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## **The Impact of Economic Policy Uncertainty on Stock Price Crash Risk with Information Asymmetry as a Moderating Variable: Evidence from Egyptian Exchange**

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**Abstract:** This study investigates the dynamic relationship between economic policy uncertainty (EPU), information asymmetry, and stock price crash risk on the Egyptian Exchange (EGX). The study uses data from 21 nonfinancial firms listed on the Egyptian exchange between 2014 and 2023 to investigate the moderating roles of information asymmetry between economic policy uncertainty and stock price crash risk. It tests hypotheses using cross-sectional analysis and hierarchical regression analyses based on 210 observations. Economic policy uncertainty (EPU) alters investor behavior in financial markets, making it challenging for investors to assess a company's risk and performance. This, in turn, increases the probability of stock price decline upon the revelation of such hidden information. Cross-sectional analysis proved that economic policy uncertainty accounted for 47.4% of stock price crash risk. Information asymmetry enhanced this to 71.21%, demonstrating its influential role in explaining the change in stock price crash risk. Hierarchical regression analysis showed that economic policy uncertainty accounted for 29.9% of stock price crash risk. Information asymmetry enhanced this to 51.2%, demonstrating its influential role in explaining the change in stock price crash risk.


The study highlights the critical role of information asymmetry in amplifying the impact of EPU on stock price crash risk. The study provides valuable insights for policymakers, corporate leaders, and market participants to navigate the challenges of this dynamic and evolving financial landscape.


**Keywords:** Economic Policy Uncertainty, Stock Price Crash Risk, Information Asymmetry, Egyptian Exchange, EGX.

**JEL Codes:**G14, G18, G41

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## Introduction

Financial markets have witnessed numerous crises, both in developed markets, as shown by the New York Stock Exchange (NYSE) during the 2008 Global Financial Crisis (Earle, 2009; Pattnaik et al., 2020), and in technology stocks during the Dot-Com Boom of 2000 (Wang, 2007). Emerging markets have also experienced similar crises, as seen with the Egyptian Exchange (EGX) in 2006 and 2011. These collapses cannot be solely attributed to the unsystematic risk inherent in these stocks but are instead linked to systematic risk. The price movements of major market indices illustrate these market declines' simultaneous and widespread nature. (Figures 1-4) reinforces this claim.



**Fig. (1) Performance of Dow Jones Industrial Average Index in 2000**



**Fig. (2) Performance of Dow Jones Industrial Average Index in 2008**

As illustrated in Figure 1, the Dow Jones Industrial Average declined 34.18% during the dot-com bubble. In comparison, Figure 2 shows a more significant drop of 52.11% during the 2008 Global Financial Crisis. In the Egyptian market, Figure 3 reveals a 44.51% decrease in the EGX30 index during the 2006 crisis, whereas Figure 4 indicates a more severe downturn of 72.73% in 2008.



**Fig. (3) Performance of EGX30 Index in 2006**



**Fig. (4) Performance of EGX30 Index in 2008**

This highlights the stock price crash risk investors face in both developed and emerging markets due to stock market crashes. These market declines were often accompanied by uncertainty regarding economic policy direction. In the US, for instance, the dot-com bubble of 2000 was fuelled by government support for IT corporates, while the 2008 financial crisis was triggered by the subprime mortgage crisis and its impact on the derivatives market. In Egypt, the uncertainty surrounding the privatization program (following the IPOs of significant corporates like Telecom Egypt, Alexandria Mineral Oils Company - AMOC, and Sidi Kerir Petrochemicals Company - SIDPEC) in 2006, and the handling of the global financial crisis in 2008 contributed to significant market volatility.

Economic policies are instruments utilized by fiscal authorities (represented by the Ministry of Finance), monetary authorities (represented by the central bank), and commercial authorities (represented by the Ministry of Trade and Industry, Economy, or International Cooperation, depending on government's ministerial structure) to guide economic activity. Economic policies are considered a crucial component in the business environment, where government motivations for policy changes often encompass economic and non-economic factors (Pastor & Veronesi, 2012).

The global economy is beset by enduring economic policy uncertainty resulting from natural calamities, political unrest, and armed conflict. Since the economic downturn triggered by the 2008 financial crisis, the global pandemic under COVID-19, the war in Ukraine, and the war in Gaza (October 2023), economic uncertainty and its consequences on financial markets have become a primary focus in the international finance literature (Pastor & Veronesi, 2012; Wang et al., 2014; Gulen & Ion, 2016; Bordo et al., 2016; Jens, 2017; Bhattacharya et al., 2017; Baker et al., 2016; Nguyen & Phan, 2017; Bonaime et al., 2018; Yang et al., 2019; Dang & Nguyen, 2020; Phan et al., 2020; Xu, 2020; Li et al., 2020; Khan et al., 2023; Li et al., 2023a; Albrecht et al., 2023; Ghani & Ghani, 2024).

Economic policy uncertainty drives corporate and market behaviors, especially in emerging markets where economic policies are frequently revised and adjusted. Therefore, understanding the impact of economic policy uncertainty is crucial for policymakers, investors, and corporations, especially in navigating the complex financial market landscape.

Economic policy uncertainty has a significant impact on information transparency. As when the future is uncertain, companies tend to withhold crucial data, leading to increased opacity and hindering informed decision-making. Consequently, corporations have become more cautious about what information they disclose. According to Wang et al. (2022), under disclosure-related costs (Blankespoor, 2019), managers may be reluctant to share

unfavorable information with the market (Blankespoor et al., 2020; Glaeser et al., 2020; Moradi et al., 2021), potentially creating an information asymmetry.

