uncertainty. The interaction term between the inverse of the Altman's z-score (*INVZ*) and all the additional measures of economic policy uncertainty (*lnEPU-PUR*, *lnEPU-CPI*, and *lnEPU-TAX*) is positive and significant (see models 7, 8, and 9 of Table 14).

5.3 Accrual quality measure of Francis et al. (2005)

This exercise involves the use of the accrual quality measure of Francis et al. (2005) as a dependent variable. This accrual quality measure is an augmented form of the accrual quality measure of Dechow and Dichev (2002). It examines the extent to which working capital accruals are related to operating cash flow realizations while taking into consideration the change in revenues and gross value of equipment, plant, and property.

Following Francis et al. (2005), we estimate accruals using the following specification:

$$\frac{TCA_{i,t}}{\overline{TA}} = \varphi_{0,i} + \varphi_{1,i}\frac{CFO_{i,t-1}}{\overline{TA}} + \varphi_{2,i}\frac{CFO_{i,t}}{\overline{TA}} + \varphi_{3,i}\frac{CFO_{i,t+1}}{\overline{TA}} + \varphi_{4,i}\frac{\Delta SALES_{i,t}}{\overline{TA}} + \varphi_{5,i}\frac{PPE_{i,t}}{\overline{TA}} + \varepsilon_{it} \tag{11}$$

$TCA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STDEBT_{i,t}$ stands for total current accruals in the current year (t).[13] $CFO_{i,t-1}$ stands for the cash flow from operations in the previous year ($t-1$), $CFO_{i,t}$ is the cash flow in the current year (t),[14] and $CFO_{i,t+1}$ is the cash flows from

[13] $\Delta CA_{i,t}$ is the change of current assets from the to the previous year (t-1) to current year (t), $\Delta CL_{i,t}$ is the change of current liabilities from the previous year (t-1) and the current year (t), $\Delta Cash_{i,t}$ is the change of cash between the previous year (t-1) and the current year (t). $\Delta STDEBT_{i,t}$ is the change in debt in current liabilities from the previous year (t-1) to the current year (t).

[14] $CFO_{i,t} = NIBE_{i,t} - TA_{i,t}$, where $NIBE_{i,t}$ is firm's net income before extraordinary items. $TA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STDEBT_{i,t} - DEPN_{i,t}$. and~stands~for~firm's~total~accruals~in~the ~current~year (t) $DEPN_{i,t}$ is the firm's value of depreciation expenses in the current year (t).

Table 14 Robustness Analysis: The Effect of Economic Policy Uncertainty (EPU) on Earnings Management–Additional EPU measures

	OLS with FE (1)	OLS with FE (2)	OLS with FE (3)	OLS with FE (4)	OLS with FE (5)	OLS with FE (6)	OLS with FE (7)	OLS with FE (8)	OLS with FE (9)
	DA	DA	DA	DA	DA	DA	DA	DA	DA
lnEPU-PUR	−0.019								
	(−1.366)								
lnEPU-CPI		.112***							
		(5.715)							
lnEPU-TAX			.036***						
			(8.803)						
lnEPU-PUR*POLSENS				.01					
				(.348)					
lnEPU-CPI*POLSENS					.056*				
					(1.772)				
lnEPU-TAX*POLSENS						−0.041***			
						(−5.892)			
lnEPU-PUR*INVZ							.013**		
							(2.088)		
lnEPU-CPI*INVZ								.017*	
								(1.75)	
lnEPU-TAX*INVZ									.006**
									(2.238)
Constant	−0.018	−0.568***	−0.252**	−0.197*	−0.236**	−0.156	−0.197*	−0.191*	−0.192*
	(−0.16)	(−4.689)	(−2.254)	(−1.948)	(−2.321)	(−1.539)	(−1.919)	(−1.885)	(−1.897)
Observations	40,924	40,924	40,924	39,844	39,844	39,844	39,844	39,844	39,844
R-squared	.025	.026	.03	.265	.265	.266	.265	.265	.265
Control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 14 (continued)

