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THE IMPACT OF INVESTMENT DECISIONS ON FIRM FINANCIAL PERFORMANCE MODERATED BY ECONOMIC POLICY UNCERTAINTY: EVIDENCE FROM THE MANUFACTURING SECTOR OF PAKISTAN

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ABSTRACT

The study examines the link between firm-level investment and firm performance moderated by economic policy uncertainty in the manufacturing sector of Pakistan across the six years from 2015–2020. The System-GMM estimation has been employed to demonstrate the problem of endogeneity with dynamic linear and non-linear models. The study revealed that the moderating impact of economic policy uncertainty has negative and significant impact on investment (investment in tangible assets, investment in intangible assets, and financial leverage) and firm performance (Tobin's Q). Similarly, economic policy uncertainty regarding investment and firm performance (ROA) is negative and significant in investment in tangible assets, but positive and significant in financial leverage. Our findings remain constant over a range of variable characteristics, even after accounting for endogeneity issues. Our main contribution is the finding that investment and firm performance have a negative and significant relationship with economic policy uncertainty. As economic policy uncertainty raises the firm level, investment decreases, which ultimately impacts firm performance negatively. Thus, the study advises that policymakers make an effort to minimize the effect of economic policy uncertainty at a certain level. They must keep this uncertainty within a reasonable range since increased economic policy uncertainty will push businesses to minimize their short-term and long-term investments.

Contribution/Originality: This research contributes favorably to a country's prospective investors and firms' internal environment to manage the investment opportunities during economic policy fluctuations. This study is one of the few studies examining the nexus between investment and firm performance under the economic policy uncertainty of manufacturing firms in Pakistan.

1. INTRODUCTION

According to the Global Economy Watch (GEW) of March 2019 (PWC, 2019), the existing international political and economic climate has created the biggest uncertainty in the current era. It is also increasing fears regarding how the decisions of policymakers can create corporate investment and profitability. As soon as

uncertainty occurs, firms might need to reduce employee reimbursement, production, and corporate investments (IMF, 2012). Based on this, the contemporary state of the research examines how uncertainty influences monetary decisions of firms, such as capital structure, mergers and acquisitions, capital structure (CS), cost of capital (CC) and corporate investment. The main problem is measuring uncertainty and identifying a proper substitute for it. Previous literature uses different measures of uncertainty, such as geopolitical risks, the volatility index (VIX), stock market instability, political risks, and economic growth. Moreover, a new substitute for improbability is the Economic Policy Uncertainty (EPU) index formed by Baker, Bloom, and Davis (2016). This index deviates from past events as it assesses the incidence of articles in the newspapers that comprise terms regarding policy, uncertainty, and economy. It capitalizes on the improbability of who will make economic policy decisions, which policy actions are likely to be implemented, and who will be influenced by the monetary implications of those decisions. The world has faced different crises, such as the global financial crisis in 2008, Brexit, the European debt crisis, and the trade wars between China and the US. In addition to that, the influence of EPU on the input and output factors of companies has stimulated widespread concentration. Still, the research has not reached a definitive agreement on such a controversial problem. This study also emphasized the macro environment instead of the micro level, particularly the influence of uncertainty of macroeconomic policy. Furthermore, given the actual context that businesses and corporations attempt to manage, EPU will have an impact on their aspirations for future growth.

Considering the greater levels of uncertainty faced by the United States economy over the last few years, Madanoglu and Ozdemir (2019) emphasized on examining how EPU influences corporate investments of hospitality firms. The manufacturing sector is considered very sensitive to economic improbability as clients typically tend to delay their decisions of consumption under negative economic situations in favor of more primary needs. From a monetary viewpoint, the firms in the manufacturing sector require continuous investments in fixed assets because their business processes rely on assets such as land, building, and equipment. Moreover, a lower level of investment in fixed assets might create a decline in manufacturing firms' performance (Sharma & Upneja, 2005). Jiang and Dalbor (2017) revealed that some firms, particularly in the manufacturing sector, are regarded as capital-intensive as companies in the respective sector keep a greater number of fixed assets. Despite this, there is a vast amount of literature available on the components of corporate investment. In this regard, Jang and Park (2011) assessed that a limited number of studies are available on investment decisions in the manufacturing sector. According to Moon and Sharma (2014), liquidity has a positive impact on fixed asset investment in the restaurant and lodging industries. For accommodation companies, the liquid ratio and monetary leverage have an adverse and affirmative impact on investment. However, firm size and financial leverage are adversely linked with investment in the restaurant sector, while liquidity and profitability ratios have a positive effect. To the best of our knowledge, this is novel research in the context of examining the effect of EPU on investment decisions among firms in the manufacturing sector of Pakistan. Some stimulating studies examine the association between economic policy uncertainty and the manufacturing sector (Ender Demir & Ersan, 2018).