Understanding the dynamics between these critical factors is essential for investors, policymakers, and corporate leaders to navigate the complexities of financial markets and mitigate potential risks. Previous studies have highlighted the critical role of economic uncertainty, particularly in the form of policy uncertainty, in shaping stock market behaviors and outcomes (Cao et al., 2023; Han et al., 2023). Economic policy uncertainty (EPU) has been shown to impact stock returns negatively (Cao et al., 2023), increase stock price volatility (Tang & Wan, 2022), and exacerbate information asymmetry between managers and investors (Wang et al., 2022). These findings suggest that EPU can be a significant driver for stock price crash risk, as managers may be incentivized to withhold negative information during periods of heightened economic uncertainty (Luo & Zhang, 2020).

In this context, recent years have witnessed significant fluctuations in the business environment of many emerging markets. These fluctuations have encompassed inflation rates, domestic interest rates, and exchange rates (i.e., the value of local currency), as evidenced in Egypt since the 1990s (El Khawaga et al., 2013; Helmy, 2022). This has led to complexities in the business environment arising from increased systematic risks at the organizational level and at the issued securities level (particularly common stocks).

These changes in the business environment greatly influence how organizations approach investments, shaping their future strategies and influencing how financial market traders evaluate the fair value of the potential benefits and risks tied to implementing these strategies.

When there are consecutive changes in economic policies, it leads to a state of uncertainty concerning those policies (Komari & Juliana, 2022). This uncertainty is reflected in stock prices, which depend on the market risk premium sought by investors in that market (Pastor & Veronesi, 2012), along with the stock's own systematic risks.

According to Tsai (2017), uncertainty regarding economic policy is directly correlated with the volatility of stock market values, both emerging and international. This indicates a higher level of risk associated with stocks traded in these markets under such conditions. This is evident in the Egyptian economic landscape, which has experienced numerous fluctuations and crises characterized by rapid changes and unexpected policy shifts (Mabrouk & Hassan, 2012).

This study defines economic policy uncertainty as a state of doubt, hesitation, and anxiety among economic agents, resulting from the lack of clarity regarding future economic policy directions (expansionary/contractionary) as well as the uncertainty surrounding expected changes in economic instruments (such as interest rates, exchange rates, tax rates, customs duties, etc.). These

directly and indirectly affect financial and investment decisions businesses, consumers, investors, and other economic agents make. In other words, economic policy uncertainty can be defined as a state of vagueness regarding future government economic policies that can influence economic expectations (Baker et al., 2016) and economic agents.

Information asymmetry is another critical factor that has been extensively studied in relation to stock price crash risk. Numerous studies have found that opaque financial reporting, corporate tax avoidance, and other practices that increase information asymmetry between managers and investors can lead to a higher likelihood of stock price crashes (Kim & Zhang, 2016; Saleem & Usman, 2021; Tang & Wan, 2022). This is because managers may exploit their informational advantage to conceal bad news from the market until the accumulated negative information reaches a critical threshold and is ultimately released, causing a sharp decline in stock prices (Saleem & Usman, 2021; Han et al., 2023).

When economic policy uncertainty is high, it heightens the uncertainty surrounding a company's fair value due to increased risks. This, in turn, exacerbates the instability of the expected benefits from the company's operations and raises the market risk premium in capital markets. This will amplify the negative effects on both stock liquidity and the overall efficiency of the capital market. (Chordia et al., 2008; Hameed et al., 2010; Armstrong et al., 2011; Pástor & Veronesi, 2013; Debata & Mahakud, 2018; Nagar et al., 2019; Mbanyele, 2023; Zhang et al., 2023; Zhang & Wong, 2023; Asgharian et al., 2023; Obenpong Kwabi et al., 2024). This is evident in the heightened sensitivity of investors to uncertainty shocks. When economic policy uncertainty increases, uninformed traders, in particular, require more accurate financial and non-financial information (Drechsler, 2013), or it diminishes investors' willingness to trade securities.

The relationship between economic uncertainty, information asymmetry, and stock price crash risk remains inadequately explored. Although previous studies have investigated the individual impacts of these factors, a deeper analysis is required to understand how they interact dynamically to affect stock market stability and resilience. This study examines the role of information asymmetry as a moderating factor in the influence of economic policy uncertainty on stock price crash risk. It aims to integrate the current body of knowledge on these interactions, drawing insights from previous studies and relevant research to provide a more detailed perspective on the complex drivers of stock price crash risk. Additionally, the study includes a quantitative analysis of these relationships using evidence from the Egyptian Exchange (EGX).

## **Literature Review**

### **Theoretical Framework of Stock Price Crash Risk:**

Stock price crash risk refers to the potential for a significant and sudden decline in the price of a stock, often triggered by the revelation of previously withheld negative information. Crashes are characterized by extreme negative returns that deviate from the stock's expected performance based on available information. The foundation of this concept lies in the asymmetric distribution of information among market participants, where insiders may possess knowledge about adverse developments that uninformed investors do not.

Jin and Myers's foundational work (2006) explains the mechanism that triggers stock price crashes. They argue that managers, driven by incentives (e.g., job security and compensation), may conceal bad news to sustain stock prices. This accumulation of undisclosed negative information eventually creates a risk that, once revealed, causes sharp drops in stock prices (Xie et al., 2022). The consequences of this risk are significant, impacting both individual corporations and the market's overall stability.

