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RESEARCH ARTICLE

Economic Policy Uncertainty and Firm Value: Is There a Link? A Panel Vector Autoregression Approach

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Abstract: This study examines the effect of the economic policy uncertainty (EPU) index on firm value. The financial data of 105 conventional banks for BRICS (Brazil, Russia, India, China, and South Africa) countries over 2009–2019 were used, totaling 1,155 observations. We use the panel vector autoregression estimate, and the results show that EPU can predict the firm value of conventional banks. When we use the generalized method of moments (GMM) estimates, the findings indicate that EPU has a significant impact on BRICS countries' firm value. The GMM analysis confirms the prediction of the panel vector autoregression that the EPU index with other firm-specific and macroeconomic variables significantly affects firm value. This study presents a unique and significant implication by focusing on financial institutions where there have been limited empirical studies. Advanced analytical techniques are conducted in the study over a long time using recent data.

Keywords: BRICS, conventional banks, economic policy uncertainty, firm value, panel VAR

Introduction

The financial industry remains one of the key players in economic recovery, activity, and stability because it enables capital to flow to investment opportunities. It can absorb economic and noneconomic shocks through inbuilt automated abilities, thereby safeguarding the economy from disruption. Participants can make decisions about their savings and investment only after evaluating their options; thus, information flow is vital for the functionality of financial institutions. Therefore, the disruption of information increases moral hazard in the banking industry and, subsequently, the flow of funds (Phan et al., 2020). Blocking information flow shrinks corporate lending, economic activity, and creative investment because of the difficulty in differentiating borrowers with good investment opportunities from those with inadequate investment opportunities. Theoretically, four elements affect information flow and cause financial instability: growing interest rates, worsening nonfinancial and financial balance sheets, and increasing uncertainty (Mishkin, 1999). This study is motivated by the growing literature and increasing policy uncertainty regarding the causes of financial instability.

The global economic and financial crisis in 2007–2008 increased financial regulation and inefficiency in fiscal policies. Hence, financial institutions become susceptible to policy dilemmas because the government could not implement reforms to stabilize the economy and financial systems. Banks now operate in a continuously changing economic environment due to bureaucracy and the policies sanctioned by the government and legislators (Gulen & Ion, 2016). The government's many regulatory policies affect banks' financial decisions and expose them to policy-related uncertainty. In this study, we use a new measurement of uncertainty, the economic policy uncertainty (EPU) index developed by Baker et al. (2016) to gauge overall EPU, which addresses the limitations and inconsistency in prior literature. The EPU index has been widely adopted in empirical studies (Cheng & Yen, 2020; Liu & Zhang, 2015), despite the availability of various other measures of uncertainty, such as those based on stochastic, implied, and historical volatility (Azzimonti, 2018). Mishkin (1999) postulates that recession, government policy uncertainty, and the collapse of a large financial institution may be leading causes of an increase in uncertainty.

Based on the literature on EPU, Rodrik (1991) deduces that investments are more likely to be delayed in developing countries because of recurrent reform until the point that uncertainty over the success of the reform is eliminated. Pastor and Veronesi (2012) affirm that policy uncertainty triggers financial costs, reduces investment, and increases economic contraction. Istiak and Serletis (2018) outline four benefits of using the EPU index over other indicators of uncertainty that have been developed: (1) the EPU index covers past historical trends in policy-related economic uncertainty; (2) unlike other EPU indicators, it is more quantifiable, as the EPU index is accessible to all advanced and developing countries (Baker et al., 2016); (3) it shows the actual nature of the economic uncertainty; and (4) it describes the cross-sectional trends in some economic variables. In general, the prior empirical literature focused on advanced countries (primarily the United States) and examined EPU with no specific link to firm value (FV). These studies do not consider the dynamic aspect of this nexus and the possibility of reverse causality; moreover, they have little discussion of emerging economies.

Contrary to existing research methods and results, this study makes a significant theoretical and empirical contribution. First, unlike other studies, our paper considers the EPU index of BRICS (Brazil, Russia, India, China, and South Africa) countries in the banking sector. In empirical studies to date, the impact of EPU on FV is ambiguous (Baker et al., 2016; Ko & Lee, 2015; Xu, 2020), so our conclusions about the nexus between EPU and the FV of banks in developing economies are new. Second, we use annual data to explore the EPU index's long-term predictive power on FV. The study contributes to the literature by showing that EPU affects FV across countries and banks. This is vital for critical and obvious reasons. Countries have different characteristics—such as in their policy toward financial and trade openness, supervisory frameworks, competitiveness, size of financial markets, preferences of financial market participants—therefore, a single-country analysis of the EPU–FV nexus would not be very informative (Chen et al., 2019). Unlike the other study, our study uses both panel vector autoregression (PVAR) and generalized method of moments (GMM) econometric techniques to provide a robust empirical finding that confirms the bidirectional effect of EPU on FV by focusing on banking sector in emerging countries (Gholipour, 2019). Third, we apply a panel vector autoregression (PVAR) model to enhance understanding of the dynamic nexus between EPU and FV and analyze the impulse response functions (IRFs) in a GMM framework. To the best of our knowledge, this is the first study to focus on conventional banks in BRICS countries using data over the period of 2009–2019. Overall, our findings support the significant effect of the EPU index on FV.