Based on the above, the current research examines how EPU is associated with the corporate investment and firm performance among 20 listed manufacturing companies in Pakistan from 2015 to 2020. The estimations of the system generalized method of moments (GMM) regression shows that investment and firm performance have a negative and significant relationship with economic policy uncertainty, and this outcome is strong in various estimation techniques. The remainder of this research paper is structured as follows: Section two emphasizes the influence of EPU and corporate investments in light of previous studies; Section three shows the methodology and data; Section four depicts the findings; and the last section concludes the study.

2. LITERATURE REVIEW

In terms of investment size, corporations' compensation balances show a decline in investment during periods of uncertainty (Dixit & Pindyck, 1994; Pindyck, 1988). Wu, Zhang, Zhang, and Zou (2020) used data from Australia from 2002 to 2017 to identify a positive association between EPU and the investments made by firms. This association holds more resolutely among companies having greater revenue and greater operating cash flow. Additionally, the effect of EPU on the level of investment depicts the properties of a structure comprising corporate mergers and acquisitions, innovative investments, and transnational investments. At first, based on corporate innovation, the study shows that uncertain economic policy significantly deters actual investment and reduces net debt issuance for businesses. Bonaime, Gulen, and Ion (2018) showed a negative correlation between EPU and mergers and acquisitions at both firm and macro levels. Borthwick, Ali, and Pan (2020) further extended this study to China and they achieved a clear conclusion. The study by Sha, Kang, and Wang (2020) examined a contrary direction. This affirmative association holds robustly when the level of EPU is high in non-state-owned enterprises.

Many types of research identified a negative association between EPU and corporate investments (Baker et al., 2016; Gulen & Ion, 2016). Gulen and Ion (2016) mentioned an adverse impact of the EPU index on the industry and company-level investment. Demir and Ersan (2017) revealed that EPU has a promising association with the corporate cash holdings because the companies minimize their corporate investments; as a result, the cash level tends to increase. Ko and Lee (2015) identified that a rise in EPU declines the prices of stocks. Moreover, Sahinoz and Erdogan Cosar (2018) suggested that EPU decreases economic growth and investment. He and Niu (2018) further showed that EPU adversely influences banks' valuations. Zhang (2019) found that the increase in EPU tends to increase the factors of risk in the sentiments of investors. Stein and Charles (2016) demonstrated that companies face relatively greater degrees of economic improbability, leading to more negative discretionary accruals. There are other researches as well who identified that uncertainty influences different outcomes at the firm level, such as capital expenditure (Bloom, 2009), research & development (R&D) expenses and hiring (Stein & Stone, 2013), speed of adjustment and leverage, issuance of equity, companies' risk-taking behavior, the costs of corporate equity and debt, and accrual investment (Arif, Marshall, & Yohn, 2016). Overall, there is sufficient empirical data to suggest that uncertainty worsens business cycles by influencing corporate actions. In addition to that, recent studies have declared that the ownership of the state is essential in identifying the investment behavior of companies (Firth, Malatesta, Xin, & Xu, 2012; Zhou, Gao, & Zhao, 2017), but its role under EPU is still relatively unexplored. Companies delay investments under uncertainty, postpone projects after a particular uncertainty level, and create a provisional rise in investment (Julio & Yook, 2016).

Moreover, Iqbal, Gan, and Nadeem (2020) examined the association between EPU and the performance of non-monetary companies indexed in the US. These companies were using four substitutes for firm performance, such as Tobin's Q, net profit margin, return on equity, and return on assets. The authors identified that in all four substitutes, the influence of EPU on economic performance is negative and significant. Qureshi, Kirkerud, Theresa, and Ahsan (2020) found convincing evidence that uncertainty in policy reduces the performance of firms. The uncertainty in policy also increases the irregularity of information between the market players and managers, increases the cost of capital, and minimizes the performance of companies (Armstrong, Core, Taylor, & Verrecchia, 2011). Despite this, the sustainability disclosure moderates this disrupting impact of EPU on the performance of companies. Furthermore, the association between EPU and corporate leverage is ex-ante and unclear. The uncertainty in policy might enhance the asymmetry of information between creditors and borrowers and influence the default risk, leading to a greater debt financing cost (Zhang, Han, Pan, & Huang, 2015). Companies are now more concerned with an unpredictable environment and they tend to borrow less. The enhancement in uncertainty might help firms produce a lower level of revenue, and hence they might experience a shortage of cash flow for investments. Changes in market uncertainty, which are influenced in part by monetary policy, will alter firms' leverage as well as the cost of getting external financing, which will have an impact on investment behavior. As a

