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Economic Policy Uncertainty and the Financial Stability—Is there a Relation?

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Economic Policy Uncertainty and Financial Stability: Is There a Relation?

ABSTRACT

This paper investigates the influence of economic policy uncertainty (EPU) on financial stability. Using data for 23 countries from 1996 to 2016, we show that the impact is negative and statistically significant. Economically, a unit standard deviation increase in uncertainty decreases financial stability by 2.66–7.26% of its sample mean. In terms of financial system characteristics, the negative influence of EPU on financial stability is stronger for countries with a financial system with more competition, less regulatory capital, and a smaller size. We show that our finding is robust, using bank-level data and different constructions of global panels and controlling for Z-score skewness, the global financial crisis, and endogeneity.

Keywords*:* Economic policy uncertainty; financial stability; financial system characteristics; country level; bank level

I. Introduction

This paper hypothesizes that economic policy uncertainty (EPU) influences financial stability. The very essence of examination this hypothesis stems from the key role the financial system plays. Well-functioning financial systems facilitate the flow of funds from savers to investors and ensure the productive allocation of scarce resources (Mishkin, 1999). Hence, if the functioning of financial systems is impaired, the flow of funds is reduced, inhibiting productive investment and aggregate economic activity. In this sense, financial stability implies proper functioning of the financial system's components, including financial intermediaries, institutions, markets, payments, settlements, and clearing systems (Klomp and De Haan, 2009). Mishkin (1992) argues that financial stability refers to a situation wherein a financial system can ensure the efficient allocation of savings to investment opportunities in a sustained manner. Intuitively, information flow is critical to the functioning of a financial system, since saving and investment decisions are made after participants have evaluated their options.

Thus, any factors that disrupt information increase moral hazard and adverse selection problems in the financial system, and, consequently, disrupt the flow of funds. Such disruption in the flow of information reduces lending, productive investment, and hence economic activity, because of the complexity in distinguishing borrowers with better investment opportunities from those with worse investment opportunities (Mishkin, 1999). In theory, four factors disrupt information flow and thus generate financial instability: rising interest rates, deteriorating financial sector balance sheets, deteriorating nonfinancial balance sheets, and rising uncertainty (Mishkin, 1999). Our hypothesis is motivated by rising uncertainty as a source of financial instability. Rising uncertainty increases information asymmetry because the characteristics of borrowers become opaque. That is, it becomes increasingly difficult for lenders to distinguish credit risks during uncertain times, leading to a decline in lending and investment, and consequently a contraction in economic activity. According to Mishkin (1999), the rise in uncertainty could originate from a recession, uncertainty about government policies, or the collapse of a large financial or nonfinancial institution. We argue that a rise in uncertainty originates from EPU (i.e., uncertainty about government policies). Gilchrist, Sim, and Zakrajšek (2014) show that uncertainty impacts investment by causing financial distortions (changes in credit spreads). They show that uncertainty influences the effective supply of credit, thereby generating countercyclical credit spreads and procyclical leverage. Avery and Zemsky (1998), Rigotti and Shannon (2005), and Segal, Shaliastovich, and Yaron (2015) demonstrate that uncertainty distorts asset prices and trade.

Furthermore, we hypothesize that the effect of EPU on financial stability depends on the characteristics of the financial system. Specifically, we consider the influence of financial system competition, banking regulatory capital, and the size of the banking sector. First, based on the competition–fragility nexus, we argue that strong competition in the financial system is associated with higher bank risk and accelerates the negative effect of EPU on financial stability. Second, stronger capital regulation is expected to have a stabilizing effect, reduce bank risk-taking, improve borrower screening and risk monitoring, and provide buffers against macroeconomic and financial shocks. Therefore, a country with more regulatory capital is likely to be less vulnerable to EPU. Finally, the adverse impact of EPU on financial stability is dampened by increases in the size of the banking system. More details on these hypotheses are discussed in Section II.

We test our hypotheses by matching EPU data for 23 countries with the corresponding country-level data from 1996 to 2016. Controlling for market characteristics, macroeconomic conditions, and cross-sectional and year fixed effects, we show that uncertainty influences financial stability. Specifically, EPU leads to a decline in financial stability (proxied by the Z-score). In addition, we find that financial system characteristics influence this relation. Specifically, the negative influence of EPU on financial stability is stronger for countries with a financial system with greater competition, less regulatory capital, and smaller size. We apply several robustness tests to our findings. First, we reproduce our analysis for bank-level data and control for bank characteristics (size, capital asset ratio, loan share, and net interest margin). Second, Laeven and Levine (2009) and Houston, Lin, Lin, and Ma (2010) argue that the Z-score is a noisy measure of financial stability because it can be skewed. We, therefore, re-estimate the regressions using the logarithm of the Z-score. Next, we control for the effect of the global financial crisis (GFC) and use different constructions of our global panel. Finally, we control for the issue of endogeneity. We find the results to be robust in all of the tests mentioned above.

Our estimates have economic interpretations. A one standard deviation increase in uncertainty leads to a decrease in the Z-score of 0.364–0.728 at the country level. Economically, the slope coefficients imply that a one standard deviation increase in uncertainty decreases financial stability by 2.66–5.31% of its sample mean. At the bank level, the decrease is 2.69–7.26% of the financial stability sample mean. Similarly, for the characteristics of the financial system, financial stability decreases up to 7.44%, 13.82%, and 13.28% of its mean value in countries with a financial system with more competition, less regulatory capital, and a smaller size, respectively. In sum, the negative impact of uncertainty on financial stability is not only statistically important but also economically meaningful.

Our study contributes to the literature in four ways. First, a strand of literature examines the origins, measures, and consequences of uncertainty. It shows that uncertainty affects various aspects of the economy, including financial and nonfinancial markets. For example, Fernández-Villaverde, Guerrón-Quintana, Rubio-Ramírez, and Uribe (2011) show that uncertainty can result from sudden changes in the interest rate, and they demonstrate that interest rate uncertainty causes investment, consumption, debt, and output to drop. Similarly, Istrefi and Mouabbi (2018) observe that uncertainty originating from the interest rate has a large negative and persistent impact on the economy. Creal and Wu (2017) demonstrate that monetary policy uncertainty drives business cycles. Mueller, Tahbaz-Salehi, and Vedolin (2017) show that uncertainty originating from monetary policy disrupts foreign exchange returns. In the same vein, Kurov and Stan (2018) show that monetary policy uncertainty distorts the equity, treasury, foreign exchange, and crude oil markets. Shin and Zhong (2018) show that financial and macroeconomic uncertainties cause real activity to decline. Ghironi and Ozhan (2019) find that interest rate uncertainty reduces returns to foreign direct investment and creates inflation, currency risks, and capital outflow. Iyke and Ho (2019) show that EPU is an important disruptive factor in foreign exchange markets. Although these studies show that uncertainty shapes financial and nonfinancial markets, none explores the unique impact of EPU in particular on the stability of a financial system, measured in terms of soundness and resilience. To the best of our knowledge, we offer the first empirical exploration of this issue.

Second, an increasing number of studies are examining financial instability and its determinants. This strand of literature offers various measures of financial stability and stress and attempts to establish the causes of financial instability, with the aim of providing effective measures to safeguard financial systems. For example, Bordo, Dueker, and Wheelock (2002), by constructing an annual index of financial conditions for the United States, show that price-level shocks explain financial instability from 1790 to 1933 and inflation shocks explain financial instability from 1980 to 1997. Allen and Gale (2004), using a variety of models, show that the relation between competition and financial stability is complex—competition can hurt or increase financial stability—while Fu, Lin, and Molyneux (2014) show that greater concentration nurtures financial fragility and bank risk exposure. Klomp and De Haan (2009) find a negative association between central bank independence and financial instability. Jones, Lee, and Yeager (2012) demonstrate that opacity engenders price contagion, which intensifies the speculative cycles of bubbles and crashes and, in turn, generates financial instability.

Fouejieu (2017) find that the financial systems in emerging market inflation targeters are more fragile. Our study contributes to this literature by showing that EPU is an important determinant of financial instability. Although this could seem obvious from the uncertainty literature discussed above, the role played by uncertainty is surprisingly absent from the financial stability literature. This literature focuses on the importance of competition, the regulatory environment, and globalization, for instance, as determinants of financial stability (e.g., Fu et al., 2014; Fouejieu, 2017; Yin, 2019).