The remainder of this study is structured as follows. In Section 2, we present a literature review. In Section 3, the data and empirical method are described. Section 4 outlines our results and discussion. Section 5 concludes the study.

Literature Review

The economic theory offers different predictions of the impact of EPU, arguing that mounting uncertainty increases information asymmetry and thereby obscures borrowers' characteristics (Mishkin, 1999). In times of uncertainty, it is challenging for lenders to differentiate good credit risks from bad. Thus, lenders hesitate to lend, resulting in a decrease in investment and thus in economic activity. Minsky (1970) also reveals that, after a continuous economic expansion, financial stability dwindles. Hence, any unexpected event can cause a reaction by the financial system. Minsky (1970) describes two types of disruptions that can cripple the financial system: a cash flow deficit caused by income losses and management or human error. They are more likely to occur under uncertainty, implying that limiting uncertainty is key to financial stability. The relationship between EPU and firm performance is investigated by Iqbal et al. (2020), using US-listed nonfinancial firms from 2000 to 2016. Their findings show that EPU has a significant and negative impact on Tobin's Q, the net profit margin, the return on assets (ROA), and equity.

A few empirical studies support the disrupting effect of uncertainty in the financial system. Karadima and Louri (2020) examine the moderating role of bank concentration on the nexus between EPU and nonperforming loans (NPLs) using data on 507 banks in four member countries of the European Union (France, Germany, Italy, and Spain) during the period of 2005 to 2017. The results show that EPU positively affects NPLs, but this influence is significantly moderated by higher bank concentration. Using a panel of 11,303 US firms from 1963Q3 to 2012Q3, Gilchrist et al. (2014) indicate that uncertainty was the cause of financial distortion—affecting the smooth supply of lendable funds and thus creating countercyclical lending spreads and procyclical leverage—and these disruptions negatively affected investment. Using data over the period of 1930 to 2012, Segal et al. (2015) find that a higher degree of uncertainty increases the level of economic activity (e.g., consumption, output, and investment) and asset valuation, whereas lower uncertainty has the opposite effect.

Theoretical models to date make ambiguous predictions, and debates over the impact of EPU have increased. For instance, He and Niu (2018) contend that policy uncertainty adversely influences bank valuation. Chen et al. (2019) investigates the nexus between EPU and firm investment in the US market, focusing on listed firms from 1999 to 2013. Using a panel data model, they reveal that firms decrease short-term, long-term, and total firm investment when higher EPU occurs. Demir and Ersan (2017) examine EPU and the cash holdings of BRICS countries using firm-level data from 2006 to 2015. They use panel data regression and argue for a positive nexus between EPU and corporate cash holding. Their findings confirm that a firm's reduction in corporate investment increases the level of cash holding.

Similarly, Zhang (2018) reveals that an increase in EPU raises the risk factor in investor sentiment. Other studies have found a negative nexus between EPU and corporate investment. For example, Sahinoz and Cosar (2018) posit that economic growth and investment are adversely affected by EPU.

More importantly, empirical attempts to examine the causes of financial instability, such as those by Fouejieu (2017) and Yin (2019), do not capture the impact of EPU. However, Iqbal et al. (2020) test the impact of EPU but focus only on measuring short-term performance. Furthermore, using data on 16 countries over the period of 1985 to 2016, Phan et al. (2020) find that EPU forecasts excess stock returns, but the probability is asymmetric and country dependent. Based on 13 African countries from 1997 to 2019, Iyke and Ho (2019) develop a monthly measurement of diverse sources of uncertainty. Their findings reveal that uncertainty disrupts exchange rate markets and predicts almost 50% of the returns and 77% of the return volatility in these countries. Using a sample of 11,518 firms in 21 countries over the period of 1989–2012, Drobetz et al. (2018) reveal that the nexus between negative investment and the cost of capital declines during periods of heightened uncertainty. They indicate that firms with greater reliance on government are affected more by the impact of EPU on the nexus between investment and the cost of capital.

As stated earlier, these studies agree in general that uncertainty disrupts financial and nonfinancial markets. These closely related studies suggest that EPU offers valuable insights that can describe investment and return behavior. However, none of them directly examines the nexus between EPU and FV. By examining the relationship between EPU and FV among banks, our study contributes to the literature by indicating that EPU significantly influences FV across countries and banks.

Data and Empirical Method

Data

We extract the FV data proxy by enterprise value divided by earnings before interest, tax, depreciation, and amortization (EBITDA) from the BankScope database (Bhullar & Bhatnagar, 2013; Olalere et al., 2020). FV is a long-term performance measurement used to ascertain undervalued financial institution.

The measurement is preferred because it offers predicted returns to investors and acquirers and costs that are useful for bank valuation that represents the overall market value of the bank. The widely accepted EPU index was obtained from Baker et al. (2016). We extracted quarterly EPU data from the source (Baker et al., 2016). However, to make the data consistent with FV, which is annual, we converted the EPU data into yearly frequency by taking 12-month averages. Prior studies have argued that geopolitical risk (GPR) may bolster the influence of EPU across region on FV. Hence, we extracted the quarterly GPR data from the source (Caldara & Iacoviello, 2018). We also converted the GPR data into yearly frequency by taking a 12-month average. The bank-specific and macroeconomic variables used are extracted from Thomson Reuters and World Bank Development Indicators. The sample totals about 1,155 observations from 105 traditional banks in BRICS countries, and the sample period is from 2009 to 2019.