result, it is argued that uncertainty has a moderating effect on the relationship of leverage investment. However, very few studies depict how uncertainty impacts the linkage between investment and leverage (Baum, Caglayan, & Talavera, 2010; Bo & Sterken, 2002; Hutchinson & Gul, 2002).

3. METHODOLOGY

The cross-sectional time-series data from the study were analyzed using panel data collected across the six years from 2015 to 2020. The research seeks to investigate how variables impact company performance. ROA and Tobin's Q are employed as response variables, hence firm performance variables can be interpreted as follows in Table 1.

Table 1. The explanatory variables and their definitions

Variables	Abbreviation	Definition
Independent Variables		
Investment in intangible assets	IIITA	Firm's intangible capital intensity as the intangible assets over total assets.
Investment in tangible assets	ITA	Fixed assets to total assets
Financial leverage	FL	Total debt to total assets
Interaction (moderator) variable		
Economic policy uncertainty	EPU	Economic Policy Uncertainty Index www.policyuncertainty.com
Dependent Variables		
Return on Assets	ROA	Net income divided by total assets
Tobin's Q	Tobin's Q	The ratio of market value to total book value
Control Variables		
Cash flow from operations	CFO	Net cash flow from operations to net sales
Firm size	FS	Log of total assets
Firm age	FA	The number of years since a firm began operating

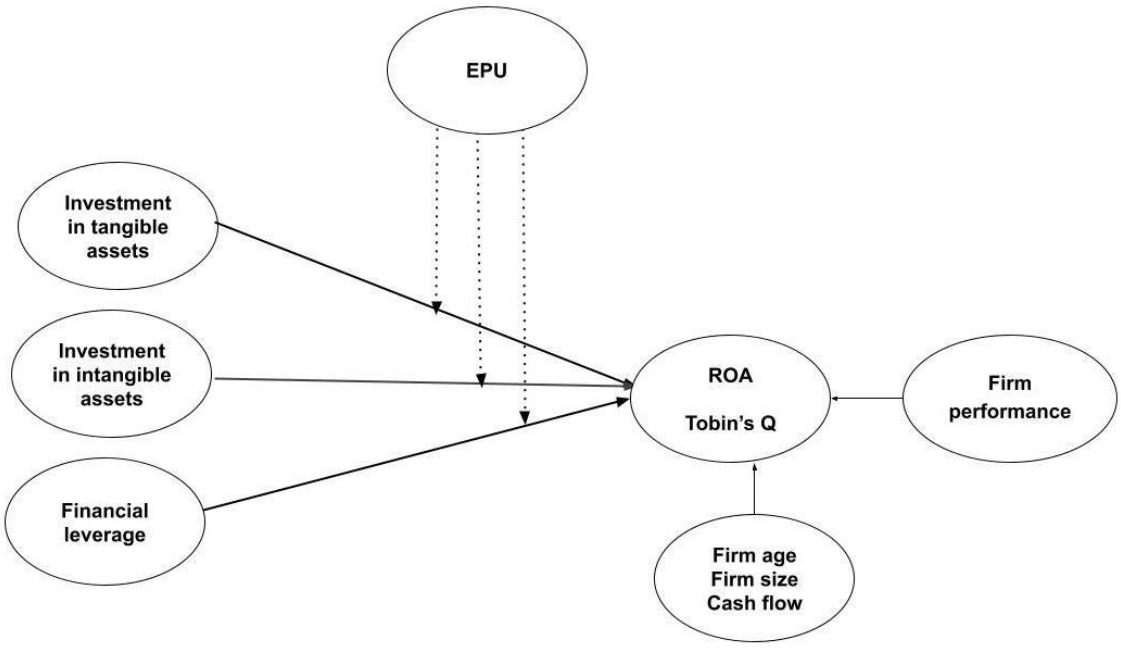

Figure 1. Conceptual framework.

