

# Value relevance of accounting information in uncertain economic policy context: evidence from Tunisia

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## Abstract

**Research Question:** What is the impact of domestic and international uncertainty shocks on the relationship between book value, earnings, and stock price?

**Motivation:** We refer to the prior research on the value relevance of accounting information (Dunham & Grandstaff, 2021) which offers valuable insights into how the financial market interprets accounting information. However, there has been little emphasis on changes in value relevance over time and the influence of economic conditions on the value relevance of accounting information (El Ghouli *et al.*, 2021; Barth, 2023).

**Idea:** The study used the Ohlson's (1995) price model to investigate the effect of economic policy uncertainty on the value relevance of financial statement information in Tunisian firms. The dependent variable was Stock price (MV). The independent variables were Book Value of equity (BVS), Earning (EPS), and Economic Policy Uncertainty (EPU).

**Data:** The study was conducted on a sample of 36 firms listed on the Tunis Stock Exchange (TSE) over 14 years (2008-2021).

**Tools:** The models were estimated using the Generalized Least Squares (GLS) method.

**Findings:** This research demonstrates that even in a highly uncertain economic environment, book value and earnings remain suitable for evaluating stock prices. Despite accounting information possibly losing its relevance, earnings seem to hold more significance than book value in stock market pricing.

**Contribution:** This study contributes to the existing research on the relevance of accounting information by examining the impact of economic uncertainty in a developing country. We assess uncertain economy by using Baker *et al.* (2016) measure, which is a global measure. We have been able to find a significant decline in the value relevance of book value in an uncertain economy and to confirm the practical perspective of agency theory.

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## **1. Introduction**

The war in Ukraine has had a significant impact on global supply chains and inflation. In 2022, the United States and Europe reported the highest inflation rates in the world, at 8.7% and 9.2% respectively (Eurostat, 2022). These developed economies have not been immune to the effects of the war, leading to stricter financing conditions. Other factors such as the COVID-19 pandemic, Europe's looming energy crisis, and geopolitical tensions are expected to hinder international cooperation and trade, potentially leading to an economic recession. The global economy appears to be facing uncertainty due to a lack of foresight (Du *et al.*, 2023). This instability has raised concerns about negative expectations in capital and oil markets (Billio *et al.*, 2017; Albulescu, 2020). Additionally, the 1997 Asian financial crisis and the 2007 US subprime mortgage crisis, which evolved into the 2007-2008 global financial crisis, resulted in a significant decline in stock prices (Zhou *et al.*, 2021). Economic policy changes can introduce systemic risks that raise stock market volatility (Pástor & Veronesi, 2013).

Research has shown that uncertainty makes investors more attentive to firm-specific information from financial analysts, especially due to a lack of disclosure by managers (Andrei *et al.*, 2019). Managers may use their accounting discretion to take advantage of investors' neglect of accruals information, leading to a relaxation of control constraints on securities transactions (Kempf *et al.*, 2016; Abramova *et al.*, 2020). However, other researchers have indicated that during periods of high uncertainty, investors are likely to carefully consider the financial information of higher-risk firms, potentially prompting managers to enhance their firm's accounting quality (El Ghouli *et al.*, 2021). Consequently, the relevance of accounting information cannot be assumed when uncertainty is particularly high. Therefore, a natural question is, how does the economic uncertainty affect the accounting information relevance on the financial market?

Accounting value relevance refers to the usefulness of accounting information and the ability of financial statements information to influence stock prices (Francis and Schipper, 1999; Barth *et al.*, 2001). The concept of relevance is even more important as it is the primary condition for investor decision-making (Andrei *et al.*, 2019). According to the FASB (2010), “*relevant financial information is capable of making a difference in the decisions made by users*”.

There is limited existing research directly related to this question (Bilgic *et al.*, 2018), with most studies focusing on large developed financial markets.

Tunisia presents an interesting case study as an emerging country that has faced significant economic challenges in recent years. The country experienced a decline in tourism from 2015 to 2018 due to a series of jihadist attacks. Additionally, Tunisia has been affected by the COVID-19 pandemic and Russia's full-scale war in Ukraine, leading to slower growth and rising inflation. Foreign debt has significantly increased, reaching nearly 90% of the GDP in 2022, with government financing requirements reaching a record \$7.5 billion. State budget expenditure is forecast at \$17.3 billion, with estimated revenues of \$14.9 billion, while debt servicing costs amount to \$5.1 billion (ICG, 2023). Political instability has contributed to the loss of 982 industrial plants in Tunisia between 2010 and 2022, leading to a decrease in average GDP growth to 1.6 percent in the period 2011-2019, compared to an average of 4.4 percent in the previous decade. Furthermore, the failure to conclude an IMF loan agreement and downturn in public finances have exacerbated the situation, resulting in downgrades of the country's sovereign rating by credit agencies. In March 2022, the Fitch and Moody's agencies reduced the country's rating from B- with a negative outlook to CCC, and in June 2023 from CCC to CCC-. This situation has restricted access to external debt, leading the authorities to raise local debt on the financial market. However, financial market activity has remained resilient (Financial Market Council, 2020; Tunisian Stock Exchange, 2023). Tunisian financial regulatory authorities have implemented various policy interventions in the financial market to maintain stability and economic growth. Several regulatory measures were introduced before and after the Tunisian Revolution, emphasizing the sincerity, transparency, and quality of financial information (e.g., the law no. 94-117 of November 14, 1994, relating to the reorganization of the financial market). The establishment of the Tunisian accounting system at the end of 1996 was a significant reform aimed at promoting corporate transparency and protecting investors and lenders (Moalla & Baily, 2018).