	OLS with FE (1) DA	OLS with FE (2) DA	OLS with FE (3) DA	OLS with FE (4) DA	OLS with FE (5) DA	OLS with FE (6) DA	OLS with FE (7) DA	OLS with FE (8) DA	OLS with FE (9) DA
Year FE	NO	NO	NO	YES	YES	YES	YES	YES	YES

The table observes the effect of additional measures of economic policy uncertainty on earnings management. LnEPU-CPI is the natural log of the uncertainty measure in terms of monetary policy, lnEPU-TAX is the natural log of the tax economic policy uncertainty measure and lnEPU-PUR is the natural log of the government spending economic policy. Models 1–3 include baseline estimations of the three alternative proxies of uncertainty. Models 4–6 include estimations with interactions between the three alternative uncertainty measures and political sensitivity proxy, while Models 7–9 include interactions between the three alternative measures of economic policy uncertainty and firm risk. In all models we cluster standards errors within firm-level. Control variables include all the main variables used in the baseline regressions, the definitions of which are in Table 1. Significance at the 10%, 5%, and the 1% levels is represented by *, **, and ***, respectively. T-values are in parentheses

operations in one year ahead ($t+1$). $\Delta SALES_{i,t}$ is the change in revenues from the current year (t) to the previous year ($t-1$). $PPE_{i,t}$ is the gross value of property plant and equipment in the current year (t). All variables are normalized by the average value of total assets ($\overline{TA}$). For the accruals' estimation, we winsorize all the variables' values at the 1st and the 99th percentile. We estimate Eq. (11) by using annual cross-sectional regressions for each industry at the two-digit SIC level. To measure accrual quality (AQ), we use the residuals from Eq. (11) and calculate the standard deviation of each firm's residuals:$AQ = \sigma(\varepsilon_i)_t$ for a four-year rolling period (t-4 through t). A higher value of the standard deviation of the residuals denotes lower accrual quality. This is because a high (low) standard deviation implies more (less) uncertainty about a firm's accruals. Then we use the accrual quality (AQ) estimates as the dependent variable in the baseline models. Note that the models that employ the accruals quality (AQ) measure of Francis et al. (2005) as a dependent variable do not directly examine *H1*, *H2*, and *H3*. These hypotheses concern the direction (upward or downward) of earnings manipulation. Here, we investigate if economic policy uncertainty displays a relationship with the extent of earnings manipulation (i.e., accrual quality) as measured by the four-year rolling average of the accruals' standard deviation. This exercise is useful because it could provide additional evidence that economic policy uncertainty affects managerial decisions about the quality of the reported earnings. The results from this exercise are available in Table 15.

In model 1 of Table 15, we run OLS estimations on the effect of economic policy uncertainty on the accruals quality measure (*AQ*). We find that economic policy uncertainty has a positive and significant relationship at the 1% level with the accruals quality measure (*AQ*). In model 2 of Table 15, we add firm-level fixed effects. We continue to observe that economic policy uncertainty exerts a negative and significant at 1% level effect on accruals quality (*AQ*). These findings imply that increased economic policy uncertainty has a positive and significant association with a deterioration in earnings quality.

Further, models 3 and 6 of Table 15 depict the results from OLS specifications that comprise the interaction between economic policy uncertainty and the political sensitivity dummy (*lnEPU*POLSENS*) and the interaction between economic policy uncertainty and the measure of firms' financial distress (*lnEPU*INVZ*), respectively. In these models, the individual effect of economic policy uncertainty on the accruals quality measure (*AQ*) continues to be positive and significant at the 1% level. In model 3 of Table 15, we also observe that the interaction between economic policy uncertainty and political sensitivity (*lnEPU*POLSENS*) is positive and significant at the 1% level. The interaction between the firms' financial distress variable and economic policy uncertainty (*lnEPU*INVZ*) is also positive and significant at the 1% level in model 6 of Table 15. Together, these results indicate that the positive association between economic policy uncertainty and the deterioration in earnings quality strengthens for firms belonging to politically sensitive industries and firms with higher financial distress.