Figure 1 illustrates the conceptual framework of the study.

3.1. Empirical Model

3.1.1. Dynamic Panel Model

Simple linear regression equation:

$$Y_{it} = \alpha_{it} + \beta_{it}(X) + \varepsilon_{it} \quad (1)$$

Equation 1 represents the simple linear regression equation.

Dynamic linear models stand accessible in the subsequent second and third empirical equations:

$$ROA_{it} = \beta_{it} + \beta_1(\mathrm{ITA}_{it}) + \beta_2(\mathrm{IIITA}_{it}) + \beta_3(\mathrm{FL}_{it}) + \beta_4(\mathrm{EPU}_{it}) + \beta_5(\mathrm{AGE}_{it}) + \beta_6(\mathrm{SIZE}_{it}) + \beta_7(\mathrm{CFO}_{it}) + \varepsilon_{it} \quad (2)$$

$$TOBIN'SQ_{it} = \beta_{it} + \beta_1(\mathrm{ITA}_{it}) + \beta_2(\mathrm{IIITA}_{it}) + \beta_3(\mathrm{FL}_{it}) + \beta_4(\mathrm{EPU}_{it}) + \beta_5(\mathrm{AGE}_{it}) + \beta_6(\mathrm{SIZE}_{it}) + \beta_7(\mathrm{CFO}_{it}) + \varepsilon_{it} \quad (3)$$

Equation 2 represents firm performance with ROA as the dependent variable, and Equation 3 represents firm performance with Tobin's Q as the dependent variable with all other independent variables employing dynamic linear models.

3.2. Dynamic Panel Model with EPU as an Interaction Effect

Dynamic non-linear models stand accessible in the subsequent fourth and fifth empirical equations:

$$ROA_{it} = \beta_{it} + \beta_1(\mathrm{ITA}_{it}) + \beta_2(\mathrm{IIITA}_{it}) + \beta_3(\mathrm{FL}_{it}) + \beta_4(\mathrm{EPU}_{it}) + \beta_1(\mathrm{ITA} * \mathrm{EPU}_{it}) + \beta_2(\mathrm{IIITA} * \mathrm{EPU}_{it}) + \beta_3(\mathrm{FL} * \mathrm{EPU}_{it}) + +\beta_5(\mathrm{AGE}_{it}) + \beta_6(\mathrm{SIZE}_{it}) + \beta_7(\mathrm{CFO}_{it}) + \mu_{it} \quad (4)$$

$$TOBIN'SQ_{it} = \beta_{it} + \beta_1(\mathrm{ITA}_{it}) + \beta_2(\mathrm{IIITA}_{it}) + \beta_3(\mathrm{FL}_{it}) + \beta_4(\mathrm{EPU}_{it}) + \beta_1(\mathrm{ITA} * \mathrm{EPU}_{it}) + \beta_2(\mathrm{IIITA} * \mathrm{EPU}_{it}) + \beta_3(\mathrm{FL} * \mathrm{EPU}_{it}) + +\beta_5(\mathrm{AGE}_{it}) + \beta_6(\mathrm{SIZE}_{it}) + \beta_7(\mathrm{CFO}_{it}) + \mu_{it} \quad (5)$$

Equation 4 represents firm performance with ROA as the dependent variable, and Equation 5 represents firm performance with Tobin's Q as the dependent variable with all other independent variables employing dynamic non-linear models.

In each equation, i (i = 1…20) is the entity's intercept, t (2015–2020) is the year under consideration, and β represents the coefficients for each regressor variable. The pooled ordinary least squares (POLS), random effects (RE), and fixed effects (FE) with *n* firm-specific intercepts will all be used to investigate the dynamic panel models. Fixed effects models examine the relationship between input and output variables in a variety of ways, accounting for the fact that each firm has its own set of characteristics that influence how variables are linked. Random effects models reveal random variance amongst organizations that is unrelated to the input factors. According to the Breusch and Pagan multiplier test, the random effects model is acceptable between the POLS and RE models; however, the Hausman test identifies the best model from the second twofold models. Finally, to overcome the problem of heteroskedasticity, fourth and fifth regression models were used, specifically regression with the two-step system GMM, which required adjustments to the estimated model. The two types of GMM estimators are one-step and two-step estimators. Because it uses the maximum weight matrix, two-step estimation is significantly more effective than one-step estimation in terms of academics. A tiny cross-section measurement could result in skewed standard errors, skewed estimate parameters, and an unreliable identification test (Windmeijer, 2005).