Agency theory is fundamental to understanding stock price crash risk, as it addresses conflicts of interest between corporate managers (agents) and shareholders (principals). Due to their superior information, managers may prioritize personal interests over those of shareholders, leading to the concealment of unfavorable information. This misalignment can result in agency costs and increased crash risk when negative news is eventually revealed (Habib et al., 2018).

In addition to agency theory, several theories provide a framework for understanding stock price crash risk, illustrating the complex interplay of managerial behavior, market dynamics, and investor psychology (Kim et al., 2016; Bashir et al., 2024; Tang & Wan, 2022; Moradi et al., 2021).

Accurate measurement of stock price crash risk is critical for both theoretical analysis and practical applications. Various methodologies have been employed to quantify this risk, including Negative Skewness of Returns: One widely accepted measure of crash risk is the negative skewness of stock returns, which captures the likelihood of extreme negative returns relative to positive ones. A higher negative skewness indicates a greater crash risk, as it suggests a distribution of returns disproportionately weighted toward adverse outcomes (Habib et al., 2018). Down-to-Up Volatility (DUVOL): This measure compares the volatility of negative returns to that of positive returns, providing insights into the asymmetry of price movements. Higher DUVOL values indicate greater crash risk, suggesting that adverse price movements are more pronounced than positive ones (Callen and Fangl., 2015). Crash Count: This metric quantifies the frequency of significant price drops beyond a specified threshold. By counting the instances where stock prices experience

dramatic declines, researchers can assess the overall crash risk associated with a particular stock or market segment (Callen and Fangl., 2015). Short Interest as a Predictor: Studies have shown that the short interest level can effectively predict future crash risk. High short interest indicates that informed investors expect adverse developments, and the subsequent realization of this negative information can lead to price collapses (Callen and Fangl., 2015).

### **Theoretical Framework of Information Asymmetry:**

Information asymmetry, a concept rooted in finance and accounting, refers to situations where one party in a transaction possesses more or better information than the other party. This imbalance can significantly influence decision-making processes in various domains, such as financial markets.

Information asymmetry is fundamentally linked to unequal information distribution among parties. Information asymmetry can result in various outcomes, including opportunistic behavior, increased transaction costs, and the potential for market failure.

Agency theory addresses the conflicts that arise when one party (the agent) decides on behalf of another party (the principal). Agency theory posits that information asymmetry can lead to agency costs, where the agent may act in their self-interest rather than the principal's best interest. This misalignment may require the implementation of monitoring and bonding mechanisms to reduce the risks linked to information asymmetry (Muslim & Setiawan, 2021).

Measuring information asymmetry is crucial for empirical analysis and has been approached through various methods. Common strategies include market indicators, such as bid-ask spreads, trading volume, and stock price volatility, which are traditional proxies for gauging information asymmetry by reflecting market behavior and price fluctuations (Chen & Wu, 2022). Additionally, mathematical models have been developed to quantify information asymmetry, such as creating an information asymmetry index derived from market microstructure literature, offering a systematic way to assess its impact on asset pricing and trading dynamics (Bharath et al., 2009). Investor behavior, particularly that of retail investors, has also been explored as a measure of information asymmetry. Studies suggest that heightened retail investor attention can reduce the effects of information asymmetry, thereby influencing market outcomes (Chen & Wu, 2022).

### **2.3 Theoretical Framework of Economic Policy Uncertainty**

Economic policy uncertainty refers to the unpredictability of government policies that can significantly affect economic conditions and financial markets. Such uncertainty often stems from changes in legislation, regulatory adjustments, and shifts in government priorities, which can create an environment of ambiguity for investors and businesses alike (Smales,

2021). The seminal work of Baker, Bloom, and Davis (2016) established a widely used index to quantify economic policy uncertainty, which has become a cornerstone in empirical research on the subject.

Economic policy broadly impacts corporate decision-making by covering taxation, monetary policy, and regulation. If policy variations are not widely expected, they might cause substantial changes in asset values and business profitability—the lack of ability to predict the possibility of such policy changes and the resulting consequences. Elevated ambiguity can postpone the process of recruiting and making financial commitments, leading to a deceleration in economic expansion, a decrease in profitability (resulting in less cash flow), an increase in discount rates (resulting in higher discount rate effects), and a loss in asset prices. Ambiguity over the permanency of economic reforms might potentially harm the economy, even if they are logical. This ambiguity can effectively discourage investment, acting as a tax on investment (Rodrik, 1991).

Economic Policy Uncertainty (EPU) is known for its ability to trigger volatility in financial markets. Investors often respond to unclear signals by adjusting their risk perceptions and investment strategies. This relationship is further complicated by a feedback loop: Rising market volatility can amplify EPU, leading to a cyclical effect that presents difficulties for both policymakers and market participants.

Agency theory is relevant in the context of EPU as it addresses conflicts between shareholders and corporate managers. When faced with high levels of uncertainty, managers may prioritize their personal interests over those of the shareholders, leading to suboptimal decision-making and increased risk exposure. This misalignment can intensify the negative impact of Economic Policy Uncertainty (EPU) on corporate performance and market stability. In addition to Agency theory, several theories provide a framework for understanding the dynamics of economic policy uncertainty and its implications for financial markets (e.g., Behavioral Finance, Market Microstructure Theory, Heterogeneous Investor Beliefs, and Information Asymmetry).