The Panel VAR Methodology

The study uses the PVAR approach because it treats all variables as endogenous simultaneously (Canova & Ciccarelli, 2013), allowing endogenous interaction between FV, EPU, and GPR. This method offers an efficient estimate by considering the cross-sectional dimension of our sample. The panel VAR with GMM estimation has been proven to yield consistent estimates in analytical models (Abrigo & Love, 2015), and it also helps to broaden the understanding of the dynamic causal relationship between FV, EPU, and GPR. The PVAR technique is relatively free of ad hoc identifying assumptions, so that data-oriented empirical results can be provided. Moreover, the advantage of using the PVAR framework is that it substantially increases the efficiency and the power of the analysis. Hence, this methodology provides more efficient estimates by allowing for unobserved individual heterogeneity as fixed effects among banks.

Formally, the following equation describes the PVAR model:

$$y_{i,t} = A_0 + A(L)\,y_{i,t} + f_i + \varepsilon_{i,t}, i = [1,...N]; t = [2009,...,2019] \tag{1}$$

where $y_{i,t}$ is a two-dimensional vector of endogenous variables, namely, firm value and the EPU and GPR index; f_i denotes the diagonal matrix of time-invariant fixed effects; A_0 is a vector of constants; $A(L) = \sum_{j=i}^{p} A_j L^J$ denotes a polynomial matrix of lagged coefficients; A_j denotes a "matrix of coefficients; and $\varepsilon_{i,t'}$ is idiosyncratic errors.

Equation 1 can be rewritten with our variables:

$$FV_{i,t} = \alpha_0 + \sum_{j}^{p} \beta_j FV_{i,t-j} + \sum_{j}^{p} \beta_j EPU_{i,t-j} + \sum_{j}^{p} \beta_j GPR_{i,t-j} + f_i + \varepsilon_{i,t'} \tag{2}$$

$$EPU_{i,t} = \alpha_0 + \sum_{j}^{p} \beta_j EPU_{i,t-j} + \sum_{j}^{p} \beta_j FV_{i,t-j} + \sum_{j}^{p} \beta_j GPR_{i,t-j} + f_i + \varepsilon_{i,t'} \tag{3}$$

$$GPR_{i,t} = \alpha_0 + \sum_{j}^{p} \beta_j GPR_{i,t-j} + \sum_{j}^{p} \beta_j FV_{i,t-j} + \sum_{j}^{p} \beta_j EPU_{i,t-j} + f_i + \varepsilon_{i,t'} \tag{4}$$

We enhance our analysis by calculating the IRF in addition to the panel VAR model. The additional analysis helps us gauge the reactions of one dependent/endogenous variable to another endogenous variable.

Panel Unit-Root Test

To check the stability/stationary of the data, we perform panel unit-root tests, using the Levin–Lin–Chu, augmented Dickey–Fuller, and Im–Pesaran–Shin tests to effectively identify the stationary and stochastic qualities of the variables along with their order of integration. The results reveal that FV, EPU, and GPR index series are stationary at order zero (the results are available on request). Table 1 lists the descriptive statistics of the variables.

For FV, the minimum and maximum values are −46% and 72%, respectively, but the mean value is 26%. EPU grew by about 683% during the period, with a deviation of 212% from the mean during the sample period. GPR grew by about 693% during the period, with a deviation of 45% from the mean during the sample period.

Results and Discussion

In this section, we examine whether the EPU can predict the FV of conventional banks in BRICS countries. The GPR index is included to test its joint effect with EPU on FV of conventional banks.

Stability of the Panel VAR Model

First, following Andrews and Lu (2001), we determine the model selection criteria using likelihood-based criteria. The test results presented in Table 2 show that the first lag model is more stable than the other likely model because it has the smallest model selection criteria (MSC)-Bayesian information criterion, model and moment selection criteria (MMSC)-Akaike information criterion, and MMSC-Hannan and Quinn information criterion.

When a panel VAR model is used, it is important to check for stability. According to Abrigo and Love (2015), it is assumed that an infinite-order vector moving average is present in panel VAR, and one possible way to confirm that the panel VAR is stable is to determine the eigenvalue stability. In Table 3, the findings on the eigenvalue show that the estimated panel VAR models satisfy the stability condition, implying that each modulus is strictly less than 1. Figure 1 illustrates that the eigenvalue is well within the unit circle.

Table 1

Descriptive statistics of variables

Variable	Observations	Mean	Standard Deviation	Min.	Max.
FV	1,155	0.2697	0.1344	−0.4673	0.7265
EPU	1,155	6.8334	2.1293	−0.5256	9.1593
GPR	1,155	6.9375	0.4550	5.5932	7.6169

Note: FV = firm value, EPU = economic policy uncertainty, GPR = geopolitical risk.