Third, we contribute to the literature by showing that EPU affects financial stability across not only countries but also banks. This result is important for critical and obvious reasons. Countries have unique attributes—for example, regulatory frameworks, stance toward financial and trade openness, level of competition, financial market size, the preferences of financial market participants, and business cycles—such that a single-country analysis of the relation between EPU and financial stability will be less informative. Moreover, our estimates are perhaps more precise because of the increase in observations associated with the pooled sample. Similarly, banks are different—in terms of operating strategies, asset and liabilities, customers, size, financial superstructure, financial technology orientation, and so forth—even within the same group (i.e., private vs. public). These nuances, which should arguably lead to heterogeneity in banks' reaction to uncertainty, are entirely ignored in the cross-country analysis using aggregate data. In addition, the cross-country analysis is likely masked by aggregation bias, which is removed using bank-level data.

Our fourth contribution is inherent in the third; that is, we further show that heterogeneity in the impact of financial stability originates from three sources: the level of competition, the amount of regulatory capital, and the size of the banking sector. Prior studies emphasize the role played by these sources in financial stability (Allen and Gale, 2000, 2004; Repullo, 2004; Konishi and Yasuda, 2004; Zhang, Wu and Liu, 2008; Amidu and Wolfe 2013;

Bertay, Demirgüç-Kunt and Huizinga, 2013; Lee and Hsieh, 2013). However, there is no evidence that the level of competition, the amount of regulatory capital, or the size of the banking sector shapes the impact of uncertainty on financial stability. We provide the first evidence by showing that the negative influence of EPU on financial stability is stronger for countries with a financial system with more competition, less regulatory capital, and a smaller size.

We proceed as follows. Section II reviews the literature. Section III outlines the model and data. Sections IV and V present the main findings and robustness test results, respectively. Section VI concludes the paper.

II. Literature Review

Theoretically, rising uncertainty increases information asymmetry, rendering the characteristics of borrowers opaque (Mishkin, 1999). During uncertain times, lenders find it difficult to distinguish good from bad credit risks. Hence, lenders are hesitant to lend, leading to a decline in investment and, consequently, a contraction in economic activity. Similarly, Minsky (1970) shows that, after a prolonged economic expansion, the domain of financial stability shrinks. Therefore, any unusual event can trigger a reaction of the financial system. The author identifies two shocks that can destabilize a financial system: the shortfall of cash flow due to a decline in income and management or human error. These factors are more likely to occur under uncertainty, meaning that uncertainty is a critical determinant of financial stability.

A number of theoretical studies support these arguments. For instance, Avery and Zemsky (1998) show how capital markets react under uncertainty: (1) If market participants possess private information on only a single dimension of uncertainty (i.e., the impact of a shock to the asset value), price adjustments prevent herd behavior; (2) if market participants possess private information on two dimensions of uncertainty (i.e., the existence and impact of a shock), herd behavior arises, but prices are not necessarily distorted; and (3) if market participants also possess private information on a third dimension of uncertainty (i.e., information quality), herd behavior arises and could cause short-run mispricing. Additionally, Rigotti and Shannon (2005), using a general equilibrium model that distinguishes uncertainty and risk by assuming that the preferences of agents are incomplete over state-contingent consumption baskets, demonstrate that uncertainty aversion can prevent the trade of some assets.

There are also empirical studies supporting the disruptive role of uncertainty in the financial system. Gilchrist et al. (2014) use a panel of 11,303 US firms from 1963Q3 to 2012Q3 and show that uncertainty causes financial distortions, that is, it influences the effective supply of credit, thus generating countercyclical credit spreads and procyclical leverage, impacting investment. Similarly, Segal et al. (2015) use US time series data covering the period from 1930 to 2012 and show that good uncertainty leads to an increase in the level of economic activity (output, consumption, and investment) and, consequently, asset prices (valuation), whereas bad uncertainty has an opposite effect.

These studies do not test the impact of EPU on financial markets in particular. Moreover, studies that seek to understand the sources of financial instability and which are closely related to ours, such as those of Fu et al. (2014), Fouejieu (2017), and Yin (2019), do not capture the role of EPU. For example, Klomp and De Haan (2009), using a sample of 60 countries covering the period from 1985 to 2005, find a negative association between central bank independence and financial instability. Additionally, Jones et al. (2012) use a data set spanning the period from 2000 to 2006 from the Center for Research in Security Prices and demonstrate that opacity engenders price contagion, which intensifies the speculative cycles of bubbles and crashes and, in turn, generates financial instability. Moreover, Fu et al. (2014), when examining the impact of competition and financial stability in the Asia–Pacific banking sector from 2003 to 2010, show that greater competition nurtures financial fragility and bank risk exposure. Fouejieu (2017), using quarterly data from 2000Q1 to 2010Q4 for a sample of 26 emerging countries, find that financial systems in emerging market inflation targeters are more fragile.

Related studies that specifically consider the role of the EPU channel of uncertainty in the economy and financial systems do not consider financial stability. For instance, Phan, Sharma, and Tran (2018) use time series data for 16 countries from January 1985 to June 2016 and find that EPU predicts stock excess returns, although the predictability is asymmetric and dependent on the country/sector. Drobetz, El Ghoul, Guedhami, and Janzen (2018), using a sample of 11,518 firms from 21 countries over the period from 1989 to 2012, find that the strength of the negative investment–cost of capital relation decreases during periods of high uncertainty. They show that the disruptive impact of EPU on the relation between investment and the cost of capital is stronger if the firms are more opaque and more reliant on the government. Iyke and Ho (2019) develop a unique monthly measure that captures various sources of uncertainty for 13 African countries over the period from January 1997 to April 2019 and show that uncertainty distorts exchange markets in these countries. They find that uncertainty can predict nearly 50% of the returns and 77% of the return volatility.

As noted above, these studies generally agree that uncertainty distorts financial and nonfinancial markets. The closely related studies show that EPU contains critical information that can explain the investment and return behavior. However, none of them directly examine the relation between EPU and financial stability. Our study contributes to the literature by showing that EPU is a source of financial instability. It provides evidence that an increase in EPU is associated with financial fragility not only across countries but also across banks. The financial stress literature contends that financial stress results from episodes during which agents in the economy are exposed to extreme uncertainty and changing expectations of financial loss (Illing and Liu, 2006; Park and Mercado, 2014). Our study contributes to this literature by exploring the relation between a type of uncertainty, EPU, and financial system stability.

III. Data and Model

To examine the relation between EPU and financial stability, we use annual data over the period from 1996 to 2016. Our main variable of interest is financial stability, which is proxied by the Z-score. The Z-score is estimated as $(ROA + Equity/Assets)/\sigma_{ROA}$, where ROA is the return-on-assets ratio and σ_{ROA} is its standard deviation. The country-specific EPU indexes are constructed by Baker, Bloom, and Davis (2016).[1] The 23 specific countries selected for our study and the data timeframe are dictated by data availability and include Australia, Brazil, Canada, Chile, China, Colombia, France, Germany, Greece, Hong Kong Special Administrative Region of China, India, Ireland, Italy, Japan, South Korea, Mexico, the Netherlands, Russia, Singapore, Spain, Sweden, the United Kingdom, and the United States.

Apart from the EPU variable, other conventional variables that affect financial stability, such as macroeconomic variables and variables related to market structure, are employed in the modeling framework. More specifically, we use three macroeconomic variables, namely, the logarithm of the gross domestic product (GDP) per capita (*GDPC*), the GDP growth rate (*GDP*), the inflation rate (*INF*), and three market structure–related variables, namely, domestic credit to the private sector (*CRE*), bank concentration (*CON*), and the ratio of bank deposits to the GDP (*DEP*).

One of our robustness tests is to conduct our analysis at the bank level. We collect bank-level data for all listed banks for the 23 countries from the Datastream database. Our sample

[1] See Baker et al. (2016) for the details of constructing EPU indexes.

includes a total of 914 banks. These bank-specific variables include the size of bank assets (*SIZE*), the capital asset ratio (*CAP*), the loan share (*LS*), and the net interest margin (*NIM*). We provide detailed information on each of our variables in Table 1.