Next, in models 4 and 7 of Table 15, we augment the previous specifications with firm fixed effects. We continue to find a positive, albeit weaker in terms of significance, effect of the lnEPU*POLSENS and lnEPU*INVZ interactions on the accruals quality variable (*AQ*). Lastly, in models 5 and 8 of Table 15, we further augment the specifications with time effects. In these models, we find that the association of the lnEPU*POLSENS and lnEPU*INVZ interactions with the accrual quality (*AQ*) remains positive but not significant.

Overall, this exercise's results evince that economic policy uncertainty has a strong positive association with earnings quality deterioration. Furthermore, we find some evidence that this association is more apparent for firms belonging to politically sensitive industries and firms with more financial distress.

6 Conclusion

This paper finds that economic policy uncertainty is a significant determinant of US firms' financial reporting quality as proxied by their earnings management behavior. In particular, we show that economic policy uncertainty exerts a positive and significant effect on abnormal accruals. Using cross-sectional tests, we also provide evidence of three factors that enhance the relationship mentioned above. We show that the positive association of economic policy uncertainty with upwards earnings manipulation is more potent for firms that operate in politically sensitive industries and for firms that display more financial distress. We also find the positive effect of economic policy uncertainty on earnings manipulation to be more evident when the economic conditions are unfavorable (i.e., during recessionary periods). Additionally, we provide evidence that an important economic mechanism (channel) that facilitates the relationship between economic policy uncertainty and upwards earnings management is the increase in firms' financial constraints.

Our findings are robust to a series of tests that deal with endogeneity, omitted variables, and other concerns. These comprise estimations that use firm fixed effects, instrumental variable regressions, and alternative measures of economic policy uncertainty, such as the US Presidential elections. We also provide similar evidence about real earnings management. We show that economic policy uncertainty exerts a negative and significant effect on abnormal discretionary expenses–i.e., real earnings management. These findings are consistent with the *"lean against the wind"* view about earnings management behavior. In the context of this study, this implies that, when economic policy uncertainty is high, managers want to present an improved financial position of the firm to mitigate the concerns of investors, analysts, creditors, and other outsiders. This managerial incentive is particularly evident in recessionary (undervaluation) periods.

This study adds to the literature investigating the determinants of earnings management and the growing literature that examines the effects of economic policy uncertainty on corporate outcomes. Our findings have some practical implications. They inform regulators, investors, analysts, and creditors about the relationship between economic policy uncertainty and earnings management. Outsiders could consider that managers may overstate firms' financial performance when economic policy uncertainty is high. Such managerial behavior could be particularly evident for firms in sectors more exposed to the government's economic policies, firms in more financial distress, and during recessionary periods.

One could extend this research in many ways. For example, one could investigate the effects of economic policy uncertainty in different countries or regional contexts. It would

Table 15 The effect of Economic Policy Uncertainty on Accruals quality

	OLS	OLS with FE	OLS	OLS with FE	OLS with FE	OLS	OLS with FE	OLS with FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	AQ	AQ	AQ	AQ	AQ	AQ	AQ	AQ
lnEPU	.029***	.017***	.023***	.016***		.056***	.03***	
	(6.972)	(3.918)	(5.498)	(3.641)		(5.366)	(3.296)	
INVZ	−0.019***	−0.008***	−0.019***	−0.008***	−0.013***	−0.019***	−0.008***	−0.013***
	(−18.992)	(−4.552)	(−19.352)	(−4.559)	(-7.683)	(−19.031)	(−4.506)	(-7.629)
POLSENS			−0.119***					
			(−3.022)					
lnEPU*POLSENS			.029***	.005	.008			
			(3.486)	(.674)	(1.141)			
lnEPU* INVZ						.005***	.002*	.002
						(3.261)	(1.838)	(1.253)
Constant	.163***	.127***	.188***	.126***	.159***	.038	.065	.168***
	(9.875)	(6.771)	(10.874)	(6.757)	(9.927)	(.811)	(1.527)	(11.38)
Observations	38,101	38,101	38,101	38,101	38,101	38,101	38,101	38,101
R-squared	.106	.036	.108	.036	.252	.107	.036	.252
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	NO	YES	NO	YES	YES	NO	YES	YES
Year FE	NO	NO	NO	NO	YES	NO	NO	YES