Table 2

PVAR optimal moment and model selection criteria

Lag	CD	J	J *p*-value	MBIC	MAIC	MQIC
1	0.9896226	178.8128	2.48e-24	4.778413	124.8128	78.18837
2	0.9906448	127.7196	1.44e-18	11.69665	91.71961	60.63662
3	0.9896668	112.9545	3.68e-20	54.94305	94.95453	79.41304

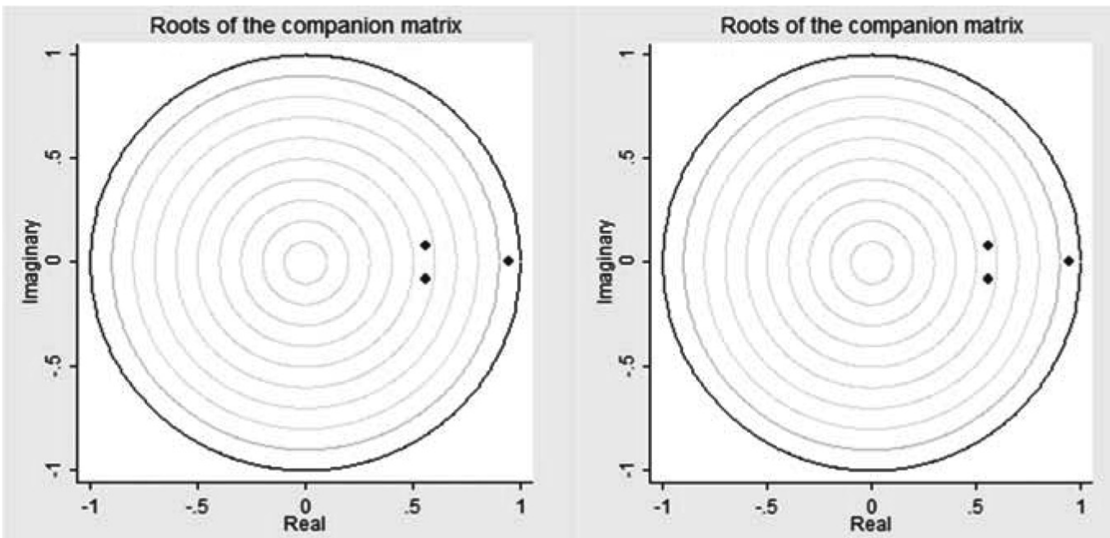
Notes: Sample period is 2009–2019. No. of obs. = 1155. No. of panels = 105. Ave. no. of T = 6.000. MBIC = MSC-Bayesian information criterion. MAIC = MMSC-Akaike information criterion. MQIC = MMSC-Hannan and Quinn information criterion. CD = coefficient of determination. (J) = Hansen´s J statistic and its p- value (J p-value).

Table 3

Eigenvalue stability condition

Models	Eigenvalue		Modulus
	Real	Imaginary	
Model: FV, EPU, and GPR	0.9471907	0	0.9471907
	0.5595973	0.5595973	0.5656573
	0.5595973	0.0825773	0.5656573

Note: The panel VAR satisfies the stability condition.



Note: The eigenvalue is within the unit circle.

Figure 1. Graph of eigenvalue (FV, EPU, GPR)

Granger-Causality Tests and Panel VAR Estimation

A PVAR model assumes that all variables are endogenous. Therefore, we perform a Granger-causality test to check the validity of the condition before conducting the PVAR. The Granger-causality test results are presented in Table 4, and the findings confirm that all the variables can be considered endogenous.

The PVAR results in Table 5 reveal a negative and significant nexus between FV and EPU at conventional banks. This result shows that both FV and policy uncertainty influenced each other. This finding is consistent with Iqbal et al. (2020), using a nondynamic method. There is a negative and significant relationship between FV and GPR index at conventional banks. Furthermore, the study also reports a negative and significant effect of EPU on the FV of banks (at the 5% level), suggesting that an adverse relationship exists between EPU and FV. This finding reveals that the increase in EPU might affect economic value by decreasing FV. The findings infer that financially constrained banks when facing policy uncertainty do not have direct access to financial markets and excess capital to finance business operations, making this uncertainty more likely to decrease bank investment. The finding affirms the presence of significant real-time interdependence between policy uncertainty and FV. This finding is inconsistent with Iqbal et al. (2020) and Athari (2020).

The result further revealed a positive and significant relationship between EPU and GPR at conventional banks. This suggests that a rise in policy uncertainty increases the GPR during the period and vice versa. Khoo (2021) documents that GPR—that is, the risk associated with wars, terrorist acts, and conflicts within and across nations—increases awareness of potential reallocation of economic resources. And that awareness, in turn, creates uncertainty about potential changes of policy in both financial markets and government sectors and their potential impact on the future economic environment. In short, GPR can increase financial volatility and economic policy uncertainty, which disrupt banks' investment activities and exacerbate financial frictions. Also, the relationship between GPR and FV is positive and significant, suggesting that an increase in GPR will lead to a rise in FV at conventional banks. Studies argued that financial institutions during high EPU may increase cash reserves to create barriers against financial shocks and manage future cash flow volatility and prefer to delay investment, which eventually declines the assets' return and profit margin (Gilchrist et al., 2014; Pastor & Veronesi, 2012).