In comparison to mature financial markets, investors in the Tunisian Stock Exchange (TSE) are facing higher and more complex levels of economic uncertainty. The real economic disruption during financial uncertainty emphasizes the importance of information flow channels that can enhance investor awareness and information integration (Du *et al.*, 2023). TSE was selected for specific reasons, including the unique regulations and economic challenges it has faced. Therefore, it is crucial to explore the impact of economic factors on financial accounting and reporting in a developing country (Dahawy, 2009).

Based on the previous discussions, the purpose of the current study is to investigate the impact of economic policy uncertainty on the quality of accounting information. Even though there have been studies on related topics, this study stands out and contributes to the literature on the accounting information relevance in the following

ways. First, as far as we know, this is the first study to examine how stock prices on the TSE are affected by economic policy uncertainty. Understanding the impact of economic shocks is crucial for investors and policymakers in terms of asset pricing, risk management policy formulation, and portfolio diversification. Up to this point, no study has looked into the impacts of economic shocks on the TSE. Second, unlike some previous research that only examined isolated economic dimensions (financial uncertainty, GFC crisis, COVID pandemic crisis, etc.), we aimed to investigate economic uncertainty using the Baker *et al.* (2016) index measure. Third, the current study expands the literature by focusing on Tunisia, an emerging nation. Few studies have been conducted in this context, but it provides a unique setting to examine firm and market behavior during periods of sharp economic uncertainty. Finally, we focus on the effect of uncertainty on firm decision-making or stock market behavior. We contribute to this line of literature by showing that economic uncertainty affects corporate disclosures and increases firms' tendency to withdraw their guidance. Given the challenging current context in Tunisia, our findings will contribute to understanding and predicting how heightened economic uncertainty and similar future events will impact firms' disclosures.

The research sample includes 36 non-financial firms listed on the TSE. The study covers a 14-year period from 2008 to 2021, comprising 504 observations. Through Generalised Least Square regression analysis, we found that book value and earnings are effective in evaluating stock prices, even in uncertain economic conditions. In this context, net income appears to be more important than book value in stock market valuation. Economic policy uncertainty seems to reduce the relevance of accounting information, while still exerting a notable impact on it.

The remainder of this paper proceeds as follows. Section 2 Literature review and hypotheses development presents the theoretical underpinnings and states the assumptions. Section 3 Research methodology describes the approach used to measure study variables. The empirical results are reported and discussed in section 4 Results and discussion. Section 5 Conclusion concludes.

## **2. Literature review and hypotheses development**

### **2.1 Theoretical underpinnings**

This research addresses how the value relevance of accounting information evolved as the economy became uncertain. This sub-section highlights the role of the agency and the efficient market theories in explaining the relationship between the economy uncertainty and information value relevance.

### *2.1.1 Efficient Markets Theory (EMH)*

The Efficient Markets Hypothesis (EMH) or theory (Fama, 1970) emphasizes the role that accounting information plays in equity assessment, i.e. the part of a firm's value that can be attributed to accounting information (Al-Hogail, 2004). The EMH provides guidance on how to classify value-relevance studies. According to this theory, prices reflect information and depend on a classification of information. Weak form efficiency corresponds to historical prices, semi-strong form efficiency to all publicly available information (including earnings announcements), and strong form efficiency to both public and private information.

There is a connection between EMH, as a theory of prices impounding information, and value relevance, as a theory of prices and earnings impounding and other financial information (Goodwin *et al.*, 2003).

In value relevance studies, the conditioning of information is important and distinguishes it from market efficiency works. Information is conditioned by the principles of accounting used, whether unbiased, conservative, or aggressive (Goodwin *et al.*, 2003). Value relevance research provides insight into standard setters' questions for two primary reasons derived from the FASB's conceptual framework (FASB, 2010). First, the objective of financial reporting is to provide information to outside providers of capital (equity investors) in making economic decisions, and stock prices reflect those decisions. Second, value relevance tests are joint tests of items' relevance and faithful representation, which are the two fundamental qualitative characteristics of useful financial information. Barth *et al.* (2001) explains that in these studies, it's usually difficult to separate relevance from faithful representation. It is assumed that information related to a transaction or economic event is relevant to investors' decisions, and value relevance tests also assess the faithfulness of the associated accounting item in representing that information (Barth *et al.*, 2023).

Akarim *et al.* (2012) have referred to value relevance as a theory that goes beyond just estimating the quality of accounting information. It also provides information for investors to assess the firm and its stock price. On the other hand, Goodwin *et al.* (2003) have described value relevance through three features. First, it is seen as a theory of information, specifically of the microstructure of information, assuming that information is diverse. Second, it allows for a combined test of market efficiency, value relevance, and price determination. Third, it specifies how financial statements capture information, which is important for testing accounting rules and their contribution to assessing the relevance of value.

Accounting academics have not sufficiently explored this theory in their studies. Nevertheless, there are two main recent research streams based on the value relevance theory, notably the impact of social responsibility (CSR) and accounting disclosures on firm value (Narullia *et al.*, 2019); and the relationship between earnings and stock returns (Akarim *et al.*, 2012).

### *2.1.2 Agency Theory*

The agency theory aims to explain how the different rules within an organization affect its efficiency and effectiveness in business. It focuses on demonstrating the efficiency of organizational structures specific to contemporary capitalism.