The table observes the effect of economic policy uncertainty on accruals quality (AQ) estimated following estimated following Francis et al. (2005). In all models we cluster standards errors within firm-level. Control variables include all the variables used in the baseline regressions the definitions of which are in Table 1. Significance at the 10%, 5%, and the 1% levels is represented by *, **, and ***, respectively. T-values are in parentheses

be interesting to see if the results we find in this study continue to hold in countries with political systems that are less or more prone to political partisanship than the US. Another interesting extension could be investigating whether the association between uncertainty about economic policy and earnings management could be conditioned by factors such as corporate governance and auditor quality.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s11156-021-01010-2.

References

Arif S, Marshall N, Yohn TL (2016) Understanding the relation between accruals and volatility: a real options-based investment approach. J Account Econ 62:65–86

Arouri M, Estay C, Rault C, Roubaud D (2016) Economic policy uncertainty and stock markets: Long-run evidence from the US. Financ Res Lett 18:136–141

Ashraf BN, Shen Y (2019) Economic policy uncertainty and banks' loan pricing. J Financ Stabil 44:100695

Azzimonti M (2018) Partisan conflict and private investment. J Mon Econ 93:114–131

Badertscher B, Shroff N, White H (2013) Externalities of public firm presence: evidence from private firms' investment decisions. J Fin Econ 109:682–706

Baker SR, Bloom, N (2013) Does uncertainty drive business cycles? Using disasters as natural experiments. National bureau of economic research working 19475

Baker SR, Bloom N, Davis SJ (2016) Measuring economic policy uncertainty. Quart J Econ 131:1539–1636

Baker TA, Lopez TJ, Reitenga AL, Ruch GW (2019) The influence of CEO and CFO power on accruals and real earnings management. Rev Quant Finance Account 52(1):325–345

Bergstresser D, Philippon T (2006) CEO incentives and earnings management. J Financ Econ 80(3):511–529

Bhattacharya U, Daouk H, Welker M (2003) The world pricing of earnings opacity. Account Rev 78:641–678

Bialkowski JP, Dang HD, Wei X (2021) High policy uncertainty and low implied market volatility–an academic puzzle? J Financ Econ (forthcoming)

Biddle G, Hilary G, Verdi R (2009) How does financial reporting quality relate to investment efficiency? J Acc Econ 48:112–131

Bird A, Karolyi SA, Ruchti T (2017) Political uncertainty and corporate transparency. Available at SSRN 2986678

Bloom N (2009) The Impact of Uncertainty Shocks. Econometrica 77:623–685

Bloom N (2014) Fluctuations in uncertainty. J Econ Pers 28:153–176

Bonaime A, Gulen H, Ion M (2018) Does policy uncertainty affect mergers and acquisitions? J Fin Econ 129(3):531–558

Boone AL, Kim A, White JT (2018) Political uncertainty and firm disclosure. Vanderbilt owen graduate school of management research paper

Bordo MD, Duca JV, Koch C (2016) Economic policy uncertainty and the credit channel: aggregate and bank level U.S. evidence over several decades. J Financ Stabil 26:90–106

Boutchkova M, Doshi H, Durnev A, Molchanov A (2012) Precarious politics and return volatility. Rev Financ Stud 25(4):1111–1154

Bowen RM, Dutta S, Zhu P (2018) Are financially constrained firms more prone to financial restatements? Available at SSRN 3211497

Brogaard J, Detzel A (2015) The asset-pricing implications of government economic policy uncertainty. Manag Sci 61(1):3–18

Brown S, Dutordoir M, Veld C, Veld-Merkoulova Y (2019) What is the role of institutional investors in corporate capital structure decisions? A survey analysis. J Corp Financ 58:270–286

Bruns W, Merchant K (1990) The dangerous morality of managing earnings. Manag Acc 72(2):22–25

Burgstahler D, Dichev I (1997) Earnings management to avoid earnings decreases and losses. J Acc Econ 24:99–126