### **The dynamic relationship between economic uncertainty policy, information asymmetry, and the stock price crash risk**

There is increasing attention on stock price crash risk (Ai et al., 2023; Chu et al., 2023; Fiorillo et al., 2024; Gong & Liu, 2023; Li et al., 2023b; Thai et al., 2023; Wang et al., 2023a; Bashir et al., 2024), which has been extensively examined through the framework of agency theory. This theory primarily addresses the conflicts of interest between various corporate stakeholders, particularly managers and shareholders. The principal-agent



problem suggests that managers, acting as agents, may prioritize their own interests over those of shareholders, leading to behaviors that heighten the risk of stock price crashes. This review draws from recent literature to clarify the mechanisms by which agency theory accounts for stock price crash risk.

Managerial bad news hoarding, a key concept in agency theory explaining stock price crash risk, refers to the tendency of managers to withhold negative information from shareholders. This behavior is motivated by the desire to protect their positions and reputations by avoiding disclosing unfavorable news that might lead to a loss of investor confidence and a subsequent decline in stock prices. Jin and Myers (2006) explain that as negative news accumulates beyond a certain threshold, it becomes increasingly difficult for managers to conceal it. This results in the abrupt release of all withheld bad news, causing a sharp drop in stock prices. This phenomenon, often termed "bad news hoarding," is a clear manifestation of agency conflicts, where information opacity enables managers to manipulate perceptions of corporate value for personal gain (Callen & Fang, 2015).

Incentives and Overinvestment, another significant aspect of agency theory, relates to managerial incentives that may drive overinvestment, contributing to stock price crash risk. Managers often have compensation packages linked to corporate performance metrics, such as stock price, which can incentivize them to use high-risk investment strategies to inflate stock prices artificially. This overinvestment can lead to significant future losses when these investments fail to yield the anticipated returns, culminating in a stock price crash. Research indicates that corporates with higher managerial overconfidence or aggressive investment strategies are more susceptible to crashes due to the misalignment between managerial incentives and shareholder interests (Andreou et al., 2021; Andreou et al., 2022).

Corporate governance plays a crucial role in mitigating the risks associated with agency problems. Effective governance mechanisms, such as the presence of independent directors and robust audit committees, can decrease managerial discretion in financial reporting and reduce the likelihood of bad news hoarding. Studies have shown that corporate-specific governance structures can significantly impact crash risk, with poorly governed corporates being more prone to stock price crashes due to ineffective oversight of managerial actions (Habib et al., 2018). For instance, Andreou et al. (2016) found that specific governance attributes, such as transient institutional ownership and CEO stock options, heightened crash risk. In contrast, strong governance practices correlated with lower crash risk (Andreou et al., 2016).

Information asymmetry and financial reporting opacity are central to agency theory's explanation of stock price crash risk. The theory suggests that the risk of crashes increases when there is a significant information gap

between managers and shareholders. Opaque financial reporting allows managers to effectively conceal unfavorable information, leading investors to rely on potentially misleading signals from management. This lack of transparency often results in mispricing, leading to a sudden and severe stock price decline when the hidden negative information is eventually disclosed. Hutton et al. (2009) empirically showed that companies with higher levels of financial reporting opacity are more prone to stock price crashes as the delayed revelation of bad news triggers sharp price drops (Xie et al., 2022).

**The Role of Institutional Investors:** Institutional investors are generally seen as a mitigating force against agency problems because of their ability to monitor management practices actively. However, their impact can be more nuanced. Studies suggest that institutional investors may sometimes engage in "herding" behavior, where they collectively respond to market signals, which can increase stock price volatility, especially during the release of negative news. This tendency is particularly pronounced in environments characterized by information asymmetry, where the delayed disclosure of unfavorable information raises the likelihood of stock price crashes (Ben-Nasr & Ghouma, 2018; Andreou et al., 2021).

**Behavioral Factors and Overconfidence:** The intersection of agency theory and behavioral finance sheds light on how managerial traits, such as overconfidence, can exacerbate crash risk. Overconfident managers may underestimate the risks associated with their decisions, leading to poor investment choices and a subsequent accumulation of negative information. Liang et al. (2020) found that corporations led by overconfident managers are more likely to experience stock price crashes due to the mismanagement of bad news disclosure (Liang et al., 2020).

Agency theory provides a robust framework for explaining stock price crash risk through various mechanisms, including managerial bad news hoarding, misaligned incentives leading to overinvestment, the impact of corporate governance structures, and the effects of information asymmetry. Understanding these dynamics is critical for investors and regulators, as they highlight the importance of transparency, effective governance, and managing agency conflicts in mitigating the risks of stock price crashes. Future research should continue to explore these relationships, particularly in the context of evolving corporate governance practices and the role of institutional investors in shaping market behaviors.

The relationship between economic uncertainty, information asymmetry, and stock price crash risk is a crucial area of research in finance and accounting. Understanding the dynamics between these critical factors is essential for investors, policymakers, and corporate leaders to navigate the complexities of financial markets and mitigate potential risks.

However, the interplay between economic uncertainty, information asymmetry, and stock price crash risk is not fully understood. While previous research has examined the individual effects of these factors, there is a need for a more comprehensive analysis of how they dynamically interact to influence stock market stability and resilience. This study aims to synthesize the current understanding of these relationships, drawing insights from previous studies and other relevant studies to offer a nuanced perspective on the complex drivers of stock price crash risk.

The dynamic relationship between economic uncertainty policy, information asymmetry, and stock price crash risk can be understood through agency theory and behavioral finance. At the core of this framework is the tension between corporate managers, who possess superior information about the corporation's operations and prospects, and outside investors, who face informational disadvantages (Saleem & Usman, 2021; Han et al., 2023).