The theory is concerned with establishing optimal contracts between principals and agents and resolving conflicts of interest (Jensen & Meckling, 1976). The main conflict arises between shareholders and managers. Shareholders prioritize long-term value and are risk-averse, while managers often prioritize short-term profits, as their bonuses are tied to immediate results (Mard & Marsat, 2012). This misalignment of interests can lead to conflict, as management decisions may prioritize their personal gain rather than maximizing shareholder wealth. Their opportunistic behavior may include avoiding damage to their career or reputation (Liberty & Zimmerman, 1986; Gilson, 1989), improving investors' perceptions (Rahman & Abdullah, 2004), mitigating high earnings volatility (Ashaari *et al.*, 1994), and disguising poor performance.

Furthermore, incomplete information and uncertainty can create asymmetric information, undermining the value of accounting information and exacerbating the agency problem (Holthausen & Watts, 2001). This information asymmetry between corporate insiders and external capital providers leads to significant agency problems. However, managers can mitigate concerns arising from information asymmetry by engaging in voluntary disclosure, which can enhance efficient asset allocation and increase shareholder value (Hope *et al.*, 2023).

### *2.1.3 Value relevance construct*

The "value relevance" construct can be understood in various ways and can be measured using different methods. Francis and Schipper (1999) offer three interpretations of value relevance. First, financial statements information affects stock prices by reflecting the intrinsic value of stocks towards which stock prices move. Second, financial information is considered value relevant if it includes the variables used in a valuation model or helps in predicting those variables. Third, value relevance is indicated by a statistical association between financial information and prices or returns (Beisland, 2009).

"Value relevance" can be defined as the ability of financial statements information to capture and summarize the information that determines a firm's value (Suadiye, 2012). Research in this area focuses on whether accounting information can explain variations in stock prices over time and/or between companies, rather than on how accounting information is used in valuation (Goodwin, 2003). Amir *et al.* (1993) coined the term "value relevance," while Barth *et al.* (2001) state that "value relevance research examines the association between accounting amounts and equity market values".

In regression analysis, the coefficient of determination  $R^2$  is used as the primary metric of value relevance. This refers to the explanatory power of earnings and book values, which are decomposed into three elements: (1) the incremental explanatory power of earnings, (2) the incremental explanatory power of book values, and (3) the explanatory power common to both earnings and book values (Beisland, 2009).

## **2.2 Empirical studies on the association between accounting information on equity, net income and stock price**

The relationship between stock values or returns and accounting numbers can be studied over different time periods. Instead of focusing on event studies, we will look at association studies, which examine the statistical connection between earnings, book values, and stock prices (or returns) over the course of three to four months up to several years. Since Ball and Brown's study in 1968, a significant amount of research in accounting has explored the link between stock price returns and information disclosed in financial statements. This research aims to determine whether accounting information offers valuable insights to investors beyond other publicly available information and voluntary disclosures by managers or analysts' recommendations (Barth *et al.*, 2001; Holthausen & Watts, 2001; Kothari, 2001; Dumontier & Raffournier, 2002). For example, Collins *et al.* (1997) found that earnings and book value are both relevant to the value of U.S. firms over the period 1953-1993. Their study also revealed that the value relevance of earnings decreases over time, while the value relevance of book value increases.

There have been numerous studies reporting conflicting evidence regarding the value relevance of financial statement information. Some studies have shown an increase in the value relevance of earnings (Francis & Schipper, 1999; Ely & Waymire, 1999; Landsman & Maydew, 2002; Francis *et al.*, 2003). However, other research has concluded that the relevance of accounting results has decreased significantly over time (Lév & Zarowin, 1999; Core *et al.*, 2003; Dontoh *et al.*, 2004).

Black and White (2003) compared the relevance of book value and earnings in Germany, Japan, and the United States. The results showed that book value is more relevant than earnings in Germany, while the results are less robust for Japanese companies. On the other hand, the relevance of earnings seemed greater than those of book value in American companies.

Two further studies examined the case of Kuwait (El Shamy & Kayed, 2005; Al-Hares *et al.*, 2012). The former reported evidence of the relevance of earnings and book values for listed Kuwaiti companies. However, earnings become less relevant than book values when companies record negative earnings.

Adaramola and Oyerinde (2014) investigated the trend in the relevance of book value using a sample of sixty-six companies listed on the Nigerian Stock Exchange. They

noted that the value relevance of accounting information did not follow any trend but was lower during the periods of military dictatorship and the global economic crisis.

Ayzer and Cema (2013) used the Ohlson (1995) simplified model to explore the value relevance of financial statement information in Turkish stock markets between 1997 and 2011. They found that book values and earnings were significantly value-relevant. Nevertheless, book values showed higher explanatory power than earnings. There are few studies in Tunisia related to value relevance of accounting numbers. To mention about them, Ayed and Abaoub (2006) studied the value relevance of accounting information, in particular earnings per share, through 262 observations of companies listed on the TSE between 1997 and 2004. The authors demonstrated that the pre-tax operating income of Tunisian companies is relevant for firm valuation.