INSERT TABLE 1

Our model is motivated by the theory that connects financial stability to uncertainty, as discussed in Section II. That is, we model financial stability as a function of uncertainty and a set of macroeconomic and market structure factors:

$$Zscore_{i,t} = \alpha + \beta_1 EPU_{i,t} + \gamma Control_{i,t} + \varepsilon_{i,t} \quad (1)$$

where, for country i and year t, $Zscore$ is the measure of financial stability, EPU is a measure of economic policy uncertainty, and $Control$ represents two sets of control variables related to the macroeconomy (*GDPC*, *GDP*, and *INF*) and market structure (*CRE*, *CON*, *DEP*). The selection of control variables is dictated by prior studies (e.g., Fu et al., 2014; Fouejieu, 2017; Yin, 2019), and α, β_1, and γ are the parameters of the model. We also control for cross-sectional and year fixed effects and cluster standard errors at the cross-sectional level. In our application, some observations are missing in certain years; hence, our panel is unbalanced. We estimate Equation (1) using the fixed effects estimator. Since unobserved bank-level or cross-sectional characteristics and time fixed effects are not random, the fixed effects estimator is appropriate in our setting.

Table 2 documents some statistical features of our data set: the mean, standard deviation, 25th and 75th percentiles, and median of each variable for a panel of 23 countries. We note that the mean is positive for all the variables. The average Z-score for the 23 countries is 13.705, with a standard deviation of 6.513, while the mean value of EPU is 121.932 index points and its standard deviation is 72.803. The average GDP growth rate and the inflation rate for the 23 countries are 3.167% and 3.594%, respectively. Next, to determine the order of integration of all the variables, we conduct a panel unit-root test using the augmented Dickey–

Fuller (ADF) test. We report ADF test statistics and the corresponding *p*-values in the last two columns of Table 2. The ADF test statistics are statistically significant at the 1% level for all the variables, which implies we can comfortably reject the null hypothesis of the unit root. Thus, we conclude that all the variables considered in this study follow a stationary process.

INSERT TABLE 2

IV. Empirical Analysis

A. Main results

Now we turn to our main findings. The results obtained by estimating Equation (1) are reported in Table 3. It is worth noting that we have estimated Equation (1) altogether six times with the use of different combinations of controls. More specifically, in Model 1, we do not include macroeconomy- or market structure–related control variables; however, we do control for cross-sectional and time fixed effects. Model 1 is therefore considered our naïve model. In Models 2 and 3, we include macroeconomy- and market structure–related variables, respectively. In Model 4, we include both macroeconomy- and market structure–related control variables. Additionally, in all three models (Models 2–4), we also control for cross-sectional and time fixed effects. The specifications for Models 5 and 6 are the same as for Model 4, except in Model 5 we do not control for time fixed effects, and in Model 6 we do not control for cross-sectional fixed effects. Before we begin with the discussion of the results, it is important to note that Model 6 is the worst fit model, since the adjusted R-squared value is only 5.3%. For the remaining five models, the adjusted R-squared value is at least 74%, which implies a good fit. Overall, the goodness of fit indicates the importance of controlling cross-sectional fixed effects, since we know that the financial stability of the 23 countries considered in our study is heterogeneous.

The results reported in Table 3 indicate that EPU has a statistically significant and negative impact on financial stability, which is consistent with our expectation. In other words, we find that an increase in EPU will lead to lower financial stability in our panel of 23 countries. Our findings remain consistent for all six different model specifications, with the coefficients varying between -0.005 and -0.010. More specifically, we note that our findings are statistically significant at the 1% level in the case of Models 1 and 2. On the other hand, when we consider Models 3 and 4 and Models 5 and 6, the power of statistical significance is reduced to the 5% and 10% levels, respectively. It is not surprising to find weaker evidence of significance in the case of Models 5 and 6. We expect this because, in these models, we do not control for time or cross-sectional fixed effects, respectively. However, overall, we conclude that our findings are robust at the 10% statistical significance level, irrespective of the model specification used to examine the impact of EPU on financial stability.

We next discuss the economic significance of our findings. Overall, the effect of EPU on financial stability is economically meaningful. One interpretation is that a unit standard deviation increase in uncertainty leads to a decrease in Z-score of 0.364–0.728.[2] Since the sample mean of the Z-score is 13.705, we can say that a unit standard deviation increase in EPU decreases financial stability by 2.66–5.31% of its sample mean. Therefore, the negative impact of uncertainty on financial stability is both statistically and economically important.

Even though the control variables are not our main interest, we briefly mention their sign and statistical significance. For instance, out of three macroeconomic variables, *GDP* and *GDPC* have a positive and statistically significant effect on financial stability only in 25% (one out of four models) and 50% of the cases (two out of four models), respectively. The positive sign of the economic growth variables is consistent with prior literature. For instance, while Fouejieu (2017) finds mixed results, Yin (2019) finds a positive impact of growth on bank

[2] The decrease in Z-score is calculated as the EPU coefficient (β_1) multiply by the standard deviation of EPU.

stability. Moreover, when we consider market structure–related variables, we find that *CON* and *CRE* have a statistically significant and negative impact on financial stability in 25% (one out of four models) and 50% of the cases (two out of four models), respectively. Again, our finding with respect to the negative sign of *CON* is consistent with prior literature that examines the relation between financial stability and market structure (e.g., Fu et al., 2014; Yin, 2019). In addition, since competition leads to credit expansion, by extension, *CRE* should impact stability negatively. Finally, we note that *INF* and *DEP* have a statistically nonsignificant impact on financial stability in all four models. This contrasts with the result of Fouejieu (2017), who finds that inflation has a weak negative impact on stability, while Yin (2019) finds a positive impact of *DEP* on stability.

INSERT TABLE 3

B. Additional tests

While the destabilizing effect of EPU on the financial system has been confirmed in the previous section, it is also worth analyzing how this relation changes due to the influence of financial system competition, banking regulatory capital, and the size of the banking sector. These three variables have been identified in the literature as major driving forces of financial stability.

B.1. Financial system competition

Competition is expected to affect the relation between EPU and financial stability. The competition–fragility nexus suggests that high competition leads to higher bank risk, which could thus exacerbate the negative effect of EPU on financial stability. That is, banks operating in a highly competitive market are less stable, because they face lower profit margins, are less diversified, have higher monitoring costs, and are thus more vulnerable to economic uncertainty compared to banks in highly concentrated markets (Diamond, 1984; Marcus, 1984; Keeley, 1990; Allen and Gale, 2000, 2004; Repullo, 2004). In addition, lower profits are associated with lower franchise or charter values. A bank with a lower franchise value to preserve is likely to have more incentives to take excessive risks, increasing moral hazard problems (Keeley, 1990; Hellmann, Murdock, and Stiglitz, 2000). Similarly, in a more competitive banking system, bank managers have fewer incentives to screen and differentiate between low- and high-quality borrowers, leading to a greater risk of bank fragility (Allen and Gale, 2000, 2004). This result is due to profit-making pressure and the lower informational rents earned from banks' relationships with borrowers in less concentrated markets. All in all, based on competition–fragility theory, we argue that the negative effect of EPU is stronger in countries with higher competition in their financial system.

To test this hypothesis, we obtain Lerner index data as a proxy for financial system competition for the 23 countries from the World Bank's Global Financial Development Database. A higher Lerner index value implies lower competition. A country is defined as having high (low) competition if its Lerner index is below (above) the average of all countries over the sample period. We create two dummy variables for competition: $COMPETITION\_HIGH$ and $COMPETITION\_LOW$, which equal one if the country has a financial system with high or low competition, respectively, and zero otherwise. To test the effect of financial system competition on the relation between EPU and financial stability, we apply the following regression:

$$Zscore_{i,t} = \alpha + \beta_1 EPU_{i,t} * COMPETITION\_HIGH_i + \beta_2 EPU_{i,t} * COMPETITION\_LOW_i + \gamma Control_{i,t} + \varepsilon_{i,t} \quad (2)$$

The results are reported in Table 4. The main noteworthy feature from these results is that the effect of EPU on financial stability is negative and statistically significant (at least at the 5% level) in all cases, which is in line with our baseline results. The effect is even stronger in terms of magnitude, where the coefficients vary from -0.007 to -0.014. Economically, a one standard deviation increase in EPU leads to a decrease of 3.72–7.44% of the mean value of financial stability. In contrast, the effect of EPU is not statistically significant in low-competition countries. Thus, the findings from Table 4 confirm our expectation that competition strengthens the negative impact of EPU on financial stability.