Table 2 presents the description of statistics of the variables.

Table 2. Descriptive statistics.

Variable	Mean	Median	Std. Dev.	Skewness	Kurtosis
TOBINQ	1.411	0.835	1.660	2.747	12.009
ROA	8.809	8.626	7.110	4.749	40.060
EPU	95.326	94.980	28.739	0.149	1.724
ITA	15.763	16.252	2.507	-0.852	3.283
IIITA	6.632	8.398	5.760	-0.003	1.578
FL	6.766	1.952	20.508	7.118	62.227
FA	30.600	24.000	17.419	0.775	2.336
FS	15.783	16.555	4.125	-2.196	8.270
CFO	0.226	0.093	0.750	7.539	60.994

Note: Tobin's Q and return on assets (ROA) are used as dependent variables. Investment in intangible assets (IIITA), investment in tangible assets (ITA), and financial leverage (FL) are used as independent variables. Economic policy uncertainty (EPU) is the moderating variable, and cash flow from operations (CFO), firm size (FS) and firm age (FA) are the control variables.

In Table 2, the mean and standard deviations for each variable are shown. The average ROA in our dataset is 8.8090, and Tobin's Q is 1.4113, but it jumps to 15.7631 when ITA is taken into account. The data indicate that the EPU index has a periodicity of 95.3258 (for the case of the natural logarithm of the annual average). Table 2 depicts the progression of the FL and IIITA variables during the time period studied as a first attempt to identify the link between corporate investment and firm performance. It's possible to deduce an inverse link. The firms in our sample have a reasonably high growth rate of 30.6 (as measured by firm age) and are of various sizes and are highly indebted (on variation, the leverage ratio is 6.7658). In terms of firm-specific characteristics, the average EPU in Pakistan for the period under consideration is 95.3258.

Table 3 illustrates the correlation of the variables.

Table 3. Correlation matrix.

Variable	TOBINQ	ROA	EPU	IFA	INTA	FL	AGE	SIZE	CFO
TOBINQ	1								
ROA	-0.170	1.000							
EPU	-0.265	0.080	1.000						
ITA	0.410	-0.255	-0.013	1.000					
IIITA	0.434	-0.163	-0.066	0.526	1.000				
FL	0.356	-0.198	0.073	0.276	0.185	1.000			
FA	0.281	-0.345	0.097	0.378	0.325	0.384	1.000		
FS	0.408	-0.296	0.023	0.866	0.517	0.224	0.305	1.000	
CFO	-0.119	0.647	0.035	-0.267	-0.149	-0.060	-0.078	-0.254	1

Note: Tobin's Q and return on assets (ROA) are used as dependent variables. Investment in intangible assets (IIITA), investment in tangible assets (ITA) and financial leverage (FL) are used as independent variables. Economic policy uncertainty (EPU) is the moderating variable, and cash flow from operations (CFO), firm size (FS) and firm age (FA) are the control variables.

Table 3 shows the Pearson correlations between the variables. Both ITA and IIITA have a negative relationship with firm performance (ROA and Tobin's Q). The correlation coefficients among the control variables support the idea that a company's size confers a reputation, allowing it to secure larger amounts of long-term funding to finance its investments and, as a result, produce greater investment results. Furthermore, the problem of multicollinearity does not exist among the variables. Table 4 presents the simple regression results (model 2) of the variables.

Table 4. Simple regression (model 2).

Variable	POLS (1)	RE (2)	FE (3)	GMM Sys (4)
Tobin's Q = L				0.638***
				(0.022)
IIITA	0.052*	0.052*	0.006	0.148***
	(0.028)	(0.028)	(0.039)	(0.032)
ITA	0.068	0.068	-0.518	0.831***
	(0.117)	(0.117)	(0.425)	(0.186)
FL	0.009	0.009	0.005	-0.034***
	(0.007)	(0.007)	(0.007)	(0.001)
EPU	-0.016***	-0.016***	-0.018	-0.002*
	(0.004)	(0.004)	(0.024)	(0.001)
FA	0.012	0.012	0.037	-0.032***
	(0.014)	(0.014)	(0.402)	(0.008)
FS	0.051	0.051	-0.013	-0.013
	(0.057)	(0.057)	(0.069)	(0.039)
CFO	-0.002	-0.001	-0.028	0.007
	(0.145)	(0.145)	(0.146)	(0.008)
Constant	0.275	0.275	10.31	-12.22***
	(1.461)	(1.461)	(11.93)	(2.667)
R-squared		0.356	0.192	
Observations	120	120	120	100
Diagnostic Checks				
Breusch and Pagan LM test			(22.760) ***	
Hausman test			(9.472) ***	
Multicollinearity test (VIF)			2.104	
Heteroskedasticity test			18030.40***	
Wald test			41.135***	
Sargan test chi2(8)/(P-Value)			-16.747 (0.212)	
AR (1)			1.267 (0.205)	
AR (2)			0.065(0.948)	