According to Hope *et al.* (2023), many studies have looked at trends in the value relevance of accounting items to see if accounting is becoming less relevant. Collins *et al.* (1997) found that while the additional value relevance of earnings has gone down in recent years, there has been an increase in the value relevance of book values. These authors explained the shift from earnings to book values by pointing to the rising frequency and size of one-time items, the increasing frequency of negative earnings, and changes in average firm size and the importance of intangibles over time. Another reason is that more firms experience losses, making profits less relevant for them. Recognizing that earnings are not the only important accounting element for valuation (Ohlson, 1995), several works add the book value of equity. These studies propose that the shift to loss-making technology companies may explain the reduced relevance of earnings and the increased relevance of the book value of equity. In fact, the book value of equity allows for estimating future abnormal earnings and reflects the option of discontinuing loss-making businesses (Collins *et al.* 1999). Francis and Schipper (1999) found that the decrease in the value of earnings is balanced out by the increase in the book value of equity.

### **2.3 Research on the relevance of accounting information in uncertain economies**

The contribution of researchers to the debate on how changes in the macroeconomic and microeconomic environment affect the quality of accounting information has so far been rather limited. We therefore believe that the impact of economic uncertainty on the value relevance is a new topic that should be of interest to the scientific community.

Having reviewed the existing literature, no study has introduced the concept of economic uncertainty as an endogenous variable in associations. Previous studies have mainly focused on current uncertainty factors, such as inflation and recession



resulting from financial crises, to show their impact on the relevance of accounting figures. For example, Belgic *et al.* (2018) conducted a study on the impact of two financial crises (hyperinflation in the 1990s followed by the global financial crisis of 2008-2009) on the relevance of accounting information. They found that the relevance of accounting information decreased significantly during periods of financial uncertainty, while the relevance of earnings information increased during the hyperinflation period. Similarly, Kane *et al.* (2015) examined the impact of macroeconomic decline following the global financial crisis of 2007-2008 on the value relevance of accounting information and concluded that recessions imply an increase in the relevance of accounting information.

Hope *et al.* (2023) also explored economic uncertainty related to the COVID-19 pandemic and found that guidance withdrawals were due to firms' exposure to the pandemic rather than poor financial performance. Moreover, guidance withdrawals led to abnormally large trading volumes and high analyst forecast dispersion without affecting stock prices.

On the other hand, Barth *et al.* (2023) observed no decline in combined accounting value relevance from 1962 to 2018 and significant increases in relevance for earning and equity items in the new economy, especially for items related to intangible assets, growth opportunities, and alternative performance measures. However, their research did not address an uncertain economy but only focused on non-profit firms.

## 2.4 Hypothesis formulation

The value relevance theory can be linked to the overall quality of accounting information. One aspect of information quality addressed by this theory is the relevance of accounting information. This relevance can be quantitatively assessed through the strength of the relationship between accounting data - a key source of decision-making information - and the equity market values. In essence, it demonstrates the accounting information's ability to capture the data that influences the value of the firm.

The importance of information has been confirmed by studies that analyze the connection between market values and book values, especially in an uncertain economic policy setting. This scenario is marked by limited information and reduced quality of information in financial statements. Therefore, we suggest the following hypotheses:

**H1:** *There is a positive association between the book value of equity and the stock price under economic policy uncertainty.*

**H2:** *There is a positive association between net income and stock price under economic policy uncertainty.*

The theoretical underpinning of the third hypothesis, which derives essentially from agency theory, can now be presented. As mentioned above, economic uncertainty has a direct or indirect, expected or unexpected impact on the financial markets in terms of returns and the volatility of stock market indices, through a contagion effect. Moreover, this uncertainty has a direct or indirect impact on the financial markets in terms of returns and the volatility of stock market indices.

Tahat (2017) has shown that during financial crises, earnings can be a less reliable measure of a firm's financial performance due to various factors such as economic uncertainty, earnings management, and the reporting of negative income. Therefore, it is important for investors to have access to as much reliable information as possible, especially given agency dilemmas. Based on this, we can propose the following hypothesis:

***H3:** The book value of equity is more relevant than net income in situations of economic policy uncertainty.*

### **3. Research methodology**

#### **3.1 Data collection**

This study aims to examine how economic policy uncertainty affects the relevance of accounting information. Our sample consisted of 81 Tunisian companies, including 56 non-financial companies and 25 financial companies listed on the Tunisian stock exchange. The observation period was from 2008 to 2021, covering 14 years. We specifically focused on the impact of the 2008 economic crisis. Our interest in understanding the repercussions of the crisis led us to select this timeframe. This study encompasses all observations from 2008 onwards.

Table 1 provides a detailed explanation of how the sample was constructed. For consistency, banks and financial companies were not included. In line with previous research, and for the sake of consistency, banks and financial companies were excluded from the initial sample due to their specific nature and regulatory constraints compared to non-financial firms. This resulted in a sample of 56 companies. Additionally, companies with missing data (20 in total) were excluded, leaving us with 36 listed companies across 10 industry sectors over a period of 14 years, resulting in a total of 504 observations. Data from Datastream and the TSE website were primarily used to test the hypotheses of our study.

**Table 1. Sample selection procedure: Tunisian listed firms**

Initial sample (Listed firms on TSE)	81
<i>Financial firms</i>	(25)
<i>Firms with Missing data</i>	(20)
<b>Final sample</b>	<b>36</b>
Total observations	14*36 = 504

The industrial sector is the most important sector in the Tunisian economy, accounting for almost 61.11% of total observations. This highlights the heavy reliance of the country's economy on the agri-food, electrical, and mechanical industries, despite the economic crisis.

The service sector is the second most vital sector in the country's economy, representing 13.9% of the total observations. This sector experienced significant growth, especially during the COVID-19 pandemic, due to health restrictions that limited people's movement.