Bushman R, Smith A (2001) Financial accounting information and corporate governance. J Acc Econ 32:237–333

Cai G, Li W, Tang Z (2020) Religion and the method of earnings management: evidence from China. J Bus Ethics 161(1):71–90

Chan YC, Saffar W, Wei KJ (2021) How economic policy uncertainty affects the cost of raising equity capital: evidence from seasoned equity offerings. J Financ Stabil 53:100841

Charitou A, Lambertides N, Trigeorgis L (2011) Distress risk, growth and earnings quality. Abacus 47:158–181
Chen PF, Lee CC, Zeng JH (2019) Economic policy uncertainty and firm investment: evidence from the US market. App Econ 51(31):3423–3435
CNBC (2019) More than 50 companies reportedly pull production out of China due to trade war. Article in press. https://www.cnbc.com/2019/07/18/more-than-50-companies-reportedly-pull-production-out-of-china-due-to-trade-war.html
Cohen DA, Zarowin P (2011) Do firms lean against the wind. Earnings management and stock market return. Working paper
Cohen DA, Dey A, Lys TZ (2008) Real and accrual-based earnings management in the pre-and post-Sarbanes-Oxley periods. Account Rev 83(3):757–787
Conrad J, Cornell B, Landsman W (2002) When is bad news really bad news? J Financ 57:2507–2531
Dai L, Ngo P (2021) Political uncertainty and accounting conservatism. Eur Account Rev 30(2):277–307
Dai L, Zhang B (2019) Political uncertainty and finance: a survey. Asia-Pacific J Financ Stud 48(3):307–333
Datta S, Doan T, Iskandar-Datta M (2019) Policy uncertainty and the maturity structure of corporate debt. J Financ Stabil 44:1–12
DeAngelo H, DeAngelo L, Skinner DJ (1994) Accounting choice in troubled companies. J Account Econ 17:113–143
Dechow PM, Dichev ID (2002) The quality of accruals and earnings: the role of accrual estimation errors. Account Rev 77(s-1):35–59
Dechow P, Sloan R, Sweeney A (1995) Detecting earnings management. Account Rev 70:193–225
Dechow P, Ge W, Schrand C (2010) Understanding earnings quality: a review of the proxies their determinants and their consequences. J Acc Econ 50:344–401
DeFond ML, Jiambalvo J (1994) Debt covenant violation and manipulation of accruals. J Account Econ 17:145–176
DeFond ML, Park CW (2001) The reversal of abnormal accruals and the market valuation of earnings surprises. Account Rev 76:375–404
Ding R, Li J, Wu Z (2018) Government affiliation, real earnings management, and firm performance: the case of privately held firms. J Bus Res 83:138–150
Drake MS, Mayberry MA, Wilde JH (2018) Pushing the future back: the impact of policy uncertainty on the market pricing of future earnings. J Bus Financ Account 45:895–927
Drobetz W, El Ghoul S, Guedhami O, Janzen M (2018) Policy uncertainty, investment, and the cost of capital. J Financ Stabil 39:28–45
Duong HN, Nguyen JH, Nguyen M, Rhee SG (2020) Navigating through economic policy uncertainty: the role of corporate cash holdings. J Corp Financ 62:1–22
Durnev A (2010) The real effects of political uncertainty: elections and investment sensitivity to stock prices. Available at SSRN 1549714
Dye RA (1988) Earnings management in an overlapping generations model. J Account Res 26(2):195–235
Farrell K, Unlu E, Yu J (2014) Stock repurchases as an earnings management mechanism: the impact of financing constraints. J Corp Financ 25:1–15
Fortune (2019) CEOs are scrambling to avoid trump tariffs and survive trade war. Article in press. https://fortune.com/2019/02/07/us-china-trade-war-trump-tariffs/
Francis J, LaFond R, Olsson P, Schipper K (2005) The market pricing of accruals quality. J Account Econ 39(2):295–327
Francis BB, Hasan I, Zhu Y (2014) Political uncertainty and bank loan contracting. J Empir Financ 29:281–286
Gilson S (1989) Management turnover and financial distress. J Financ Econ 25:241–262
Graham JR, Harvey CR, Rajgopal S (2005) The economic implications of corporate financial reporting. J Account Econ 40(1–3):3–73
Gulen H, Ion M (2016) Policy uncertainty and corporate investment. Rev Financ Studies 29(3):523–564
Gungoraydinoglu A, Çolak G, Öztekin Ö (2017) Political environment, financial intermediation costs, and financing patterns. J Corp Financ 44:167–192
Guo H, Jiang X (2011) Accruals and the conditional equity premium. J Account Res 49:187–221
He G, Ren H (2017) Are financially constrained firms susceptible to a stock price crash? WBS finance group research paper, 239
Healy PM (1985) The effect of bonus schemes on accounting decisions. J Account and Econ 7(1–3):85–107
Herron MC, Cram D, Lavin J, Silver J (1999) Measurement of political effects in the United States economy: a study of the 1992 presidential election. Econ Politics 11:51–81