Table 4

Granger-causality Wald tests

Model	Null Hypothesis	Chi^2	*p*-Value
Model 1: FV, EPU, and GPR	FV (excluded) does not Granger cause EPU.	8.731***	0.003
	FV (excluded) does not Granger cause GPR.	3.074*	0.080
	EPU (excluded) does not Granger cause FV.	4.473**	0.034
	EPU (excluded) does not Granger cause GPR.	31.977***	0.000
	GPR (excluded) does not Granger cause FV.	19.211***	0.000
	GPR (excluded) does not Granger cause EPU.	4.143**	0.042

Note: *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 5

Estimation result of the PVAR models: Firm value

		Coefficients	Std. Err.	*Z*	*P* > *z*	[95% Conf.	Interval]
FV							
	FV L1.	.5448	.0635	8.58	0.000***	.4204	.6693
	EPU L1.	−.3658	.0533	−6.85	0.000***	−.2612	−.4704
	GPR L1.	−1.8542	.7159	−2.59	0.010***	−3.2575	−.4509
EPU							
	FV L1.	−.0568	.0231	−2.45	0.014**	−.1022	−.0114
	EPU L1.	.4248	.0278	15.25	0.000***	.3702	.4794
	GPR L1.	3.4034	.4212	8.08	0.000***	2.5778	4.2290
GPR							
	FV L1.	.0159	.0034	4.63	0.000***	.0092	.0227
	EPU L1.	.0523	.0039	13.18	0.000***	.0445	.0600
	GPR L1.	1.0238	.0448	22.84	0.000***	.9359	1.1116
Number of obs.	1,155						

Note: PVAR-GMM Estimation. Final GMM Criterion Q(b) = 0.346. GMM weight matrix: Robust. No. of panels = 105. Ave. no. of T = 6.0000. Instruments: l(1/4). (FV, EPU).

The IRF and forecast-error variance decomposition (FEVD) proposed by Abrigo and Love (2015) were calculated. We determine the IRF confidence interval using 1,000 Monte Carlo draws based on the fitted model. The FEVD estimates in Table 6 reveal that 0.4% of the variation in FV can be explicated by EPU,