### **3.2 Research models**

In previous research, several models have been used to assess the relevance of accounting information (Emeni *et al.*, 2016; Erin *et al.*, 2017; Alkali *et al.*, 2018). Two main models, the price model and the return model, have emerged in the empirical investigation of the relevance of accounting value, each relying on a different type of outcome.

This paper is based on previous studies that used Ohlson's (1995) price model to examine the relevance of earnings and book values. Ohlson's model allows the price to be expressed in terms of current variables, unlike the return model, which requires estimates of future abnormal earnings. Despite its limitations, the price model has made a significant contribution to research. Accounting information may not directly impact price, but it is related to stock price and decision-making (Wang *et al.*, 2008). According to Kothari and Zimmerman (1995), the estimated slope coefficients under the price model are less biased than those of the returns model, making the price model preferable from an economic standpoint. We have also compared the explanatory power of the price model and the return model and found that the price model offers more robust results ( $R^2$  PRICE = 54.02% versus  $R^2$  RETURNS = 4.66%).

To test the first research hypothesis, assuming a positive relationship between the book value of equity and stock price under economic policy uncertainty, we propose the following model based on the price model.

$$MV_{it} = \beta_0 + \beta_1 BVSEPU_{it} + \beta_2 SIZE_{it} + \beta_3 INDUS_{it} + \varepsilon_{it} \quad (1)$$

Where MV = Market Value; BVS = Book Value per Share; EPU = Economic Policy Uncertainty;  $BVSEPU_{it} = BVS_{it} * EPU_{it}$ ; SIZE = Firm Size; INDUS = Firm Industry; To test the second research hypothesis, we propose the following model to examine the positive relationship between earnings (net income) and stock price under economic policy uncertainty.

$$MV_{it} = \delta_0 + \delta_1 EPSEPU_{it} + \delta_2 SIZE_{it} + \delta_3 INDUS_{it} + \varepsilon_{it} \quad (2)$$

Where  $MV(E)$  = Market Value of Earning;  $EPS$  = Earnings per share;  $EPU$  = Economic Policy Uncertainty;  $EPSEPU_{it} = EPS_{it} * EPU_{it}$ ;  $SIZE$  = Firm Size;  $INDUS$  = Firm Industry

Finally, as mentioned above, the third hypothesis is checked by comparing the adjusted explanatory power ( $R^2$ ) of the two previous models.

### **3.3 Variables definition**

#### *3.3.1 Dependent variable*

The *dependent variable* is the market value ( $MV$ ) which represents the stock price three months after the end of the financial year. The choice of this period is not arbitrary and serves to ensure that accounting information was available and had been assimilated by investors (Tsalavoutas *et al.*, 2012). Table 2 provides definitions for the variables.

#### *3.3.2 Independent variables*

The *independent variable* of Economic Policy Uncertainty ( $EPU$ ) is an index constructed by Baker *et al.* (2016). Several measures of uncertainty are used in the empirical literature (index based on Twitter, index based on internet searches, index introduced by Tahoun, etc.). We adopted the one by Baker *et al.* (2016), which we believed to be the most comprehensive, taking into account all possible sources of unforeseen changes in the financial and economic system. This index is tripartite. The first part is essentially media-related, linked to the information provided by newspapers. In this case, the subjects are related to government uncertainty in each of the countries covered by the index. In other words, it includes coverage of political and regulatory uncertainty. The second part of the index focuses on documents published by the US Congressional Budget Office, mainly those dealing with new tax information. The third and final part of the  $EPU$  index is based on the economic and financial forecasts of the Federal Reserve Bank. It focuses on future expectations for macroeconomic variables, such as the consumer price index and government spending. The Baker Index is available at [www.policyuncertainty.com](http://www.policyuncertainty.com).

The independent variable, book value of equity per share ( $BVS$ ) refers to a firm's total assets minus total liabilities divided by the number of ordinary shares. In other words, the residual interest in assets after the deduction of liabilities.

The independent variable, earning ( $EPS$ ) is determined by dividing a firm's net income after interest and tax by the weighted average number of ordinary shares.

#### *3.3.3 Control variables*

We chose two control variables, which we believe to be directly related to our research theme, namely firm size and industry type.

Firm size is a quantitative variable "SIZE", which is equal to the logarithm of total assets (Baboukardos *et al.*, 2016).

The industry type (INDUS) is a coded dichotomous variable that is scored 1 for the industrial firm and 0 for the non-industrial firm.

**Table 2. Variable definitions**

<b>Proxy</b>	<b>Variable definition</b>	<b>Type</b>	<b>Measure</b>
<b><i>Dependent Variable</i></b>			
<b>MV</b>	Market Value	Quantitative	Stock price 3 months after the end of the financial year
<b><i>Independent Variables</i></b>			
<b>BVS</b>	Book Value per Share	Quantitative	= Shareholder equity/ Weighted average number of ordinary shares
<b>EPS</b>	Earnings per share	Quantitative	= Net income/Weighted average number of ordinary shares
<b>EPU</b>	Economic policy uncertainty index	Quantitative	Index published by the site <a href="http://www.policyuncertainty.com">www.policyuncertainty.com</a>
<b>BVSEPU</b>	Interaction of the Book Value of Equity and the Index of Economic Uncertainty	Quantitative	= BVS * EPU
<b>EPSEPU</b>	Interaction of net profit and the economic uncertainty index	Quantitative	= EPS * EPU

## **4. Results and discussion**

### **4.1 Descriptive statistics**

Table 3 displays the descriptive statistics for the dependent variable and all the independent variables. For instance, the first row of the table indicates that the market value (MV) per share in our sample ranges from 0.25 to 263.17 Tunisian Dinar. This significant difference is attributed to the higher prices of oil and energy firm shares on the stock market as compared to those of other firms in the sample. The MV has a mean value of 13.69 and a standard deviation of 30.52.