Hirshleifer D, Hou K, Teoh S (2009) Accruals, cash flows, and aggregate stock returns. J Financ Econ 91:389–406
Ho PH, Lin CY, Linh TTT (2018) The dark side of bank CEO risk-taking incentives: evidence from bank lending decisions. Available at SSRN 3416023
Iatridis G, Kadorinis G (2009) Earnings management and firm financial motives: a financial investigation of UK listed firms. Int Rev Financ Anal 18(4):164–173
Iqbal U, Gan C, Nadeem M (2020) Economic policy uncertainty and firm performance. Appl Econ Lett 27(10):1–6
Jens CE (2017) Political uncertainty and investment: Causal evidence from U.S. gubernatorial elections. J Financ Econ 124:563–579
Jiang JX, Petroni KR, Wang IY (2010) CFOs and CEOs: who have the most influence on earnings management? J Financ Econ 96(3):513–526
Jin X, Chen Z, Yang X (2019) Economic policy uncertainty and stock price crash risk. Account Financ 58(5):1291–1318
Jones J (1991) Earnings management during import relief investigations. J Account Res 29:193–228
Julio B, Yook Y (2012) Political uncertainty and corporate investment cycles. J Financ 67(1):45–83
Julio B, Yook Y (2016) Political uncertainty and cross-border flows of capital. J Int Econ 103:13–26
Kang W, Wang J (2018) Oil shocks, policy uncertainty and earnings surprises. Rev Quant Finance Account 51:375–388
Kang Q, Liu Q, Qi R (2010) Predicting stock market returns with aggregate discretionary accruals. J Account Res 48:815–858
Kang W, Lee K, Ratti RA (2014) Economic policy uncertainty and firm-level investment. J Macroecon 39:42–53
Kaplan SN, Zingales L (1997) Do investment-cash flow sensitivities provide useful measures of financing constraints? Q J Econ 112(1):169–215
Kaviani MS, Kryzanowski L, Maleki H, Savor P (2020) Policy uncertainty and corporate credit spreads. J Financ Econ 138(3):838–865
Kim J, Kim Y, Zhou J (2017) Languages and earnings management. J Account Econ 63:288–306
Ko JH, Lee CM (2015) International economic policy uncertainty and stock prices: wavelet approach. Econ Lett 134:118–122
Kurt AC (2018) How do financial constraints relate to financial reporting quality? Evidence from seasoned equity offerings. Eur Account Rev 27(3):527–557
Lambert R, Leuz C, Verrecchia R (2007) Accounting information, disclosure, and the cost of capital. J Account Res 45:385–420
Lang M, Maffett M (2011) Transparency and liquidity uncertainty in crisis periods. J Account Econ 52:101–125
Lang M, Lins KV, Maffett M (2012) Transparency, liquidity, and valuation: international evidence on when transparency matters most. J Account Res 50:729–774
Lel U (2019) The role of foreign institutional investors in restraining earnings management activities across countries. J Int Bus Stud 50(6):895–922
Leuz C, Wysocki PD (2016) The economics of disclosure and financial reporting regulation: evidence and suggestions for future research. J Account Res 54:525–622
Leuz C, Nanda D, Wysocki PD (2003) Earnings management and investor protection: an international comparison. J Financ Econ 69:505–527
Li L (2019) Economic policy uncertainty and corporate cash policy: international evidence. J Account Public Pol 38(6):106694
Liu L, Zhang T (2015) Economic policy uncertainty and stock market volatility. Financ Res Lett 15:99–105
MacKinnon DP, Dwyer JH (1993) Estimating mediated effects in prevention studies. Evaluation Rev 17(2):144–158
Nagar V, Scoenfeld J, Wellman L (2019) The effect of economic policy uncertainty on investor information asymmetry and management disclosure. J Account Econ 67:36–57
Nguyen Q, Kim T, Papanastassiou M (2018) Policy uncertainty, derivatives use, and firm-level FDI. J Intl Bus Stud 49(1):96–126
Pastor L, Veronesi P (2012) Uncertainty about government policy and stock prices. J Financ 67:1219–1264
Pastor L, Veronesi P (2013) Political uncertainty and risk premia. J Financ Econ 110:520–545
Pastor L, Veronesi P (2017) Explaining the puzzle of high policy uncertainty and low market volatility. VOX Column, 25