Table 6

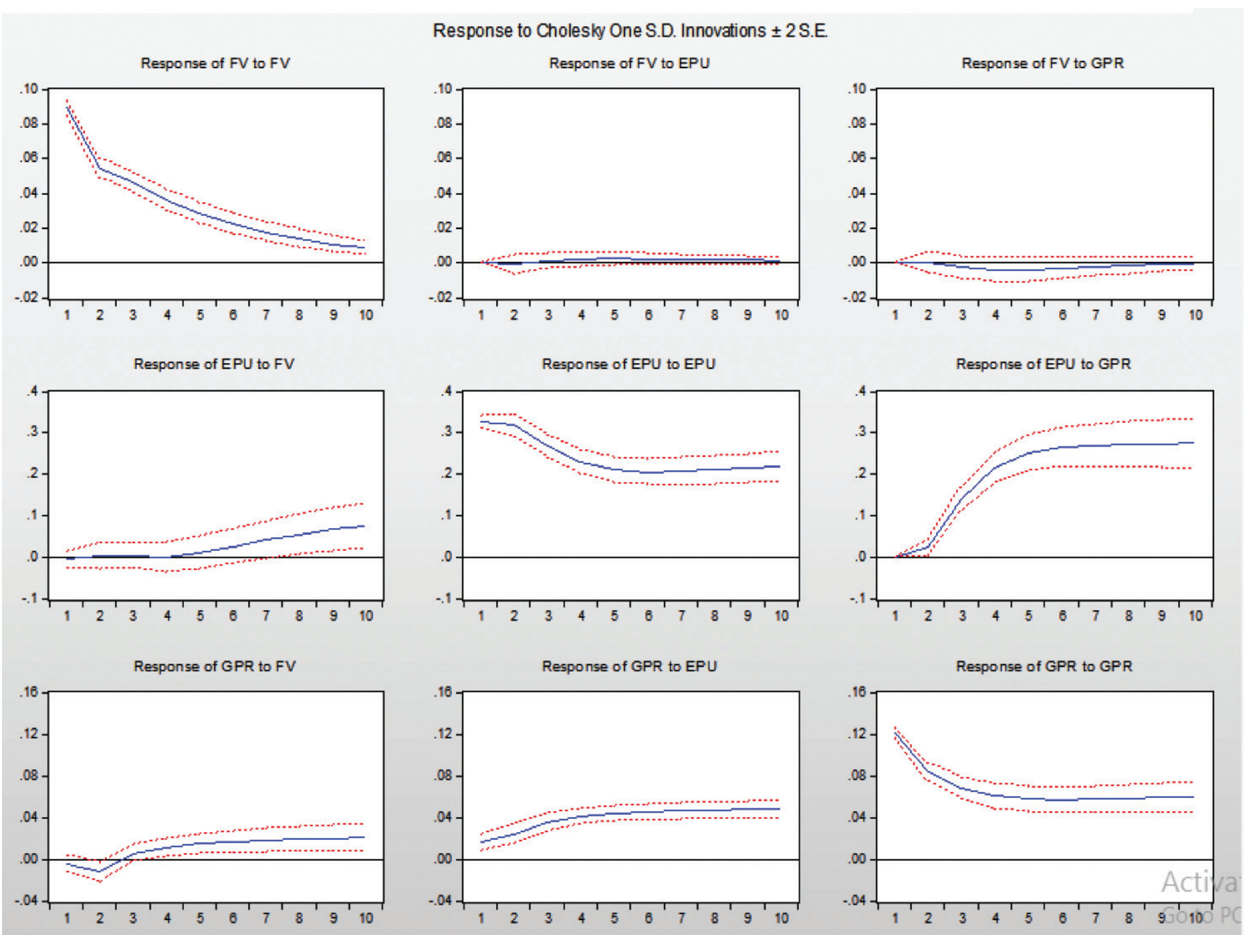
Forecast-error variance decomposition

Response Variable and Forecast Horizon	FV Response	Variable EPU	GPR
FV			
0	0	0	0
1	1	0	0
2	.9925368	.0012213	.0062419
3	.9808736	.0020214	.017105
4	.968222	.0021983	.0295797
5	.9563885	.00217	.0414414
6	.9461335	.0022662	.0516003
7	.937554	.002579	.059867
8	.9304497	.0030614	.0664889
9	.9245493	.0036317	.071819
10	.9196069	.0042229	.0761702
EPU			
0	0	0	0
1	.001728	.9982721	0
2	.0075129	.9030951	.0893921
3	.0638457	.7265602	.209594
4	.1613511	.5530313	.2856175
5	.2597811	.4242448	.3159741
6	.3401667	.3377023	.322131
7	.4009876	.2803329	.3186795
8	.4460979	.2415299	.3123723
9	.4796667	.2144633	.3058699
10	.504965	.1949651	.3000699
GPR			
0	0	0	0
1	.0050434	.1427966	.8521599
2	.166086	.0885038	.7454102
3	.3113507	.0631752	.6254742
4	.4110839	.0512288	.5376872
5	.4773541	.0452669	.4773791
6	.5221781	.0421248	.4356971
7	.5533631	.0403865	.4062504
8	.5756908	.039379	.3849302
9	.5921094	.0387668	.3691238
10	.6044787	.038376	.3571454

Note. FV = firm value, EPU = economic policy uncertainty, GPR = geopolitical risk.

and at the same time, FV explains about 50% of the variation in EPU. Also, about 8% of the variation in FV can be explained by GPR while the 30% of the variation in EPU can be explicated by GPR. Table 6 also reveals that 4% of the variation in GPR can be explained by EPU and FV explains about 60% of the variation in GPR.

The IRFs findings are shown in Figure 2. The IRFs in Figure 2 show that a positive shock to FV triggers a negative response from EPU, while a positive shock to EPU triggers a negative response from FV. Firstly, our results indicate that the EPU may be negative in BRICS countries. These results are in line with some previous studies (Athari, 2020; Iqbal et al., 2020). However, our findings do not corroborate the results of Gulen and Ion (2016) and Demir and Ersan (2017), who find a positive relationship between policy uncertainty and cash holdings. The IRF plot shows that a positive shock to GPR leads to a lower level of FV of BRICS financial institutions—suggesting that GPR creates a negative downward slope but a significant effect on FV. Further, the plots show that a positive shock to GPR triggers a positive and significant response from EPU, while a positive shock to EPU leads to an increase in GPR in BRICS countries. The implication for this could be that an increase in GPR raises EPU across the BRICS countries. Lastly, a positive shock to FV triggers a negative response from GPR.



Note: The blue solid line shows the impulse responses. The dashed red lines indicate the standard error confidence band around the estimate. Errors are generated by Monte-Carlo with 1,000 repetitions. EPU = economic policy uncertainty, GPR = geopolitical risk, FV = firm value, PVAR = panel vector autoregression.

Figure 2. Impulse response of EPU, GPR, and firm value using the PVAR approach

Additional Test

Although the disruptive impact of EPU on FV has been established in the prior section, it is essential to examine the shift in the relationship due to the effect of control variables, such as leverage, capital expenditure, ROA, the interest rate, the size of the banking sector, the inflation rate, and the gross domestic product (GDP). These crucial variables are recognized in the literature as drivers of FV.

Control Variables

The proxies for EPU, GPR, and FV are discussed in the previous section. In this section, the dependent variable is FV, and EPU is the major explanatory variable. We use annual growth in real GDP as a measurement of instability in economic activity, and the measurement of the inflation rate (inflation) captures the monetary conditions (Phan et al., 2020). We use a *Z*-score to proxy for banking sector riskiness, as it measures the possibility that bank profitability will decline due to insolvency, when the value of debt is higher than the value of assets. We measure the *Z*-score as the addition of return on average assets ROAA and capital adequacy divided by ROAA (Islam et al., 2020). The natural logarithm of total assets is used as a proxy for bank size, and the quality of management and liquidity risk is measured using the ROA. The consumer price index (CPI) is used as a proxy for the interest rate. Capital investment is measured as the ratio of capital expenditure to total assets (Iqbal et al., 2020).

Generalized Method of Moments Estimator

We then estimate the effect of the EPU index on FV with other firm-specific and macroeconomic factors using the sys-GMM panel data approach. The GMM approach is considered reliable and efficient as it addresses the potential problems with intrinsic endogeneity, autocorrelation, and heteroskedasticity. We apply the GMM estimation technique because it controls for unobserved heterogeneity and has the capability to resolve the endogeneity issues and inconsistencies in ordinary least square, random, or fixed effects estimates. The reliability and efficiency of the methodology is confirmed, as it solves the problem of serial correlation that may exist in the presence of a lagged dependent variable. A Sargan test is conducted in which the null hypothesis signifies the instrument's exogeneity and Arellano–Bond test. The null hypothesis denotes that second-order autocorrelation is absent from the estimation residuals. In the empirical model, the lag of FV is treated as endogenous in Equation 5 to check for the potential persistence of change over time, but the other variables are exogenous. The GMM is regarded as a perfect estimator if the period (T) is short and the cross-section (N) is large, attributes mostly found in bank-level data.