Notes: * and *** denote significance at the 10% and 1% levels, respectively.
Tobin's Q is used as the dependent variable. Investment in intangible assets (IIITA), investment in tangible assets (ITA) and financial leverage (FL) are used as independent variables. Economic policy uncertainty (EPU) is the moderating variable, and cash flow from operations (CFO), firm size (FS) and firm age (FA) are the control variables.

4. RESULTS AND DISCUSSION

Table 4 shows the results of the study. We employed two proxies of firm performance (Tobin's Q and ROA) to analyze the impact of EPU on investment and firm performance. It shows the results of the linear regression model using dynamic panel analysis where Tobin's Q is used as a dependent variable; investment in intangible assets, investment in tangible assets, and financial leverage are used as independent variables; firm age, firm size and cash flow from operation are used as control variables; and economic policy uncertainty is used as the interaction variable. The panel analysis was applied to multicollinearity tests using the variance inflation factor (VIF) test, with a mean value of VIF < 10, indicating that there is no multicollinearity problem (Cyril & Singla, 2020). In the first and second stage, we ensure robustness of the standard error where the autocorrelation parameter is higher and the standard errors are larger than for the model fitness of serial correlation, which is possible.

Table 5 presents the simple regression results (model 3) of the variables.

Table 5. Simple regression (model 3).

Variable	POLS (1)	RE (2)	FE (3)	GMM Sys (4)
ROA = L				9.080***
				(1.928)
IIITA	0.039	0.039	-0.281*	0.059
	(0.107)	(0.107)	(0.145)	(0.066)
ITA	0.567	0.567	-4.747***	0.407*
	(0.440)	(0.440)	(1.573)	(0.235)
FL	-0.003	-0.003	0.018	-0.003
	(0.025)	(0.025)	(0.026)	(0.002)
EPU	0.025*	0.025*	0.098	0.052***
	(0.014)	(0.014)	(0.089)	(0.009)
FA	-0.127**	-0.127**	-1.526	-0.365***
	(0.049)	(0.049)	(1.485)	(0.109)
FS	-0.468**	-0.468**	-0.848***	-0.174***
	(0.217)	(0.217)	(0.253)	(0.059)
CFO	5.637***	5.637***	5.270***	5.045***
	(0.554)	(0.554)	(0.541)	(0.200)
Constant	7.268	7.268	135.0***	0.082***
	(5.394)	(5.394)	(44.10)	(0.004)
R-squared			0.578	
Observations	120	120	120	100
Diagnostic Checks				
Breusch and Pagan LM test for random effects			(14.670) ***	
Hausman test			(20.982) ***	
Multicollinearity test (VIF)			2.104	
Heteroskedasticity test			778.43***	
Wald test			28.960***	
Sargan test chi2(8)/(P-Value)			11.018 (0.679)	
AR (1)			-1.419(0.156)	
AR (2)			-0.521(0.602)	

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.
Return on assets (ROA) is used as the dependent variable. Investment in intangible assets (IIITA), investment in tangible assets (ITA) and financial leverage (FL) are used as independent variables. Economic policy uncertainty (EPU) is the moderating variable, and cash flow from operations (CFO), firm size (FS) and firm age (FA) are the control variables.

The fourth column contains the outcomes of the two-step system GMM. The coefficient of determination is featured as the adjusted R-squared indicates that the statistical models are best explained by different explanatory variables and the model is the best fit for the data. The results of the two-step system GMM explains the best outcomes of the linearity of the study where investment in intangible assets and investment in tangible assets have a significant and positive influence, while financial leverage and economic policy uncertainty have a negative and significant effect on a firm's market performance (Tobin's Q). Furthermore, the problems of serial correlation are managed through the Wooldridge test, which is significant, and the heteroskedasticity test is also significant in dynamic panel data.