Economic policy uncertainty (EPU) is crucial in shaping this dynamic. During periods of heightened EPU, managers may be incentivized to withhold or manipulate information to protect their own interests, leading to increased information asymmetry between insiders and outsiders (Jin et al., 2019; Luo & Zhang, 2020; Cao et al., 2023). This is because EPU can create an environment of heightened risk and ambiguity, where managers may perceive more significant benefits in concealing negative information from the market (Jin et al., 2019; Cao et al., 2023).

Bitria and Ghirelli (2021) argue that Economic policy uncertainty (EPU) leads to a difference in the behavior of investors in financial markets, especially within investor heterogeneity. Economic policy uncertainty curtails company investment by either increasing precautionary savings or exacerbating lending conditions. Long-term institutional investors react favorably to economic policy uncertainty shocks, while short-term institutional investors decrease their investments during times of uncertainty (Wang et al., 2024). Therefore, long-term institutional ownership and institutional common ownership serve to alleviate funding frictions during times of uncertainty (Saad and Belkacem, 2024). This is reflected in the risk premium of stocks under economic policy uncertainty according to the systematic risks of common stock, which is due to the positive impact of investor sentiment on the economic policy uncertainty premium (Nartea et al., 2020).

The risk premium of stocks is influenced by economic policy uncertainty and systematic risks of common stock. This is because investor sentiment positively impacts the economic policy uncertainty premium (Nartea et al., 2020).

The theoretical framework suggests that the accumulation of bad news, driven by managers' opportunistic behavior, is a crucial precursor to stock

price crashes (Saleem & Usman, 2021; Han et al., 2023). As negative information is withheld, it gradually builds up within the corporation until it reaches a critical threshold and is ultimately released, triggering a sharp decline in stock prices (Saleem & Usman, 2021; Han et al., 2023). This mechanism, often called "bad news hoarding," can be exacerbated by information asymmetry between managers and investors (Saleem & Usman, 2021; Han et al., 2023).

Furthermore, the theoretical framework highlights the role of investor heterogeneity and disagreement in amplifying the relationship between EPU and stock price crash risk (Luo & Zhang, 2020). When investors hold divergent beliefs and expectations about a corporation's prospects, driven by informational asymmetry, it can increase market volatility and a heightened likelihood of stock price crashes (Luo & Zhang, 2020). This is because releasing previously withheld negative information can trigger a sudden shift in investor sentiment and a collective retreat from the stock, leading to a rapid price decline (Luo & Zhang, 2020).

In addition to the direct impact of EPU on information asymmetry and crash risk, the theoretical framework also suggests that economic uncertainty can influence other corporate-level characteristics that, in turn, affect stock price dynamics. For instance, EPU may exacerbate financial distress (Andreou et al., 2021), further incentivizing managers to engage in opportunistic behavior and withhold bad news, ultimately increasing the risk of stock price crashes (Andreou et al., 2021).

The theoretical framework, therefore, emphasizes the complex and multifaceted nature of the relationship between economic uncertainty, information asymmetry, and stock price crash risk. It suggests that understanding the specific mechanisms through which these factors interact and the role of corporate-level characteristics and investor behavior is crucial for developing a comprehensive understanding of this important topic in finance.

So, the dynamic relationship between economic uncertainty policy, information asymmetry, and stock price crash risk has been the subject of extensive research in finance. The existing literature highlights the crucial role these factors play in shaping the stability and resilience of financial markets.

At the heart of this relationship is the tension between corporate managers, who possess superior information about the corporation's operations and prospects, and outside investors, who face informational disadvantages (Saleem & Usman, 2021; Han et al., 2023). Economic policy uncertainty (EPU) can exacerbate this information asymmetry, as managers may be incentivized to withhold or manipulate information to protect their own

interests during periods of heightened economic risk and ambiguity (Jin et al., 2019; Luo & Zhang, 2020; Cao et al., 2023).

The empirical evidence supports the theoretical framework, providing insights into the specific mechanisms through which economic uncertainty, information asymmetry, and stock price crash risk are interrelated. Several studies have documented the negative impact of EPU on stock returns and the positive relationship between EPU and stock price volatility (Jin et al., 2019; Tang & Wan, 2022; Cao et al., 2023). These findings suggest that heightened economic uncertainty can create an environment conducive to corporate managers withholding negative information.

The existing literature has made significant strides in elucidating the interplay between economic uncertainty policy, information asymmetry, and stock price crash risk. The theoretical framework and empirical evidence suggest that understanding the specific mechanisms and moderating factors that shape these relationships is crucial for investors, corporate decision-makers, and policymakers to navigate the complexities of financial markets and mitigate potential risks. As the research in this area continues to evolve, further examination of the nuanced dynamics and the implications for market stability and resilience will be an important area of inquiry.

## **Research Gaps**

The relationship between economic uncertainty policy, information asymmetry, and stock price crash risk has received significant attention in the literature, with a growing body of empirical and theoretical research exploring the various facets of this complex dynamic. One prominent gap is the lack of a comprehensive framework fully capturing the interplay between economic policy uncertainty, information asymmetry, and stock price crash risk. While individual studies have examined the impact of economic policy uncertainty on crash risk (Jin et al., 2019; Luo & Zhang, 2020; Dai et al., 2021; Du et al., 2021; Yuan et al., 2022; Wang et al., 2023b), or the role of information asymmetry in influencing crash risk (Khodarahmi et al., 2016; Habib et al., 2018; Moradi et al., 2021; He et al., 2022; Cao et al., 2023), there are limited efforts that addresses the dynamic and interdependent nature of these factors.