INSERT TABLE 4

B.2. Banking regulatory capital

The ultimate purpose of stricter capital regulation is to ensure banks' capabilities to absorb significant losses while still meeting deposit withdrawals and other obligations (Anginer et al., 2018). Accordingly, capital is expected to have a stabilizing effect by reducing insolvency risk (Repullo, 2004; Von Thadden, 2004). The role of regulatory capital in reducing bank risk taking has also been emphasized in a number of theoretical and empirical papers (Furlong and Keeley, 1989; Konishi and Yasuda, 2004; Zhang, Wu and Liu, 2008; Lee and Hsieh, 2013). In particular, banks with greater capitalization tend to improve risk management and to select less risky portfolios due to limited risk-shifting incentives at high levels of capital. Further, borrower screening and risk monitoring are improved for banks with greater capitalization (Allen, Carletti, and Marquez, 2011; Mehran and Thakor, 2011). By providing a buffer against macroeconomic and financial shocks, bank capital can also help to shield against contagious defaults and prevent individual bank distress from propagating to other banks through the interbank market, fire sales, and contagious panics (Allen and Gale, 2000; Kaufman and Scott, 2003; Eichberger and Summer, 2005; Anginer et al., 2018). Therefore, a country with more regulatory capital is likely to be less vulnerable to EPU. In other words, the shock-absorbing buffer effects of greater capital adequacy potentially mitigate the destabilizing effect of EPU.

We collect data on the ratios of bank regulatory capital to risk-weighted assets for the 23 countries from the World Bank's Global Financial Development Database. A country is defined as having strong (weak) capital regulation if its ratio of bank regulatory capital to risk-weighted assets is above (below) the average of all the countries over the sample period. The dummy variables $CAPITAL\_HIGH$ and $CAPITAL\_LOW$ equal one if the country has a strong or weak capital regulation, respectively, and zero otherwise. We apply the following regression to test the effect of capital regulation on the relation between EPU and financial stability:

$$Zscore_{i,t} = \alpha + \beta_1 EPU_{i,t} * CAPITAL\_HIGH_i + \beta_2 EPU_{i,t} * CAPITAL\_LOW_i + \gamma Control_{i,t} + \varepsilon_{i,t} \quad (3)$$

The results of this analysis are reported in Table 5. The results suggest a consistent adverse relation between EPU and financial stability for both strong– and weak–capital regulation countries, since the coefficients of EPU (β_1 and β_2) are negative and statistically significant in eight of 12 cases. However, we observe that the effect in weak–capital regulation countries is stronger, as evidenced by (1) the absolute value of β_2 being larger than the absolute value of β_1 and (2) β_2 being statistically significant in five out of six cases, compared to β_1 being statistically significant in only three cases. In terms of economic significance, a one standard deviation increase in EPU leads to a decrease of up to 13.81% (3.72%) of the mean value of financial stability for countries with strong (weak) capital regulation. Overall, the results support our hypothesis that the effect of EPU on financial stability is dampened in countries with strong capital regulation.

INSERT TABLE 5

B.3. Size of the banking sector

The influence of bank size on the destabilizing effect of EPU on financial stability, however, is not as clear. One line of research suggests that when banks become large, they are likely to subject to the "too-important-too-fail" problem. The managers of larger banks are incentivized to take on excessive risk due to the government's greater safety net subsidy they can potentially receive (Mishkin 1999). The implicit "too-important-too-fail" policy thus heightens the fragility of banking systems (e.g., Boyd and Runkle, 1993). Further, large banks are generally more complex organizations that employ sophisticated financial instruments and involve business lines that can be detrimental to their stability (Amidu and Wolfe, 2013). On the contrary, another line of research argues that large banks with a high franchise or charter value tend to limit excessive risk-taking behavior to protect these values. There is also contradictory empirical evidence on the effect of bank size and risk. For example, the relation between bank size and the Z-score is found to be nonsignificant in the study of Bertay et al. (2013), whereas Boyd and Runkle (1993) document a negative effect of bank size on the volatility of asset returns. Fu et al. (2014), however, report that larger banks take on greater risk. Therefore, it is of interest to empirically investigate whether bank size dampens or aggravates the negative impact of EPU on bank stability.

We collect data on the ratio of bank assets to the GDP for 23 countries from the World Bank's Global Financial Development Database. The dummy variable $SIZE\_LARGE$ ($SIZE\_SMALL$) equals one if the ratio of banks assets to the GDP is above (below) the average of all the countries over the sample period, and zero otherwise. To test the effect of the size of the banking sector on the relation between EPU and financial stability, we use the following regression:

$$Zscore_{i,t} = \alpha + \beta_1 EPU_{i,t} * SIZE\_LARGE_i + \beta_2 EPU_{i,t} * SIZE\_SMALL_i + \gamma Control_{i,t} + \varepsilon_{i,t} \quad (4)$$

We report the results in Table 6. Once again, we confirm the previous findings of our baseline regression, that the effect of EPU on financial stability is negative and statistically significant. In addition, a new discovery is the effect of the size of the banking sector on this relation. There are three noteworthy features: first, the absolute value of β_2 is higher than the absolute value of β_1. Second, β_2 is negative and statistically significant in all cases, whereas β_1 is statistically significant in only two of six cases. Finally, a one standard deviation increase in EPU leads to a decrease of up to 13.28% (3.18%) of the mean value of financial stability for countries with a large (small) banking sector. Taking all these results together, we conclude that the negative effect of EPU on financial stability is stronger in countries with a smaller banking sector.

INSERT TABLE 6

V. Robustness Checks

In this section, we test the sensitivity of our findings. Besides considering different model specifications (see Section III), we now undertake five robustness analysis of our research question.

A. Bank-level data

In the first robustness test, we estimate Equation (1) using bank-level data. In other words, we now consider the Z-score for a panel of 914 banks (those listed for the 23 countries) as a dependent variable. We use the same country-level estimation approach, except we introduce a third set of control variables that relates specifically to banks. More preciously, in addition to macroeconomic and market structure control variables, we include four bank-specific control variables, namely, *SIZE*, *CAP*, *LS*, and *NIM*, in our regression model. This leads to a combination of seven estimation models. The model specification remains unchanged in the first three models. In Model 4, apart from the EPU variable, we include four bank-related control variables, whereas in Models 5 to 7, we cover all three sets of control variables (i.e., macroeconomy-, market structure–, and bank-specific variables). Additionally, we control for cross-sectional and time fixed effects in Models 1 to 5. In the case of Models 6, we only control for cross-sectional fixed effects, whereas Model 7 only controls for time fixed effects. The results are reported in Table 7.

The results at bank-level data are similar to our earlier country-level findings. We report EPU has a statistically significant and negative effect on financial stability, regardless of the use of country- or bank-level data. EPU is found to be statistically significant with at most a 5% level in 86% of cases (six of seven models). The only exception is Model 7, where we do not control for cross-sectional fixed effects. In terms of the economic meaning of the results, a unit standard deviation increase in uncertainty leads to a decrease in Z-score of 1.966–5.315, which is 2.69–7.26% of the Z-score sample mean.

Moreover, in the bank-level analysis, we note that all three macroeconomic variables have a statistically significant and positive effect on financial stability, while market structure variables (namely *CON* and *CRE*) have a statistically significant and negative impact on financial stability.[3] The third set of control variables includes four bank-level variables, considered in Models 4 to 7. We find *SIZE* and *NIM* have a statistically significant and negative effect on financial stability, whereas *CAP* has a statistically significant and positive effect. These results are consistent with prior literature (e.g., Allen and Gale, 2004; Beck, Demirgüç-Kunt, and Levine, 2006; Fu et al., 2014; Yin, 2019).

The adjusted R-squared values are also reported for all seven models in the last row of Table 7. It is obvious that the adjusted R-squared values for the bank-level models are not as good as those in the case of the country-level analysis. The adjusted R-squared values range from 8% (Model 6) to 11.5% (Model 5). Overall, these adjusted R-squared estimates are similar to those of Yin (2019).

INSERT TABLE 7

B. Natural logarithm of the Z-score

We implement a robustness test using the natural logarithm of Z-score, motivated by the argument that Z-score is a noisy measure of financial stability, since it can be skewed (Laeven and Levine, 2009; Houston et al., 2010). Again, we conduct our empirical analysis using both country-level (six models) and bank-level (seven models) data. Our model specification approach remains the same as that discussed earlier. We report the results based on the country-

[3] Although inflation is linked to financial instability, Boyd, Levine, and Smith (2001) demonstrate that the relationship is nonlinear. A threshold exists whereby further increases in inflation do not inhibit financial performance (or weaken stability) and could even enhance stability, which is consistent with our results.

and bank-level data in Panels A and B of Table 8, respectively. The results are robust. We find EPU has a statistically significant and negative effect on financial stability, irrespective of the use of country- or bank-level data. The results suggest that a unit standard deviation increase in uncertainty leads to a decrease in the logarithm of financial stability Z-scores by 1.71%–4.11% of its sample mean at the country level and by 1.00%–2.73% of its sample mean at the bank level.