Table 5 also shows the impact of investment and EPU on firm performance. The key findings reveal that firms with greater investment opportunities prefer to provide more under economic policy uncertainty, whereas enterprises with lower investment opportunities do not. The findings of the system GMM shows that ITA has a significant and positive effect on ROA. EPU and CFO also have a significant and positive association with ROA. Moreover, firm age and firm size have a negative and significant relationship with ROA. Under policy uncertainty, firms with low investment potential do not change their investment decisions, both in the short and long terms.

Table 6 presents the non-linear Tobin's Q (model 4) results for the variables.

Table 6. Non-linear Tobin's Q (model 4).

Variables	POLS (1)	RE (2)	FE (3)	GMM Sys (4)
Tobin's Q = L				0.339***
				(0.043)
IIITA	0.112	0.112	0.065	0.145***
	(0.079)	(0.079)	(0.087)	(0.039)
ITA	0.033	0.033	0.250	1.548***
	(0.235)	(0.235)	(0.593)	(0.373)
FL	0.144***	0.144***	0.104***	0.212***
	(0.036)	(0.036)	(0.039)	(0.017)
EPU	-0.009	-0.009	0.014	0.048***
	(0.027)	(0.027)	(0.037)	(0.011)
FA	0.004	0.004	-0.088	0.003
	(0.011)	(0.011)	(0.392)	(0.029)
FS	0.053	0.053	0.023	0.047
	(0.057)	(0.057)	(0.068)	(0.031)
CFO	-0.015	-0.015	-0.005	0.060*
	(0.143)	(0.143)	(0.142)	(0.035)
EPU*ITA	0.001	0.003	-0.002	-0.003***
	(0.002)	(0.002)	(0.002)	(0.001)
EPU*IIITA	-0.001	-0.001	-0.002	-0.001*
	(0.001)	(0.001)	(0.001)	(0.001)
EPU*FL	-0.001***	-0.001***	-0.001*	-0.002***
	(0.003)	(0.003)	(0.001)	(0.001)
Constant	-0.135	-0.135	-0.265	-26.14***
	(3.086)	(3.086)	(13.26)	(6.302)
Observations	120	120	120	100
Diagnostic Checks				
Breusch and Pagan LM test for random effects			(12.750) ***	
Hausman test			(27.412) ***	
Multicollinearity test (VIF)			2.351	
Heteroskedasticity test			4.9e+050***	
Wald test			51.258***	
Sargan test chi2(8)/(P-Value)			11.779 (0.546)	
AR (1)			-1.302(0.193)	
AR (2)			0.957(0.338)	

Note: *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.
Tobin's Q is used as the dependent variable. Investment in intangible assets (IIITA), investment in tangible assets (ITA) and financial leverage (FL) are used as the independent variables. Economic policy uncertainty (EPU) is the moderating variable, and cash flow from operations (CFO), firm size (FS) and firm age (FA) are the control variables.

The effect of the interaction of EPU as moderating on Pakistani firms' value shows strengthens impact in Table 6, the result of the system GMM shows that the interaction of EPU*ITA, EPU*IIITA and EPU*FL have significant and negative impact on firm performance (Tobin's Q). It means when economic policy uncertainty rises, firm performance will decrease and vice versa. The moderation variable economic policy uncertainty indicates significant behavior with investment and firm performance nexus. These findings are in line with some previous study (Akron, Demir, Díez-Esteban, & García-Gómez, 2020; Chen, Lee, & Zeng, 2019; Iqbal et al., 2020). The control variables—firm size, firm age, and cash flow from operations (CFO)—all reveal statistically significant coefficients with values that are consistent with previous research. Cash flow from operations (CFO) has a significant impact on corporate performance, whilst other variables have a negative impact. Larger firms produce lower productivity, as seen by the negative relationship between firm size and firm age.

Table 7 presents the non-linear ROA (model 5) results for the variables.

Table 7. ROA non-linear (model 5).