Studies by Jin et al. (2019); Luo and Zhang (2020); Dai et al. (2021); Du et al. (2021); Yuan et al. (2022); and Wang et al. (2023b) provide valuable insights into the direct relationship between economic policy uncertainty (EPU) and stock price crash risk. They demonstrate that higher EPU is associated with a greater likelihood of stock price crashes. However, these studies do not fully explore the mechanisms through which EPU affects crash risk, leaving gaps in understanding the underlying drivers of this relationship.

The literature reviewed also highlights the importance of information asymmetry as a critical determinant of stock price crash risk like Khodarahmi et al. (2016), Habib et al. (2018), Moradi et al. (2021), He et al. (2022), Cao et al. (2023). Studies have shown that information asymmetry, stemming from factors such as managerial incentives to withhold bad news, can contribute to the accumulation of negative information and the subsequent sudden release, leading to stock price crashes. However, these studies primarily focus on corporate-specific characteristics and agency-related factors without adequately addressing the potential role of economic policy uncertainty in shaping information asymmetry and its downstream effects on crash risk.

To address this gap, a more holistic approach is needed to investigate how economic policy uncertainty interacts with information asymmetry to influence stock price crash risk. This would involve examining the dynamic interplay between these factors, including how EPU may exacerbate information asymmetry within corporates, which could amplify the likelihood of stock price crashes. Exploring the channels through which EPU and information asymmetry jointly contribute to crash risk would provide a more comprehensive understanding of this phenomenon.

There is a significant gap in the literature concerning the dynamic relationship between economic uncertainty policy, information asymmetry, and stock price crash risk. This gap is due to the lack of a comprehensive framework that captures the interplay between these three elements, the underlying mechanisms driving their relationships, and the need for a deeper understanding of how economic policy uncertainty may shape information asymmetry within corporations and how this, in turn, influences stock price crash risk. The scarcity of research on the consequences of stock price crashes is crucial for understanding the broader implications of this phenomenon in the Egyptian Exchange (EGX).

Addressing these gaps in the literature would contribute to a more holistic understanding of the dynamic relationship between economic uncertainty policy, information asymmetry, and stock price crash risk, thereby informing both academic research and practical decision-making in Egyptian exchange.

## **Study methodology and design**

### **Study Problem**

The dynamic relationship between economic uncertainty policy, information asymmetry, and stock price crash risk is a complex and multifaceted finance and accounting research area. Understanding the interplay between these critical factors is crucial for investors, policymakers, and corporate decision-makers in navigating the challenges of volatile financial markets. At the core of this relationship lies the tension between corporate

managers, who possess superior information about the corporation's operations and prospects, and outside investors, who face informational disadvantages (Saleem & Usman, 2021; Han et al., 2023). Economic policy uncertainty (EPU) plays a crucial role in exacerbating this information asymmetry, as managers may be incentivized to withhold or manipulate information to protect their own interests during periods of heightened economic risk and ambiguity (Jin et al., 2019; Luo & Zhang, 2020; Cao et al., 2023).

The literature review highlights the complex and dynamic relationship between economic uncertainty policy, information asymmetry, and stock price crash risk. While the existing research has provided valuable insights into the underlying mechanisms and moderating factors, there is a need for further exploration of the specific channels through which these factors interact to influence the stability and resilience of financial markets. The following sections will delve deeper into the empirical evidence and examine the implications of these findings for various stakeholders. Therefore, the following research question appears in the study:

"Does information asymmetry help explain stock price crash risk resulting from economic policy uncertainty in the Egyptian Exchange?"

### Study hypotheses

Study hypotheses are based on the research gap and the study problem:

**H1: Economic policy uncertainty significantly impacts stock price crash risk.**

**H2: Information asymmetry moderates the relationship between Economic Policy Uncertainty and stock price crash risk.**

### Study Model:

Function No. 1 outlines the proposed framework for stock price crash risk in relation to economic policy uncertainty and information asymmetry. The study introduces a model to measure stock price crash risk and analyzes it using hierarchical regression and cross-sectional analysis.

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$$\text{stock price crash risk} = \int \text{economic policy uncertainty} + \text{information asymmetry} \quad \text{Function (1)}$$


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#### 3.3.1 stock price crash risk without information asymmetry:

This study tested the hypothesis according to Equation (1) without considering the moderating role of information asymmetry.

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$$\text{SPCR}_{j,t} = \beta_0 + \beta_1 \text{EPU}_{j,t} + \varepsilon_{j,t} \quad \text{Equation (1)}$$


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Equation (1) was drafted to test the hypothesis, where (j) represents the corporation and (t) represents time. SPCR represents stock price crash risk, whereas EPU represents the degree of economic policy uncertainty based on the World Uncertainty Index for Egypt as a dependent variable.  $\beta_0$  is a constant term addition to ( $\beta_1$ ), the population parameters, but ( $\epsilon_{jt}$ ) represents the random error term (unobservable).

### ***stock price crash risk within information asymmetry:***

This study tested the hypothesis according to Equation (2) without considering the moderating role of information asymmetry.