INSERT TABLE 8

C. GFC

Our results could be sensitive to the effects of the GFC. A number of studies document that the GFC has impacted financial stability (e.g., Caballero and Krishnamurthy, 2009; Shin, 2009; De Haas and Van Lelyveld, 2014; Vazquez and Federico, 2015). Therefore, it is imperative to account for the GFC and confirm that our findings are not questionable with respect to GFC effects. To do so, we rerun all the different model specifications (as discussed earlier) with the inclusion of a dummy variable for the GFC that takes the value of one for the years 2007 to 2009 and zero otherwise. The results are reported in Table 9. Our findings with respect to the GFC control remain unchanged in terms of the EPU effect's sign, statistical significance, and economic meaning.

INSERT TABLE 9

D. Global panel construction

In this robustness test, we use different constructions of the global panel. Our initial global panel includes 23 countries, and we now create 23 sub-global portfolios by removing one country from the global panel. For all 23 panels, the analyses are reproduced for both the country- and bank-level data. The results are reported in Table 10. The results at the country level in Panel A confirm our prior hypothesis on the effect of EPU on financial stability, regardless of the sub-global panels. We find the coefficient of EPU is negative and statistically significant in 126 of 138 models (90%). The result is strongest in Models 1 and 2, where the negative and statistically significant coefficient is found in all panels (100%), followed by Models 3 to 5 (91%), with the weakest result in Model 6 (61%). Similar findings are observed in Panel B, which reports the results for bank-level data. Overall, our conclusions for the baseline results hold, regardless of the construction of the global panel.

INSERT TABLE 10

E. Endogeneity

In this robustness test, we control for the issue of potential endogeneity in our regression model by implementing a two-step generalized method of moments (GMM) system dynamic panel estimator to test the null hypothesis that EPU negatively influences financial stability. Our regression model is as follows:

$$Zscore_{i,t} = \alpha + \beta_1 EPU_{i,t} + \beta_2 Zscore_{i,t-1} + \gamma Control_{i,t} + \varepsilon_{i,t} \quad (5)$$

We conduct analysis using country- and bank-level data and report the results in Panels A and B of Table 11, respectively. Similarly, we make several model modifications based on different sets of control variables. The results of this robustness test also support our baseline conclusions.

INSERT TABLE 11

VI. Conclusion

In this paper, we hypothesize that EPU influences financial stability. Theory suggests that uncertainty disrupts information flow and worsens adverse selection and moral hazard problems, which, in turn, reduces liquidity in the financial system. To date, there has been no direct test of the association between EPU and financial stability. We test our hypothesis by matching EPU data for 23 countries over the period from 1996 to 2016. Controlling for market characteristics (domestic credit to the private sector, bank concentration, and the ratio of bank deposits to the GDP), macroeconomic conditions (economic growth, inflation), bank characteristics (size, capital asset ratio, loan share, and net interest margin), and cross-sectional and year fixed effects, we show that uncertainty influences financial stability. EPU leads to a decline in financial stability (proxied by the Z-score). We find this result holds true at the bank level, controlling for the skewness of the Z-score, controlling for the GFC, and using different constructions of the global panel. We show that our finding has economic interpretations. A one standard deviation increase in uncertainty leads to a decrease in the financial stability of 2.66–7.26% of its sample mean. Finally, we find that the characteristics of a country's financial system affect the relation between EPU and financial stability. The negative effect of EPU is stronger for countries with a financial system with more competition, less regulatory capital, and a smaller size.

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Table 1: Variable definition

This table provides detail data description of all variables considered in this study.

Variable	Description	Source
Dependent variables		
Z-score	Country-level or bank-level Z-score	World Bank Global Financial Development Database (country-level) and Datastream (bank-level)
Explanatory variable		
Economic policy uncertainty (EPU)	Economic Policy Uncertainty Index constructed by Baker, Bloom, and Davis (2016)	Baker, Bloom, and Davis (2016)
Macroeconomic control variables		
GDP per capita (GDPC)	Log of a country's GDP per capita	World Bank World Development Indicators
GDP growth (GDP)	Percent changes in GDP	World Bank World Development Indicators
Inflation rate (INF)	Change in the consumer price index	World Bank World Development Indicators
Market structure control variable		
Domestic credit to private sector (CRE)	Domestic credit to private sector refers to financial resources provided to the private sector.	World Bank Global Financial Development Database
Bank concentration (CON)	The assets of the largest three banks as a percentage of total bank assets in a country	World Bank Global Financial Development Database
Bank deposit to GDP (DEP)	The claims on the domestic real nonfinancial sector by deposit money banks as a share of GDP	World Bank Global Financial Development Database
Bank-specific control variables		
SIZE	The logarithm of bank assets	Datastream
Capital asset ratio (CAP)	Ratio of equity capital to bank assets	Datastream
Loan share (LS)	Ratio of loan to total assets	Datastream
Net interest margin (NIM)	Bank's net interest income over interest-bearing assets	Datastream

Table 2: Descriptive statistics and panel unit root test

This table reports selected descriptive statistics and results for a panel unit root test. The detailed definition of variables is provided in Table 1. We use ADF panel unit root test to examine the null hypothesis of a unit root. We report the ADF statistic and its corresponding p-value in the last column. *** denotes statistical significance at the 1% level.

Variables	Observation	Mean	SD	25%	Median	75%	ADF	
Z-score	483	13.705	6.513	8.152	13.619	18.061	-6.492***	0.000
EPU|	449	121.932	72.803	75.258	103.700	150.835	-3.228***	0.001
GDP	483	3.167	3.473	1.495	2.956	4.815	-6.419***	0.000
GDPC	483	9.962	1.020	9.280	10.433	10.701	-7.903***	0.000
INF	483	3.594	5.841	1.301	2.411	4.156	-2.847***	0.002
CON	475	60.536	19.616	44.930	60.845	73.400	-8.028***	0.000
DEP	424	79.595	58.392	47.071	64.926	91.869	-5.955***	0.000
CRE	473	98.647	49.576	56.058	98.909	129.157	-8.473***	0.000

Table 3: Baseline results

This table reports result for testing the effect of EPU on financial stability obtained from the following regression model:

$$Zscore_{i,t} = \alpha + \beta_1 EPU_{i,t} + \gamma Control_{i,t} + \varepsilon_{i,t}$$

where $Zscore$ is used as a proxy for the dependent variable, financial stability; EPU represents economic policy uncertainty; i indexes the country; t denotes the year. We report the coefficients and its corresponding t-statistics in parenthesis. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
EPU	-0.008***	-0.007***	-0.007**	-0.006**	-0.005*	-0.010*
	(-2.885)	(-2.712)	(-2.236)	(-2.163)	(-1.915)	(-1.693)
GDP		0.146**		0.086	0.071	0.151
		(2.122)		(1.116)	(1.107)	(1.132)
GDPC		-0.623		-1.558	3.295**	1.550***
		(-0.349)		(-0.795)	(2.201)	(2.931)
INF		0.018		0.037	-0.011	0.027
		(0.489)		(1.083)	(-0.187)	(0.697)
CON			0.004	0.000	0.025	-0.081***
			(0.178)	(-0.017)	(1.262)	(-4.248)
DEP			-0.020	-0.022	-0.002	-0.005
			(-1.390)	(-1.491)	(-0.114)	(-0.747)
CRE			-0.024**	-0.018	-0.022*	0.016
			(-2.287)	(-1.584)	(-1.789)	(1.263)
Constant	13.470***	18.730	15.345***	29.773	-18.209	2.533
	(11.374)	(1.063)	(9.156)	(1.564)	(-1.251)	(0.524)
Observations	449	449	385	385	385	385
Country effect	Yes	Yes	Yes	Yes	Yes	No
Year effect	Yes	Yes	Yes	Yes	No	Yes
Adjusted R2	0.737	0.738	0.775	0.775	0.764	0.053