Hence, we estimate the following dynamic regression model:

$$FV_{i,t} = \alpha_0 + \delta FV_{i,t-1} \sum_{a=1}^{a} \beta_a EPU_t^a + \sum_{b=1}^{b} \beta_b ControlVar_t^b + \upsilon_{it} + \mu_{it} \quad (5)$$

Discussion of GMM Models

The empirical findings for Brazilian banks indicate that the lag of FV is highly significant at 1%, confirming the consistency of FV during the selected period. Furthermore, EPU has a significant and negative impact on FV. This indicates that at Brazilian banks, an increase in EPU decreases FV, leading to recurrent financial instability. This finding signifies that with a 1% decrease in EPU, FV increases by 299%. The result suggests that banks tend to not invest when EPU in the country increases to ensure a stable performance. Studies argue that risk factors for corporate investors and managerial perceptions increase when EPU rises, thereby leading to a decline in FV. The result is consistent with Iqbal et al. (2020). The leverage, capital expenditure, and GDP have a significant and negative effect on FV. Relevant literature suggests that banks with lower leverage tend to bolster their investment opportunities by holding less cash, thereby increasing FV. The interest rate has a significant and positive impact on FV—suggesting that FV increases with a rise in the interest rate. By contrast, bank riskiness, ROA, size, and the inflation rate have no significant influence.

The result for Russian banks, as with Brazilian banks, reveals that EPU has a significant negative impact on FV, signifying that increased EPU reduces the FV of Russian banks. The likelihood of this result implies that the financial system will be exposed to substantial financial instability over the long run if there is a steady rise in EPU. Converse (2018) predicts that greater policy uncertainty drives financial institutions to cut down on their investments, sometimes causing a shift from long-term investment projects to short-term investments. Stolbov et al. (2020) argues further that aggregate measure of systemic risk and EPU mutually reinforces each other for a sample of European economies. They also reveal that in case of more financially fragile economies such as Russia, systemic risk fuels uncertainty. The capital expenditure and interest rate have a significant and positive impact on FV, suggesting that FV increases with a steady rise in capital expenditure and the interest rate. However, the inflation rate, bank size, and GDP have a significant and negative effect on the FV of Russian banks. This infers that FV falls with an increase in the interest rate, bank size, and GDP. By contrast, bank riskiness, leverage and ROA have no significant influence.

Similar to our other results, the findings for the Indian banks indicate that EPU has a negative and significant influence on the FV of banks. However, they further reveal that an increase in EPU decreases FV, thereby increasing banks' financial instability. This is consistent with the conclusions reached by Iqbal et al. (2020). Few studies argued that that the cost of external financing increases during the EPU, causing a decline in assets' return, which impairs corporate financial constraints. Likewise, banks have the tendency to increase cash reserves to create barriers against financial shocks, which eventually declines the profitability (Gilchrist et al., 2014; Pastor & Veronesi, 2012). The control variables (bank riskiness, ROA, and inflation rate) have a negative and significant effect on FV, showing that an increase in bank riskiness (*Z*-score), ROA, and inflation rate decreases FV. However, leverage, interest rate, size, and GDP have a positive and significant effect on FV, suggesting that an increase in leverage, interest rate, size, and GDP raise FV. Other variables such as inflation rate and capital expenditure have no significant influence.

Furthermore, EPU has a significant and negative impact on FV at Chinese banks, which implies that an increase in EPU reduces FV. In periods of uncertainty, financially constrained banks are more likely to reduce investment when they lack sufficient funds to finance business operations and do not have access to the financial market. These corporate decisions often lead to reduction in revenues, ultimately affecting the FV of banks. Our finding is consistent with Iqbal et al. (2020). Further, considering the immature market system and government intervention in China, the policy uncertainty has huge influence on financial institutions. Studies argued that FV can be disrupted in the long term due to the bank's exposure to EPU (Yang et al., 2019). The ROA, capital expenditure, interest rate, size, and GDP negatively affect FV. This suggests that a decline in the ROA, capital expenditure, interest rate, size, and the GDP increase FV. However, leverage has a positive and significant effect on FV—suggesting that an increase in leverage raises FV. The bank riskiness and inflation rate have no significant influence.

At South African banks, our findings reveal that EPU has a significantly negative impact on FV. This result is similar to the findings for other countries. Previous studies assert that policy uncertainty raises a negative effect on firm investment due to several reasons, such as risk aversion, irreversibility of investment, and financial constraints (Chen et al., 2019). By implication, high policy uncertainty increases the investment threshold and therefore reduces the likelihood of investment (i.e., a negative investment-policy uncertainty relation). Interest rate has a significant and negative effect on FV, suggesting that an increase in interest rate decreases FV of banks. Meanwhile, other variables, such as *Z*-score, capital expenditure, leverage, ROA, bank size, GDP, and the inflation rate, have no significant effect on FV.