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$$\text{SPCR}_{j,t} = \beta_0 + \beta_1 \text{EPU}_{j,t} + \beta_{\text{BAS}} \text{BAS}_{j,t} + \epsilon_{j,t} \quad \text{Equation (2)}$$


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Equation (2) was drafted to test the hypothesis, where (j) represents the corporation and (t) represents time. SPCR represents stock price crash risk, EPU represents the degree of economic policy uncertainty based on the World Uncertainty Index for Egypt as a dependent variable. BAS represents Bid-Ask Spread as a measure of information asymmetry. Information asymmetry is a Moderating Variable between stock price crash risk and economic policy uncertainty.  $\beta_0$  is a constant term addition to ( $\beta_1$ ), the population parameters, ( $\epsilon_{jt}$ ) represents the random error term (unobservable).

### **Variables Measure**

#### **- Stock Price Crash Risk as Dependent Variable**

In accordance with previous studies (Chen et al., 2001; Hutton et al., 2009; Kim et al., 2011a, 2011b; Kim, Li, and Li, 2014), the study employs three metrics of crash risk specific to individual corporates. These measurements are derived from corporate-specific weekly returns computed using the residuals from the market model outlined below.

---


$$r_{i,\tau} = \alpha_i + \beta_{1i}r_{m,\tau-2} + \beta_{2i}r_{m,\tau-1} + \beta_{3i}r_{m,\tau} + \beta_{4i}r_{m,\tau+1} + \beta_{5i}r_{m,\tau+2} + \epsilon_{i,\tau}, \quad \text{Equation (3)}$$


---

This study considers the return of stock (i) and the return on the CRSP value-weighted market index in week ( $\tau$ ), denoted as ( $r_i$ ) and ( $r_m, \tau$ ), respectively. To account for nonsynchronous trading, the study incorporates lead and lag terms for the market index return, as suggested by Dimson (1979).

To calculate weekly returns specific to each corporation, the study utilizes the natural logarithm of one plus the residual from equation (3), denoted as  $w_{i,\tau} = \ln(1 + \epsilon_{i,\tau})$ . Kim et al. (2011a, 2011b) and Kim, Li, & Li (2014) have previously employed this approach.

Our first measure is the crash probability for each corporation in a fiscal year. A crash week for a given corporation in a fiscal year is defined as a week where the corporation's weekly returns are 3.2 standard deviations below the mean corporate-specific weekly returns for that year. The value of 3.2



corresponds to a frequency of 0.1% in the normal distribution, as per Kim et al. (2011b). Our initial measure ( $SCR\_Crash_{i,t}$ ), is an indicator variable equal to one if a corporation experiences one or more crash weeks within a fiscal year and zero otherwise. This measure has been previously utilized by Hutton et al. (2009) and Kim et al. (2011a, 2011b).

The study's second measure is negative conditional return skewness ( $SCR\_Ncskew_{i,t}$ ). It is defined as the negative value of the third moment of the corporate-specific weekly returns divided by the third power of the standard deviation of corporate-specific weekly returns (Chen et al., 2001; Kim, Li, & Li, 2014). To be specific, for each corporate (i) in the year, the study calculates ( $SCR\_Ncskew_{i,t}$ ) using the equation (4):

$$SCR\_Ncskew_{i,t} = -\frac{N(N-1)^{\frac{3}{2}} \sum W^3_{i,t}}{(N-1)(N-2)(\sum W^2_{i,t})^{\frac{3}{2}}} \quad \text{Equation (4)}$$

Where N represents the number of weekly returns generated by the corporate (i) in a fiscal year. A higher value of ( $SCR\_Ncskew_{i,t}$ ) indicates a greater crash risk for the corporation.

The third measure under consideration is down-to-up volatility ( $SCR\_Duvol_{i,t}$ ), which has been studied previously by Chen et al. (2001) and Kim, Li, and Li (2014). The weekly outcomes are categorized into up and down weeks, with down (up) weeks defined as those where the weekly returns for a particular corporation are less than (greater than) the yearly average weekly return.  $SCR\_Duvol_{i,t}$  is represented by the natural logarithm of the ratio between the standard deviation in down weeks and that in up weeks (Kim, Li, & Li, 2014). Specifically, for each corporate i in year t, we compute  $SCR\_Duvol_{i,t}$  as follows:

$$SCR\_Duvol_{i,t} = \ln \left( \frac{(N_U - 1) \sum W^2_{iD,t}}{(N_D - 1) \sum W^2_{iU,t}} \right) \quad \text{Equation (5)}$$

### - Information asymmetry as moderating variable

The literature has employed various proxies that capture different aspects of informational asymmetry in the financial market. According to the available data, the bid-ask spread (BAS) layer applies. The bid-ask spread (see Equation 6) is a widely used proxy for information asymmetry, reflecting the costs of trading against informed investors (Kim & Zhang, 2016; Chen & Wu, 2022). This measure is estimated on an annual basis (see Equation 7).

$$\text{Bid-Ask Spread (\%)} = [(\text{Ask Price} - \text{Bid Price}) \div \text{Ask Price}] \quad \text{Equation 6}$$

$$BAS_{j,t} = \quad \text{Equation 7}$$

---

$\Sigma$  Bid-Ask Spread (%) ÷ Number of trading days in the year (t) for corporate (j) [

---

### Economic Policy Uncertainty

The World Uncertainty Index (WUI) for Egypt (WUIEGY) is a country-specific measure of economic and political uncertainty within Egypt. The WUI is calculated by analyzing the frequency of the word "uncertainty" in the quarterly Economist Intelligence Unit (EIU) country reports for 143 countries, including Egypt. The WUIEGY reflects the level of uncertainty in Egypt, considering both economic and political factors (Liu & Gao, 2022). The index data is public and published through the following link: <https://fred.stlouisfed.org/series/WUIEGY>