On the other hand, the mean of the variable EPSEPU is 0.16 with a maximum value of 7.25, suggesting that earnings may not be significant or that companies limit dividend payments in uncertain periods to maintain liquidity and solvency. The variable BVSEPU has a mean of approximately 2 and a standard deviation of 5.

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The industry variable (INDUS) has a mean of 0.6, indicating that 60% of the companies in the sample are industrial, while the rest are service providers or commercial companies. The mean value of the size variable (SIZE) is 11.53, with a standard deviation of 1.37. The values range from 5.99 to 15.2.

**Table 3. Descriptive statistics**

Variables	Obs	Mean	Std. Dev.	Min	Max
<b>MV</b>	387	13.692	30.523	0.250	263.170
<b>BVSEPU</b>	489	1.992	4.997	0.497	44.247
<b>EPSEPU</b>	482	0.162	0.635	0	7.258
<b>SIZE</b>	424	11.538	1.372	5.991	15.201
<b>INDUS</b>	490	0.600	0.4903	0	1

#### 4.2 Bivariate and correlation analysis

The results of the SPEARMAN correlation matrix are summarized in Table 4. The coefficients range in absolute value between 0.004 and 0.716 without exceeding 0.8. The smallest coefficient (0.004) shows the correlation between EPSEPU and size, while the highest coefficient (0.716) indicates a significant correlation, at the 1% threshold, between the market value (MV) and the variable (EPSEPU). This coefficient does not pose any issues as it pertains to the relationship between the dependent variable and an independent variable. Upon observing the coefficients in this table, we note that they do not exhibit multicollinearity problems.

**Table 4. Spearman Correlation Matrix**

	MV	BVSEPU	EPSEPU	SIZE	INDUS
<b>MV</b>	1				
<b>BVSEPU</b>	0.524***	1			
<b>EPSEPU</b>	0.716***	0.470***	1		
<b>SIZE</b>	0.035***	0.036	0.004***	1	
<b>INDUS</b>	-0.210*	0.069***	0.116***	0.121***	1

\*\*\* Significant at 1% level, \*\* significant at 5% level, \* significant at 10% level.

Where : MV: Stock price; BVSEPU= BVS\*EPU; BVS: Book value of equity; EPU: Economic policy uncertainty; EPSEPU= EPS\*EPU; EPS: Earnings per share ; SIZE: firm size; INDUS: Industry type.

It's important to assess collinearity to ensure the reliability of the statistical analysis. We used the Variance Inflation Factor (VIF) to check for multicollinearity as recommended by Chatterjee *et al.* (2000). According to their suggestion, a VIF value greater than or equal to 10 and/or an average VIF greater than or equal to 2 indicates a multicollinearity problem. In our analysis, the VIF values (VIF<sub>j</sub>) range from 1.02

to 1.32, with an average VIF of 1.17, which is less than 2. Additionally, the value of 1/VIF is greater than 0.1, indicating no multicollinearity issue between the variables.

**Tableau 5. VIF Test**

	VIF variable	Tolerance 1/VIF
<b>BVSEPU</b>	1.310	0.764
<b>EPSEPU</b>	1.320	0.757
<b>SIZE</b>	1.020	0.984
<b>INDUSTRY</b>	1.050	0.953
<b>Mean VIF</b>	1.170	

Where : MV: Stock price; BVSEPU= BVS\*EPU; BVS: Book value of equity; EPU: Economic policy uncertainty; EPSEPU= EPS\*EPU; EPS: Earnings per share ; SIZE: firm size; INDUS: Industry type.

### 4.3 Regression results

We gathered 504 observations from a sample of 36 companies over a 14-year period (2008-2021). To choose the panel data regression method, we conducted two tests. Firstly, the Breusch-Pagan test revealed heteroscedasticity of the error term for models (2) and (3) ( $p=0.000 < 5\%$ ). We also used a Fisher test to assess sample homogeneity and specific individual effects. The resulting p-value was zero, leading us to reject the  $H_0$  hypothesis and confirm the existence of firm-specific effects. Given these findings, including the presence of heteroscedasticity and fixed effects in our sample, we applied the GLS (Generalised Least Square) method to address these issues.

BVSEPU represents the interaction of the book value of equity and the level of economic policy uncertainty. This variable exhibits a significant effect ( $p\text{-value} = 0.000$ ) on the stock price at a 1% significance level and a positive coefficient of 1.407 (see Table 6). Thus, the BVSEPU variable has a positive impact on MV, indicating that the positive relationship between the book value of equity and stock price becomes stronger as economic uncertainty increases.

The results indicate that model (1) accounts for 33.72% ( $R^2$ ) of the variation in stock price. The findings support the predictive hypothesis, thus confirming the acceptance of  $H_1$ .

**Table 6. Results of Regression model (1)**

MV	Coef.	Std. Err.	Z	P> z
<b>BVSEPU</b>	1.407	0.232	6.070	<b>0.000***</b>
<b>INDUS</b>	10.094	6.454	-1.560	<b>0.118</b>
<b>SIZE</b>	1.755	1.908	0.920	<b>0.358</b>
<b>Cons</b>	-4.887	22.242	-0.220	<b>0.826</b>

\*\*\* Significant at 1% level, \*\* significant at 5% level, \* significant at 10% level.