Table 4: Effect of competition on EPU and financial stability relationship

This table reports result for testing the effect of competition on the relationship between EPU on financial stability obtained from the following regression model:

$$Zscore_{i,t} = \alpha + \beta_1 EPU_{i,t} * COMPETITION\_HIGH_t + \beta_2 EPU_{i,t} * COMPETITION\_LOW_t + \gamma Control_{i,t} + \varepsilon_{i,t}$$

where $Zscore$ is used as a proxy for dependent variable, financial stability; EPU represents economic policy uncertainty; $COMPETITION\_HIGH$ is a dummy variable, which equals 1 if the financial system competition in a country is higher than the average of all countries in the sample or equals zero otherwise; $COMPETITION\_LOW$ is a dummy variable, which equals 1 if the financial system competition in a country is higher than the average of all countries in the sample or equals zero otherwise; i indexes the country; t denotes the year. We report the coefficients and its corresponding t-statistics in parenthesis. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
EPU*COMPETITION_HIGH	-0.011***	-0.009***	-0.009***	-0.009***	-0.007**	-0.014**
	(-3.561)	(-3.212)	(-3.051)	(-2.923)	(-2.305)	(-2.123)
EPU* COMPETITION_LOW	-0.005	-0.004	0.003	0.004	0.002	0.006
	(-1.386)	(-1.221)	(0.611)	(0.662)	(0.355)	(0.642)
GDP		0.142**		0.082	0.070	0.096
		(2.051)		(1.069)	(1.084)	(0.743)
GDPC		-0.874		-1.692	3.304**	1.999***
		(-0.494)		(-0.870)	(2.193)	(3.317)
INF		0.016		0.032	-0.014	0.019
		(0.426)		(0.955)	(-0.244)	(0.469)
CON			0.010	0.005	0.029	-0.084***
			(0.399)	(0.184)	(1.462)	(-4.468)
DEP			-0.027*	-0.029*	-0.006	-0.009
			(-1.822)	(-1.877)	(-0.367)	(-1.206)
CRE			-0.022**	-0.016	-0.021*	0.000
			(-2.110)	(-1.441)	(-1.659)	(0.007)
Constant	13.553***	21.275	15.327***	31.130	-18.446	-0.102
	(11.405)	(1.221)	(9.132)	(1.648)	(-1.261)	(-0.019)
Observations	449	449	385	385	385	385
Country effect	Yes	Yes	Yes	Yes	Yes	No
Year effect	Yes	Yes	Yes	Yes	No	Yes
Adjusted R2	0.737	0.738	0.777	0.777	0.765	0.074

Table 5: Effect of capital regulation on EPU and financial stability relationship

This table reports result for testing the effect of capital regulation on the relationship between EPU on financial stability obtained from the following regression model:

$$Zscore_{i,t} = \alpha + \beta_1 EPU_{i,t} * CAPITAL\_HIGH_t + \beta_2 EPU_{i,t} * CAPITAL\_LOW_t + \gamma Control_{i,t} + \varepsilon_{i,t}$$

where $Zscore$ is used as a proxy for dependent variable, financial stability; EPU represents economic policy uncertainty; $CAPITAL\_HIGH$ is a dummy variable, which equals 1 if the capital regulation in a country is higher than the average of all countries in the sample or equals zero otherwise; $CAPITAL\_LOW$ is a dummy variable, which equals 1 if the capital regulation in a country is lower than the average of all countries in the sample or equals zero otherwise; i indexes the country; t denotes the year. We report the coefficients and its corresponding t-statistics in parenthesis. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
EPU*CAPITAL_HIGH	-0.007**	-0.006**	-0.006	-0.005	-0.005*	0.003
	(-2.248)	(-2.098)	(-1.620)	(-1.517)	(-1.675)	(0.383)
EPU*CAPITAL_LOW	-0.010**	-0.009**	-0.007*	-0.007*	-0.005	-0.026***
	(-2.533)	(-2.230)	(-1.811)	(-1.743)	(-1.115)	(-3.694)
GDP		0.145**		0.087	0.071	0.058
		(2.096)		(1.119)	(1.102)	(0.467)
GDPC		-0.707		-1.619	3.313**	2.082***
		(-0.396)		(-0.818)	(2.193)	(3.874)
INF		0.016		0.036	-0.010	0.052
		(0.416)		(1.035)	(-0.175)	(1.208)
CON			0.004	-0.001	0.025	-0.085***
			(0.160)	(-0.031)	(1.261)	(-5.142)
DEP			-0.020	-0.022	-0.002	-0.006
			(-1.408)	(-1.501)	(-0.109)	(-0.843)
CRE			-0.023**	-0.017	-0.022*	0.013
			(-2.237)	(-1.530)	(-1.800)	(1.112)
Constant	13.508***	19.598	15.358***	30.382	-18.380	-2.277
	(11.333)	(1.115)	(9.115)	(1.578)	(-1.251)	(-0.453)
Observations	449	449	385	385	385	385
Country effect	Yes	Yes	Yes	Yes	Yes	No
Year effect	Yes	Yes	Yes	Yes	No	Yes
Adjusted R2	0.736	0.737	0.774	0.774	0.764	0.131

Table 6: Effect of banking sector size on EPU and financial stability relationship

This table reports result for testing the effect of the banking sector seize on the relationship between EPU on financial stability obtained from the following regression model:

$$Zscore_{i,t} = \alpha + \beta_1 EPU_{i,t} * SIZE\_LARGE_i + \beta_2 EPU_{i,t} * SIZE\_SMALL_i + \gamma Control_{i,t} + \varepsilon_{i,t}$$

where $Zscore$ is used as a proxy for dependent variable, financial stability; EPU represents economic policy uncertainty; $SIZE\_LARGE$ is a dummy variable, which equals 1 if the banking sector size of a country is larger than the average of all countries in the sample or equals zero otherwise; $SIZE\_SMALL$ is a dummy variable, which equals 1 if the banking sector size of a country is smaller than the average of all countries in the sample or equals zero otherwise; i indexes the country; t denotes the year. We report the coefficients and its corresponding t-statistics in parenthesis. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
EPU*SIZE_LARGE	-0.006*	-0.006*	-0.006	-0.006	-0.004	0.014**
	(-1.867)	(-1.799)	(-1.330)	(-1.354)	(-0.869)	(2.048)
EPU* SIZE_SMALL	-0.010***	-0.008***	-0.007**	-0.006*	-0.006*	-0.025***
	(-3.058)	(-2.605)	(-2.079)	(-1.881)	(-1.937)	(-3.522)
GDP		0.143**		0.086	0.071	0.018
		(2.027)		(1.105)	(1.100)	(0.142)
GDPC		-0.611		-1.547	3.317**	0.023
		(-0.341)		(-0.760)	(2.215)	(0.044)
INF		0.017		0.037	-0.011	0.022
		(0.462)		(1.076)	(-0.190)	(0.534)
CON			0.004	0.000	0.026	-0.082***
			(0.183)	(-0.015)	(1.267)	(-4.560)
DEP			-0.020	-0.022	-0.003	-0.013*
			(-1.404)	(-1.476)	(-0.187)	(-1.913)
CRE			-0.023**	-0.018	-0.021*	0.010
			(-2.214)	(-1.593)	(-1.734)	(0.852)
Constant	13.492***	18.657	15.320***	29.667	-18.452	18.809***
	(11.381)	(1.058)	(9.061)	(1.496)	(-1.265)	(3.745)
Observations	449	449	385	385	385	385
Country effect	Yes	Yes	Yes	Yes	Yes	No
Year effect	Yes	Yes	Yes	Yes	No	Yes
Adjusted R2	0.736	0.737	0.774	0.774	0.764	0.129