Conclusions and Policy Issues

In this paper, we examine the nexus between the EPU index and FV. Unlike prior studies, this study addresses how the EPU index might forecast the FV of banks, which has not been the subject of a direct study before. We also include the GPR index to test the joint influence of EPU and GPR on FV using the panel VAR method. First, we test this proposition by investigating how EPU data influence FV in BRICS countries from 2009 to 2019. We use a PVAR analysis to confirm the significant relationship between the two variables. Our findings indicate that the EPU and GPR index predicts and significantly affects FV using the panel VAR method. Second, we match EPU data to data on bank-specific and macroeconomic variables to ascertain changes in the impact of EPU on FV using a GMM estimation. In doing so, we control for bank characteristics (bank riskiness, leverage, capital expenditure, ROA, and size) and macroeconomic factors (interest rate, GDP, and inflation). The results show that EPU influences FV.

Table 7

Result of firm value Sys-GMM model

Variables	All Banks		Brazil Model 1		Russia Model 2		India Model 3		China Model 4		South Africa Model 5	
	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat	Coef.	*t*-stat
L.FV	.2876	15.01***	.3548	1.69*	.5999	2.12**	.2130	8.13***	.6852	24.50***	−2.5030	−0.99
EPU	−.0067	−1.88*	−.4375	−2.99***	−.8200	−1.72*	−4.1449	−1.77*	−.0888	−3.28***	−.0166	−1.71*
***Z*-score**	.0192	3.61***	.0228	0.45	−2.8480	−0.86	1.0265	−2.06**	−.0077	−0.86	.0426	1.13
LEV	.0251	0.49	−1.8949	−1.76*	−.7370	−0.10	10.927	2.24**	.1021	2.47***	−.1045	−0.93
ROA	−1.0681	−7.33***	−.6472	−0.33	−26.770	−1.31	−9.9605	−1.66*	−.3686	−5.68***	−11.047	−1.09
CAPEXP	.0092	6.35***	−.1879	−2.93***	.0433	1.66*	.1465	1.07	−.0232	−2.93***	7.1131	0.78
INT	.0692	6.55***	.0538	1.81*	7.0396	2.04**	.7362	1.74*	−.7554	−2.28**	−2.4245	−1.70*
SIZE	10.244	7.80***	−7.7681	−0.48	−15.620	−1.73*	10.71015	5.74***	−.4701	−5.01***	−2.6267	−1.34
GDP	.0423	4.76***	−.1588	−2.09**	−3.4899	−1.69*	2.2737	3.88***	−.2452	−4.27***	−.0350	−1.12
INFL	−.0088	−3.87***	.0652	0.99	−11.978	−1.88*	−1.8239	−5.79***	.0010	0.57	1.1051	1.22
_cons	−.397	−4.49***	1.6104	1.92*	−18.842	−1.18	−10.384	−1.60*	.0185	0.09	−5.6652	−1.46
AR1	−3.8896 (0.1025)		−2.1526 (0.0314)		−.3328 (0.7392)		−3.0973 (0.0020)		−3.3098 (0.0724)		.47546 (0.6345)	
AR2	0.29001 (0.7718)		−1.6274 (0.1036)		−.4617 (0.6442)		−.3669 (0.7137)		1.1392 (0.2546)		.5019 (0.6157)	
Hansen test	56.96663 (0.3298)		6.4753 (1.0000)		5.0350 (1.0000)		24.38081 (0.9997)		22.51415 (0.9999)		1.0017 (1.0000)	
F test	1120.32 (0.0000)		176.34 (0.0000)		49.50 (0.0000)		1771.09 (0.0000)		7323.55 (0.0000)		61.60 (0.0000)	
No. of instruments	64		64		64		64		64		64	
Observations	1,155		187		154		330		363		121	

FV = firm value. EPU = economic policy uncertainty. LEV = leverage. ROA = return on assets. CAPEXP = capital expenditure. INT = interest rate. SIZE = bank size. GDP = GDP growth rate. INFL = inflation rate. *Note*: ***Significant at 1%, **significant at 5%, *significant at 10%.

Although our findings vary across countries, one consistent result is that EPU leads to a decline in FV. Our findings have economic meaning and implications. An increase in EPU leads to a decline in FV by a 212% deviation in its sample mean. Despite the differences among the countries in terms of their economic conditions, business environment, and geographic location, our results confirm that EPU affects FV regardless of this diversity. Some studies further argued that the reason why FV decreases when EPU increases could be attributed to weak institutional environment. Suggesting that consistency of regulations is increasingly important under economic transformation. In other words, the financial market is adversely affected due to unstable policy environment, especially for banks with a high level of exposure to uncertainty. The implication is that high EPU exposure in the long term can influence FV because managers are less disciplined under uncertainty.

Furthermore, we also find that each of the country's financial system characteristics influences the nexus between EPU and FV. Therefore, policymakers must design strategies to reduce economic uncertainty because when EPU increases, stock market investors are more likely to react swiftly. Even though policy uncertainty is slightly inevitable, a great number of policy changes would make it difficult for banks to cope with different types of regulations and therefore weaken market efficiency as well as its value. Hence, corporate and individual investors, business managers, policymakers, and institutional investors should monitor the overall EPU index to maintain awareness of overall uncertainty. In conclusion, the empirical results offer more evidence regarding the recent debate as to whether EPU influences the FV of banks. This study offers valuable analysis for policy makers, bank supervisors, and market investors and has vital policy implications with respect to the nexus between policy uncertainty and FV at banks.

Declaration of Ownership

This report is our original work.

Conflict of Interest

None.

Ethical Clearance

This study was approved by our institution.

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