Where: MV: Stock price; BVSEPU= BVS\*EPU; BVS: Book value of equity; EPU: Economic policy uncertainty; EPSEPU= EPS\*EPU; SIZE: firm size; INDUS: Industry type.

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Based on the findings in Table 7, there is a significant and positive relationship between the variables MV and EPUEPS, with a p-value of 0.000, indicating statistical significance at the 1% confidence level. The coefficient is 28.65684. This implies that, in the context of economic uncertainty, net income plays a significant role in explaining 53.12% of the variation in stock price. These results provide further support for our predictive hypothesis, and as a result, H2 is accepted.

**Table 7. Results of Regression model (2)**

MV	Coef.	Std. Err.	Z	P> z
EPSEPU	28.657	1.699	16.870	<b>0.000***</b>
INDUS	-8.811	2.678	-3.290	<b>0.001***</b>
SIZE	1.381	0.964	1.430	<b>0.152</b>
Cons	-1.580	11.225	-0.140	<b>0.888</b>

\*\*\* Significant at 1% level, \*\* significant at 5% level, \* significant at 10% level.

Where : MV: Stock price; BVSEPU= BVS\*EPU; EPU: Economic policy uncertainty; EPSEPU= EPS\*EPU; EPS: Earnings per share ; SIZE: firm size; INDUS: Industry type.

The results are consistent with the findings of Vijltha and Nimalathanan (2014), who demonstrated a significant positive correlation between earnings per share and share prices of companies listed on the Colombo Stock Exchange.

When comparing the R<sup>2</sup> (Adjusted) and the regression coefficients of the two models, it is evident that those of the second model are higher than those of the first (53.12% versus 33.72% or 28.657 versus 1.407) (refer to Table 8). This indicates that the explanatory power of earnings (EPSEPU) is 19.4% higher than book value in uncertain context (BVSEPU). The comparison shows that the relationship between MV and EPS becomes significantly stronger under uncertain economic conditions compared to the relationship between MV and BVS. Therefore, during economic policy uncertainty, earnings are more relevant than book value in evaluating the stock market.

**Table 8. Comparison of Adjusted R-squared**

	Model (1)	Model (2)
<b>Adjusted R-squared</b>	<b>33.72 %</b>	<b>53.12 %</b>

Based on Table 8, we can confirm the following:

- Economic policy uncertainty has reduced the importance of earnings (Adjusted R2 reduction of 19.4%).
- Even though economic uncertainty has diminished the significance of earnings, they still maintain their importance compared to book value in terms of value relevance.



Table 9. Comparison of Adjusted R-squared based on the variable EPU

	Without considering economic policy uncertainty	With considering economic policy uncertainty
<b>Regression model</b>	$MV_{it} = \delta_0 + \delta_1 EPS_{it} + \delta_2 SIZE_{it} + \delta_3 INDUS_{it} + \varepsilon_{it}$ (2)	$MV_{it} = \delta_0 + \delta_1 EPSEPU_{it} + \delta_2 SIZE_{it} + \delta_3 INDUS_{it} + \varepsilon_{it}$ (2)
<b>Adjusted R-squared</b>	<b>70.23 %</b>	<b>53.12%</b>

The results indicate that we can reject hypothesis 3, which claims that book value is more relevant than accounting earnings in times of economic uncertainty. These findings align with Black and White's (2003) study, which concluded that the relevance of earnings value is greater than book value, at least for the sampled US companies. However, these results contradict Pervan and Bartulović's (2016) findings, which demonstrated that the relevance of book value is significantly higher than earnings in a sample of Southeast European companies. This contradiction can be attributed to the possibility of European companies manipulating earnings to meet the expectations of investors, particularly institutional investors such as banks, insurance companies, pension funds, and mutual funds (SICAVs), due to their significant role in capital markets or to different methodological approaches. Institutional investors play a significant role in balancing the power of management (Pellat-Finet, 2009). From this perspective, institutional investors are highly valued as they contribute capital (in either money or assets) to companies to support their growth. However, this support can also challenge the traditional social structure of the company.

The findings of our research suggest that market participants consider earnings to be reliable sources of information for their evaluations and predictions, even in an uncertain economic climate. As per article 1328 of law no. 2005-96 issued on 18 October 2005, one or two statutory auditors are responsible for auditing the financial statements of listed companies that meet specific conditions. This audit plays a critical role in instilling confidence in various stakeholders regarding the quality of financial information, especially when the firm is under BIG4 management. It helps to mitigate the risk of earning management, despite the flexibility of Tunisian accounting standards and methods. In line with this, Francis and Deuchun (2008) noted that the quality of accounting outcomes is better for companies audited by the "BIG 4" in countries that prioritize investor protection, such as the USA under SEC oversight.

The importance of earnings relevance over book value relevance is supported by the incentive for managers to present accurate financial statements. This is essential to avoid legal action and maintain a good reputation, especially in a small market like Tunisia. The findings of the study align with value relevance and agency theories. In

practical terms, this theory is well-suited to current economic, political, and social issues. It offers a practical solution to the inefficiencies of modern stock markets and the risk aversion of investors due to economic uncertainty. This theory underscores the importance of accounting information for decision-makers, including stock market intermediaries, analysts, and firm managers, enabling them to assess stocks and make timely, effective decisions.