Table 7: Robustness test-results for a panel of 914 banks

This table reports result using bank-level data. Our estimation model remains the same as discussed in Table 2. We report the coefficients and its corresponding t-statistics in parenthesis. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EPU	-0.027**	-0.040***	-0.042**	-0.032**	-0.049***	-0.073***	-0.008
	(-1.975)	(-2.805)	(-2.539)	(-2.303)	(-2.750)	(-5.173)	(-0.438)
GDP		1.512***			0.995*	2.604***	2.268***
		(3.744)			(1.938)	(8.176)	(5.245)
GDPC		44.490***			51.472***	20.464**	6.640***
		(6.146)			(4.154)	(2.321)	(3.981)
INF		1.705***			2.938***	1.942***	2.045***
		(3.127)			(3.811)	(4.236)	(3.479)
CON			-0.345***		-0.206**	-0.907***	-0.211***
			(-4.014)		(-2.223)	(-10.201)	(-3.979)
DEP			0.216**		0.131	0.029	0.009
			(2.362)		(1.420)	(0.353)	(0.422)
CRE			-0.147***		-0.163**	-0.157***	-0.004
			(-2.643)		(-2.538)	(-2.820)	(-0.154)
SIZE				-1.117***	-1.292***	-1.045**	-1.309***
				(-2.872)	(-3.194)	(-2.505)	(-3.382)
CAP				2.821***	2.854***	2.863***	2.859***
				(12.919)	(12.724)	(12.804)	(13.164)
LS				-0.086	-0.037	-0.035	-0.010
				(-1.572)	(-0.635)	(-0.598)	(-0.183)
NIM				-2.394***	-3.591***	-1.715***	-4.358***
				(-5.951)	(-8.682)	(-4.253)	(-13.856)
Constant	108.985***	-359.449***	124.604***	126.203***	-390.660***	-85.470	22.508
	(21.386)	(-4.870)	(14.123)	(12.869)	(-3.114)	(-0.961)	(1.228)
Observations	13,229	13,229	12,605	12,399	11,831	11,831	11,831
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	No
Year effect	Yes	Yes	Yes	Yes	Yes	No	Yes
Adjusted R2	0.090	0.093	0.089	0.111	0.115	0.080	0.101

Table 8: Robustness test – results obtained using the natural logarithm of Z-score

This table reports results using the natural logarithm of Z-score as the dependent variable. Our estimation model remains the same as discussed in Table 2. We report the coefficients (multiplied by 100) and their t-statistics (in parenthesis) relating to the EPU variable using both country-level (see Panel A) and bank-level (see Panel B) data. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Panel A: Country-level data

	(1)	(2)	(3)	(4)	(5)	(6)
EPU	-0.085***	-0.058*	-0.084**	-0.059	-0.062*	-0.139*
	(-2.659)	(-1.678)	(-2.215)	(-1.438)	(-1.902)	(-1.945)
Macro	No	Yes	No	Yes	Yes	Yes
Market structure	No	No	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes	No
Year effect	Yes	Yes	Yes	Yes	No	Yes

Panel B: Bank-level data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EPU	-0.063***	-0.095***	-0.092***	-0.052***	-0.067**	-0.142***	0.012
	(-3.133)	(-4.455)	(-3.083)	(-2.630)	(-2.196)	(-6.383)	(0.369)
Macro	No	Yes	No	No	Yes	Yes	Yes
Market structure	No	No	Yes	No	Yes	Yes	Yes
Bank-specific	No	No	No	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	No
Year effect	Yes	Yes	Yes	Yes	Yes	No	Yes

Table 9: Robustness test – results obtained by controlling for the GFC effects

In this table, we report results by controlling for the global financial crisis (GFC). We include a dummy variable for the GFC effects in the estimation model given in Table 2. The dummy takes a value one for years 2007, 2008, and 2009, and zero otherwise. We report the coefficients and their t-statistics (in parenthesis) relating to the EPU variable using both country-level (see Panel A) and bank-level (see Panel B) data. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Panel A: Country-level data

	(1)	(2)	(3)	(4)	(5)	(6)
EPU	-0.008***	-0.007***	-0.007**	-0.006**	-0.005**	-0.010*
	(-2.885)	(-2.712)	(-2.236)	(-2.163)	(-2.069)	(-1.693)
Macro	No	Yes	No	Yes	Yes	Yes
Market structure	No	No	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes	No
Year effect	Yes	Yes	Yes	Yes	No	Yes

Panel B: Bank-level data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EPU	-0.027**	-0.040***	-0.042**	-0.032**	-0.049***	-0.077***	-0.008
	(-1.975)	(-2.805)	(-2.539)	(-2.303)	(-2.750)	(-5.415)	(-0.438)
Macro	No	Yes	No	No	Yes	Yes	Yes
Market structure	No	No	Yes	No	Yes	Yes	Yes
Bank-specific	No	No	No	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	No
Year effect	Yes	Yes	Yes	Yes	Yes	No	Yes

Table 10: Robustness test – results obtained by using different constructions of the global portfolio

In this table, we report results by using different constructions of the global portfolio. We now create sub-global portfolios by removing one country from the global panel. We report the coefficients and their t-statistics (in parenthesis) relating to the EPU variable using both country-level (see Panel A) and bank-level (see Panel B) data. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Panel A: Country-level data

	(1)	(2)	(3)	(4)	(5)	(6)
Global-Australia	-0.008***	-0.007***	-0.006**	-0.006**	-0.005*	-0.01
	(-2.904)	(-2.769)	(-2.194)	(-2.148)	(-1.739)	(-1.640)
Global-Brazil	-0.009***	-0.008***	-0.008**	-0.008**	-0.006**	-0.015**
	(-3.005)	(-3.043)	(-2.429)	(-2.491)	(-1.990)	(-2.106)
Global-Canada	-0.008***	-0.007***	-0.006**	-0.006**	-0.005*	-0.011*
	(-2.949)	(-2.733)	(-2.092)	(-2.084)	(-1.695)	(-1.792)
Global-Chile	-0.008***	-0.007***	-0.007**	-0.006**	-0.005*	-0.008
	(-2.914)	(-2.797)	(-2.219)	(-2.205)	(-1.917)	(-1.327)
Global-China	-0.009***	-0.008***	-0.007**	-0.006**	-0.005*	-0.010*
	(-3.275)	(-3.017)	(-2.236)	(-2.163)	(-1.915)	(-1.693)
Global-Colombia	-0.008***	-0.007**	-0.006**	-0.006*	-0.005*	-0.013**
	(-2.737)	(-2.561)	(-2.095)	(-1.959)	(-1.772)	(-2.118)
Global-France	-0.008***	-0.007**	-0.007**	-0.006**	-0.006**	-0.015**
	(-2.752)	(-2.569)	(-2.218)	(-2.050)	(-2.227)	(-2.145)
Global-Germany	-0.008***	-0.007***	-0.006**	-0.006**	-0.006**	-0.011*
	(-2.877)	(-2.707)	(-2.157)	(-2.128)	(-2.134)	(-1.753)
Global-Greece	-0.008***	-0.007***	-0.007**	-0.006**	-0.006**	-0.011*
	(-2.875)	(-2.700)	(-2.166)	(-2.092)	(-2.048)	(-1.763)
Global-Hong Kong	-0.007**	-0.006**	-0.006**	-0.005*	-0.006**	-0.009
	(-2.559)	(-2.377)	(-1.982)	(-1.873)	(-2.413)	(-1.398)
Global-India	-0.008***	-0.007***	-0.007**	-0.006**	-0.005**	-0.01
	(-2.973)	(-2.749)	(-2.396)	(-2.244)	(-2.005)	(-1.531)
Global-Ireland	-0.007**	-0.006**	-0.006**	-0.006**	-0.005*	-0.005
	(-2.531)	(-2.452)	(-2.007)	(-2.006)	(-1.944)	(-0.798)
Global-Italy	-0.008***	-0.007***	-0.007**	-0.006**	-0.004*	-0.011*
	(-3.119)	(-2.851)	(-2.409)	(-2.274)	(-1.662)	(-1.827)
Global-Japan	-0.007***	-0.006**	-0.006**	-0.006*	-0.005*	-0.012*
	(-2.608)	(-2.501)	(-2.037)	(-1.927)	(-1.702)	(-1.831)
Global-Korea	-0.008***	-0.007***	-0.008***	-0.007**	-0.006**	-0.007
	(-2.910)	(-2.591)	(-2.707)	(-2.556)	(-2.231)	(-1.159)
Global-Mexico	-0.007**	-0.006**	-0.005	-0.005	-0.002	-0.007
	(-2.214)	(-2.042)	(-1.606)	(-1.416)	(-0.949)	(-1.125)
Global-Netherlands	-0.008***	-0.007***	-0.007***	-0.007**	-0.005*	-0.012*
	(-3.120)	(-2.817)	(-2.708)	(-2.514)	(-1.737)	(-1.873)
Global-Russia	-0.007**	-0.005**	-0.005	-0.003	-0.002	-0.009
	(-2.522)	(-1.989)	(-1.557)	(-1.029)	(-1.042)	(-1.479)
Global-Singapore	-0.008***	-0.007***	-0.007**	-0.006**	-0.005*	-0.011*
	(-2.900)	(-2.763)	(-2.250)	(-2.192)	(-1.925)	(-1.829)
Global-Spain	-0.008***	-0.007***	-0.007**	-0.006**	-0.006**	-0.009
	(-2.958)	(-2.817)	(-2.292)	(-2.252)	(-2.136)	(-1.484)
Global-Sweden	-0.007***	-0.007**	-0.006**	-0.006**	-0.005*	-0.012*
	(-2.716)	(-2.560)	(-2.090)	(-2.065)	(-1.959)	(-1.867)
Global-UK	-0.008***	-0.007**	-0.007**	-0.006**	-0.005*	-0.010*
	(-2.695)	(-2.499)	(-2.236)	(-2.163)	(-1.915)	(-1.693)
Global-US	-0.007***	-0.007***	-0.006**	-0.006**	-0.005*	-0.012**
	(-2.750)	(-2.592)	(-2.107)	(-2.037)	(-1.826)	(-2.113)
Macro	No	Yes	No	Yes	Yes	Yes
Market structure	No	No	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes	No
Year effect	Yes	Yes	Yes	Yes	No	Yes