Variable	POLS (1)	RE (2)	FE (3)	GMM Sys (4)
ROA = L				0.189***
				(0.016)
IIITA	0.467	0.467	-0.069	-0.330
	(0.315)	(0.315)	(0.329)	(0.632)
ITA	0.155	0.155	-8.019***	4.390***
	(0.949)	(0.949)	(2.240)	(1.428)
FL	-0.071	-0.071	-0.135	-0.101
	(0.143)	(0.143)	(0.149)	(0.085)
EPU	-0.015	-0.015	-0.108	0.531***
	(0.105)	(0.105)	(0.140)	(0.119)
FA	-0.132**	-0.132**	-1.405	-0.171
	(0.053)	(0.053)	(1.480)	(0.128)
FS	-0.467**	-0.467**	-0.876***	-0.232
	(0.226)	(0.226)	(0.256)	(0.349)
CFO	5.578***	5.578***	5.147***	6.360***
	(0.554)	(0.554)	(0.538)	(0.663)
EPU*ITA	0.004	0.005	0.013*	-0.032***
	(0.007)	(0.007)	(0.008)	(0.010)
EPU*IIITA	-0.005	-0.005	-0.003	0.004
	(0.003)	(0.003)	(0.003)	(0.006)
EPU*FL	0.001	0.001	0.001	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	11.45	11.45	183.7***	-56.91***
	(12.57)	(12.57)	(50.07)	(13.99)
Observations	120	120	120	100
Diagnostic Checks				
Breusch and Pagan LM test for random effects			(9.151) ***	
Hausman test			(40.034) ***	
Multicollinearity test (VIF)			2.351	
Heteroskedasticity test			1099.92***	
Wald test			73.025***	
Sargan test chi2(8)/(P-Value)			5.411 (0.965)	
AR (1)			-1.255(0.209)	
AR (2)			0.305(0.761)	

Note: *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.
Return on assets (ROA) is used as the dependent variable. Investment in intangible assets (IIITA), investment in tangible assets (ITA) and financial leverage (FL) are used as the independent variables. Economic policy uncertainty (EPU) is the moderating variable, and cash flow from operations (CFO), firm size (FS) and firm age (FA) are the control variables.

In Table 7, we assess the impact of EPU on investment and firm performance, measured as ROA through potential mechanisms. The analysis investigates the relationship across the characteristics of a firm. The interaction of EPU*ITA indicates a significant and negative relationship with firm performance, while EPU*FL shows a positive and significant impact on corporate performance, which means that economic policy uncertainty effectively influences firm performance (ROA). These results are supported by a great deal of literature, such as Gulen and Ion (2016); Baker et al. (2016); Duong, Nguyen, Nguyen, and Rhee (2020); Kang, Lee, and Ratti (2014); and Jens (2017).

5. CONCLUSION

Using a GMM approach with Pakistani firm-level panel data from 2015 to 2020, this research explores the link between investment decisions and firm performance modulated by economic policy uncertainty (EPU). Many studies have been conducted on this topic, and the majority of them conclude that uncertainty has a negative impact on investment decisions and corporate performance. Our contribution to the existing literature is twofold. First, we focus on the interaction between EPU and firms' investments and performance. As we examine the investment behavior to EPU, we find that when EPU rises, funds available for total investments are reduced, resulting in lower company performance. The interaction of EPU with investment and firm performance (Tobin's Q, investment in

tangible assets, investment in intangible assets and financial leverage) is significant and negative; conversely, EPU in investment and firm performance (ROA) is negative and significant in investment for tangible assets, but positive and significant for financial leverage. Although the findings support theoretical models (e.g., (Aghion, Angeletos, Banerjee, & Manova, 2010; Converse, 2018)), there have been few empirical studies. Second, we explore the possibility of a non-linear link between corporate investment performance and uncertainty, as suggested by several theoretical models (e.g., Sarkar (2000)) and empirical studies (e.g., Bo and Lensin (2005)). Our main contribution is that investment and firm performance have a negative and significant relationship with EPU. This opposes the findings of Bo and Lensin (2005), who claim that investment and uncertainty have an inverted U-curve relationship. In other words, firms can tolerate a certain amount of uncertainty while investment declines as EPU rises. As a result, the study suggests that policymakers should attempt to minimize economic policy uncertainty. They should aim to minimize such uncertainty as much as possible, as greater economic policy uncertainty would lead to enterprises reducing both short-term and long-term investments. The final effect could be a slowing of a company's performance as well as a country's economic performance.

6. LIMITATIONS OF THE STUDY

No research is without limitations, as evidenced by the following statements:

- The study is confined to data from 2015 to 2020. As a result, a thorough analysis over a specified period may yield mixed results.
- This study used secondary data obtained from the State Bank of Pakistan, and the nature of the analysis is solely dependent on the correctness and legitimacy of the data. The data sources can influence the estimation findings and explain the outcomes of the analysis.

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