Regarding agency theory, our findings align with this theory. The evidence suggests that profits are crucial to investors and are linked to firm performance, profitability, and future growth opportunities. Even in times of economic policy uncertainty, profits maintain significant importance. Our conclusions are supported by the following:

- The Financial Market Council of Tunis plays a crucial role in mandating the disclosure of specific reports, allowing the Board to send warning signals to the market when necessary, and thereby resolving information asymmetry, addressing a dilemma identified in agency theory.
- In certain cases, chartered accountants are required to conduct dual audits.
- The influence of the management market.

Investors should be protected by laws and regulatory bodies' due diligence. However, it is important to recognize that existing laws may not be enough. Additional rules and practices should be implemented to address the demands of a volatile and uncertain economic climate.

In relation to the control variables, the findings of this study suggest that the SIZE variable does not have a significant impact (P value >10%) on stock price variation for both models 1 and 2, which means that it does not influence the relevance of accounting information. These results contradict Basu *et al.* (1997), who found that stock price variation is more significant in large companies than in small ones. This inconsistency arises from the fact that both small and large firms are affected by economic uncertainty to the same extent relative to their size.

Regarding the industry type (INDUS), the results show that earnings explain about 7.53% and 66.84% of the variation in the stock prices of industrial and non-industrial companies, respectively (refer to Table 10). There are substantial differences in the comparative explanatory powers (59.31%). This aligns with Badu and Appiah (2018), who assert that, in the Ghanaian context, profits and book value offer a stronger justification for the variation in the stock prices of companies operating in the service sector compared to those operating in the industrial sector.

**Table 10. Comparison of Adjusted R-squared for the Regression per industry type**

	INDUSTRIES	OTHERS
ADJUSTED R-SQUARED	7.53 %	66.84

#### 4.4 Robustness checks

We performed robustness checks to confirm the accuracy of the regression results from an econometric model. We computed an alternative measure of the value relevance of accounting information, and the estimation results with this alternative measure are similar.

We then considered the annual return using the model developed by Easton and Harris (1991). This model includes the current year's annual earnings and changes in the previous year's earnings as explanatory variables. Our goal was to test this model:

$$R_{it} = \alpha_0 + \alpha_1 EPSEPU_{it} + \alpha_2 SIZE_{it} + \alpha_3 INDUS_{it} + e_{it}$$

where R is the company's annual return, calculated as follows:  $R_{it} = \frac{P_{i,t} - P_{i,t-1} + div_{i,t-1}}{P_{i,t-1}}$

In Table 7, the coefficient for the EPSEPU variable is consistently positive and significant at the 1% level. This confirms a positive relationship between net profit and stock price in a situation of economic policy uncertainty. These results validate the strength and reliability of the findings (refer to Table 11).

**Table 11. Robustness checks**

R	Coef.	Std. Err.	Z	P> z
EPSEPU	4.017	1.083	3.710	0.000***

\*\*\* Significant at 1% level, \*\* significant at 5% level, \* significant at 10% level.

## 5. Conclusion

The economic uncertainty has been a major concern in recent years, particularly with the ongoing impact of the COVID-19 pandemic and the lingering effects of the 2008 financial crisis. This macroeconomic instability has led to more frequent and significant policy changes across countries, exacerbating the economic policy uncertainty faced by the market (Du *et al.*, 2023). A high-quality accounting is then necessary in mitigating the negative effects of uncertainty on investment and firm assessment (El Ghoul *et al.*, 2021).

Our research specifically focuses on the impact of economic policy uncertainty on value relevance. The findings add new evidence to the Tunisian Stock Exchange, in addition to confirming the findings of numerous studies in different others contexts (Black & White, 2003; Vijltha & Nimalathan, 2014).

Our results show a positive and statistically significant relationship between book value and stock price in the presence of economic uncertainty, thereby confirming our first research hypothesis. Additionally, results show a positive and statistically significant relationship between earnings and stock price in the presence of economic uncertainty, further validating our second research hypothesis. The finding, supported by the validation of H1 and H2, suggests that economic policy uncertainty diminishes the relevance of accounting information while still maintaining a significant impact on it. The findings suggest that economic policy uncertainty diminishes the relevance of accounting information while still maintaining a significant impact on it. Furthermore, the research underscores the effectiveness of agency theory and value relevance theory in illustrating the influence of current economic issues on capital markets. Then, economic uncertainty induced by the successive shocks, is associated with decreases in firm value rather than earnings (Bilgic *et al.*, 2018).

We make several contributions. By recording changes in accounting valuation channels around macro-economic disruptions, we reveal the volatile nature of accounting valuation feedback. In particular, the loss or decrease in feedback value relevance from earnings. Second, this study aims to provide valuable insights for various stakeholders such as investors, insurers, and portfolio managers. It helps in assessing the potential impact of Tunisian economic policies on portfolios and can guide forecasting of equity profitability and liquidity. Moreover, it can aid stakeholders in identifying appropriate hedging instruments and serve as an additional indicator for managers of listed companies. The study can also influence decision-making and the implementation of accounting, economic, and tax policies, ultimately contributing to the development of efficient capital markets and promoting growth in emerging economies.

The study acknowledges its limitations, including the modest sample size due to data availability constraints and its geographical focus on the Tunisian context. Future research should aim for a larger, more comprehensive study involving major African stock exchanges to enhance external validity. Additionally, exploring the impact of economic uncertainty on financial institutions such as insurance companies and banks can provide valuable insights due to their significant role in financing the economy.

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