Panel B: Bank-level data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)

Global-Australia	-0.027**	-0.040***	-0.042**	-0.034**	-0.050***	-0.073***	-0.006
	(-2.012)	(-2.795)	(-2.553)	(-2.390)	(-2.805)	(-5.130)	(-0.314)
Global-Brazil	-0.021	-0.041**	-0.038*	-0.029*	-0.050**	-0.090***	-0.006
	(-1.417)	(-2.557)	(-1.842)	(-1.833)	(-2.343)	(-5.915)	(-0.267)
Global-Canada	-0.031**	-0.047***	-0.043**	-0.037***	-0.051***	-0.074***	-0.009
	(-2.319)	(-3.242)	(-2.570)	(-2.640)	(-2.860)	(-5.121)	(-0.487)
Global-Chile	-0.026*	-0.040***	-0.041**	-0.033**	-0.048***	-0.072***	-0.007
	(-1.934)	(-2.761)	(-2.456)	(-2.293)	(-2.688)	(-5.065)	(-0.415)
Global-China	-0.026	-0.024	-0.042**	-0.027	-0.049***	-0.073***	-0.008
	(-1.644)	(-1.444)	(-2.539)	(-1.615)	(-2.750)	(-5.173)	(-0.438)
Global-Colombia	-0.022	-0.039***	-0.035**	-0.028*	-0.047**	-0.075***	-0.005
	(-1.620)	(-2.662)	(-2.077)	(-1.947)	(-2.556)	(-5.291)	(-0.263)
Global-France	-0.032**	-0.050***	-0.054***	-0.036**	-0.065***	-0.080***	-0.085***
	(-2.314)	(-3.444)	(-3.424)	(-2.506)	(-3.615)	(-5.344)	(-4.643)
Global-Germany	-0.028**	-0.041***	-0.043***	-0.033**	-0.049***	-0.074***	-0.007
	(-2.047)	(-2.857)	(-2.617)	(-2.343)	(-2.723)	(-5.177)	(-0.410)
Global-Greece	-0.025*	-0.037**	-0.039**	-0.030**	-0.043**	-0.075***	-0.001
	(-1.829)	(-2.530)	(-2.319)	(-2.127)	(-2.323)	(-5.133)	(-0.040)
Global-Hong Kong	-0.032**	-0.044***	-0.047***	-0.038***	-0.054***	-0.070***	-0.013
	(-2.349)	(-3.047)	(-2.857)	(-2.709)	(-3.065)	(-4.862)	(-0.766)
Global-India	-0.036***	-0.053***	-0.058***	-0.044***	-0.066***	-0.080***	-0.014
	(-2.624)	(-3.651)	(-3.409)	(-3.025)	(-3.694)	(-5.514)	(-0.776)
Global-Ireland	-0.027*	-0.039***	-0.040**	-0.032**	-0.044**	-0.073***	0.000
	(-1.957)	(-2.724)	(-2.406)	(-2.285)	(-2.493)	(-5.125)	(-0.017)
Global-Italy	-0.028**	-0.041***	-0.045***	-0.035**	-0.052***	-0.078***	-0.019
	(-2.081)	(-2.804)	(-2.714)	(-2.483)	(-2.912)	(-5.491)	(-1.077)
Global-Japan	-0.012	-0.028*	-0.023	-0.014	-0.01	-0.069***	0.024
	(-0.878)	(-1.874)	(-1.361)	(-0.908)	(-0.535)	(-4.651)	(1.399)
Global-Korea	-0.029**	-0.040***	-0.044***	-0.034**	-0.050***	-0.075***	-0.001
	(-2.112)	(-2.788)	(-2.642)	(-2.381)	(-2.757)	(-5.181)	(-0.049)
Global-Mexico	-0.021	-0.033**	-0.033*	-0.030**	-0.043**	-0.072***	-0.01
	(-1.505)	(-2.273)	(-1.925)	(-2.053)	(-2.340)	(-5.076)	(-0.554)
Global-Netherlands	-0.028**	-0.042***	-0.044***	-0.034**	-0.051***	-0.073***	-0.009
	(-2.076)	(-2.909)	(-2.675)	(-2.441)	(-2.906)	(-5.181)	(-0.490)
Global-Russia	-0.02	-0.039***	-0.031*	-0.027*	-0.049***	-0.080***	0.004
	(-1.411)	(-2.618)	(-1.757)	(-1.830)	(-2.619)	(-5.432)	(0.231)
Global-Singapore	-0.027**	-0.040***	-0.042**	-0.033**	-0.049***	-0.074***	-0.007
	(-1.989)	(-2.784)	(-2.558)	(-2.321)	(-2.745)	(-5.212)	(-0.424)
Global-Spain	-0.025*	-0.037***	-0.037**	-0.030**	-0.042**	-0.072***	-0.002
	(-1.829)	(-2.596)	(-2.238)	(-2.136)	(-2.386)	(-5.078)	(-0.120)
Global-Sweden	-0.026*	-0.039***	-0.042**	-0.032**	-0.049***	-0.073***	-0.007
	(-1.897)	(-2.722)	(-2.530)	(-2.228)	(-2.748)	(-5.162)	(-0.393)
Global-UK	-0.031**	-0.046***	-0.042**	-0.036**	-0.049***	-0.073***	-0.008
	(-2.265)	(-3.146)	(-2.539)	(-2.524)	(-2.750)	(-5.173)	(-0.438)
Global-US	-0.041***	-0.046***	-0.057***	-0.041***	-0.046**	0.009	-0.005
	(-2.771)	(-2.910)	(-3.027)	(-2.670)	(-2.352)	(0.582)	(-0.250)
Macro	No	Yes	No	No	Yes	Yes	Yes
Market structure	No	No	Yes	No	Yes	Yes	Yes
Bank-specific	No	No	No	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	No
Year effect	Yes	Yes	Yes	Yes	Yes	No	Yes

Table 11: Robustness test – controlling for endogeneity

In this table, we report results by controlling for the issue of potential endogeneity. The regression takes the following form:

$$Zscore_{i,t} = \alpha + \beta_1 EPU_{i,t} + \beta_2 Zscore_{i,t-1} + \gamma Control_{i,t} + \varepsilon_{i,t}$$

The estimation method is the two-step GMM system dynamic panel estimator. The Arellano-Bond (AB) test for serial correlation is based on the null hypothesis of second-order autocorrelation in the first differenced residuals. We report the coefficients and their t-statistics (in parenthesis) relating to the EPU variable using both country-level (see Panel A) and bank-level (see Panel B) data. ** and *** denote significance at the 5% and 1% levels, respectively.

Panel A: Country-level data

	(1)	(2)	(3)	(4)
EPU	-0.002***	-0.004***	-0.003**	-0.007***
	(-5.086)	(-5.377)	(-2.145)	(-3.581)
Macro	No	Yes	No	Yes
Market structure	No	No	Yes	Yes

Panel B: Bank-level data

	(1)	(2)	(3)	(4)	(5)
EPU	-0.026***	-0.030***	-0.033**	-0.096***	-0.067**
	(-3.186)	(-3.118)	(-2.522)	(-5.218)	(-2.369)
Macro	No	Yes	No	No	Yes
Market structure	No	No	Yes	No	Yes
Bank-specific	No	No	No	Yes	Yes