Pindyck RS (1982) Adjustment costs, uncertainty, and the behavior of the firm. Am Econ Rev 72(3):415–427
Associated Press (2019) Facing Trump's tariffs, some companies move, change or wait. Article in press. https://apnews.com/article/ed4080f18c124564acc2d6537d21044f
Pustylnick I (2016) Use of Z-score in detection of revenue manipulations. Working paper. Paper presented at the 21-st international scientific conference economics and management, Brno, Czech Republic
Rae DW (1967) The political consequences of electoral laws. Yale University Press, New Haven
Reuters (2016) JPMorgan could move thousands of staff out of UK–report. Article in press. https://cn.reuters.com/article/britain-eu-jpmorgan-idCNL8N19T0WE
Rosner RL (2003) Earnings manipulation in failing firms. Contemp Account Res 20:361–408
Ryan SP (2012) The costs of environmental regulation in a concentrated industry. Econometrica 80(3):1019–1061
Shang L, Lin JC, Saffar W (2019) Does economic policy uncertainty drive corporate lobbying? Available at SSRN 3211764
Shroff N, Sun A, White H, Zhang W (2013) Voluntary disclosure and information asymmetry: evidence from the 2005 securities offering reform. J Account Res 51:1299–1345
Sobel ME (1982) Asymptotic confidence intervals for indirect effects in structural equation models. Sociol Methodol 13:290–312
Stein LCD, Wang CCY (2016) Economic uncertainty and earnings management. Working Paper 16–103, Harvard Business School
Teoh SH, Welch I, Wong TJ (1998) Earnings management and the underperformance of seasoned equity offerings. J Financ Econ 50(1):63–99
The New York Times (2019) The government shutdown was the longest ever: Here's the history. Article in press. https://www.nytimes.com/interactive/2019/01/09/us/politics/longest-government-shutdown.html
Tiwari AK, Jana RK, Roubaud D (2019) The policy uncertainty and market volatility puzzle: evidence from wavelet analysis. Financ Res Lett 31:278–284
Tran QT (2021) Economic policy uncertainty and cost of debt financing: international evidence. N Am J Econ Financ 57:101419
Trueman B, Titman S (1988) An explanation for accounting income smoothing. J Account Res 3:127–139
Verrecchia R (2001) Essays on disclosure. J Account Econ 32:97–180
Waisman M, Ye P, Zhu Y (2015) The effect of political uncertainty on the cost of corporate debt. J Financ Stabil 16:106–117
Wang HJ, Li QY, Xin W (2014) Economic policy uncertainty, cash holding and market value. J Financ Res 9:53–68
Xu Z (2020) Economic policy uncertainty, cost of capital, and corporate innovation. J Bank Financ 111:105698
Xu H, Dao M, Wu J (2019) The effect of local political corruption on earnings quality. Rev Quant Finance Account 53:551–574