According to the above, the study variables can be summarized in Table (1)

---

**Table (1): Study Variables**

| Variable          |                        |        | Measures                                   | Previous Studies                           |
|-------------------|------------------------|--------|--|--|
| <b>Dependent</b>  | stock price crash risk |        | Negative Coefficient of Skewness (NCSKEW)  | Chen et al. (2001)                         |
| <b>Moderating</b> | information asymmetry  |        | Bid-Ask Spread (BAS)                       | Kim and Zhang, 2016; Chen and Wu, 2022     |
| <b>Dependent</b>  | economic uncertainty   | policy | World Uncertainty Index for Egypt (WUIEGY) | Perić and Sorić, 2018<br>Liu and Gao, 2022 |

---

**Study sample:**

The study was tested in the context of the Egyptian exchange, which is the oldest financial market in the Middle East and North Africa. The sample components were filtered from non-financial corporates traded, and disclosure was regular over ten years from 2014 to 2023. The examination concluded that corporates met the conditions, as shown in Table (2).

| <b>Table (2): study sample</b> |   |             |            |                                    |             |
|--------------------------------|---|-------------|------------|------------------------------------|-------------|
| <b>No.</b>                     | <b>Corporation</b>                              | <b>Code</b> | <b>No.</b> | <b>Corporation</b>                 | <b>Code</b> |
| 1                              | Arab Cotton Ginning                             | ACGC        | 2          | Medical Packaging Company          | MEPA        |
| 3                              | Arabian Cement Co SAE                           | ARCC        | 4          | Acrow Misr                         | ACRO        |
| 5                              | The Arab Ceramic Ceramica Remas                 | CERA        | 6          | Cairo Poultry                      | POUL        |
| 7                              | Eastern Tobacco                                 | EAST        | 8          | Delta sugar                        | SUGR        |
| 9                              | Egyptian Chemical Industries                    | EGCH        | 10         | El Sewedy Electric                 | SWDY        |
| 11                             | Electro Cable Egypt                             | ELEC        | 12         | Alexandria Containers and goods    | ALCN        |
| 13                             | Ezz steel                                       | ESRS        | 14         | Oriental Weavers                   | ORWE        |
| 15                             | Telecom Egypt                                   | ETEL        | 16         | Sidi Kerir Petrochemicals - SIDPEC | SKPC        |
| 17                             | GB AUTO   | GBCO        | 18         | Abou Kir Fertilizers               | ABUK        |
| 19                             | Juhayna food industries                         | JUFO        | 20         | Alexandria Mineral Oils Company    | AMOC        |
| <b>No.</b>                     | <b>Corporation</b>                              |             |            |                                    | <b>Code</b> |
| 21                             | Egyptian International Pharmaceuticals (EIPICO) |             |            |                                    | PHAR        |

According to Table (2), the study sample includes 21 non-financial corporates with a total of 210 observations. The following criteria guided the selection of study sample items: The corporation is non-financial, has actively traded its common stock between 2014 and 2023, and has not received any offers to acquire or merge its common stocks during this period.

**Data analysis and hypothesis testing**  
**Stationary of Data**

The study tested the stationarity of the data to ensure that the mean and variance remained constant. This involved evaluating the stationarity of the time series of the basic independent and dependent indicators at level zero

using tests such as the Augmented Dickey–Fuller (ADF), Philips–Perron (PP), Im, Pesaran and Shin W-stat (IPSW), Levin, and Lin and Chu t (LLC) tests at a significance level of less than 0.05. Additionally, the Tau-statistic and Z- statistic criteria were used at a significance level of less than 0.05.

## Replacing outliers

Quantitative studies need accurate data representation and analysis to draw valid conclusions. However, real-world data often contains extreme values, known as outliers, which can distort statistical results and lead to inaccurate interpretations. The issue becomes more complex when analyzing variables that change over time, as outliers may occur at different points in the data series, influencing the overall trend analysis. In this study, we are using the Winsorization method, which involves replacing outliers with values at the edge of a predefined percentile range, to mitigate their influence while preserving most data (Hoaglin et al., 2000). This method is applied at the 1% level for all study variables.

## Weekly returns:

Figures (5) to (25) display the weekly returns of the components in the study sample:

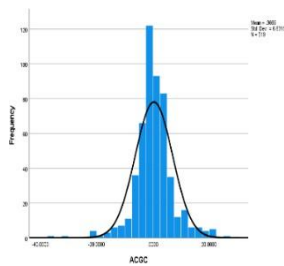


Fig. (5): Weekly return of ACGC

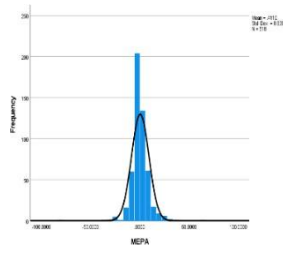


Fig. (6): Weekly return of MEPA

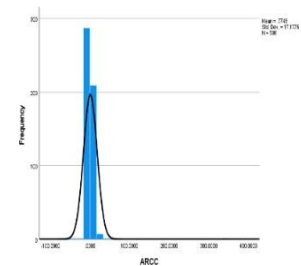


Fig. (7): Weekly return of ARCC

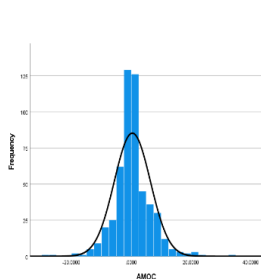


Fig. (8): Weekly return

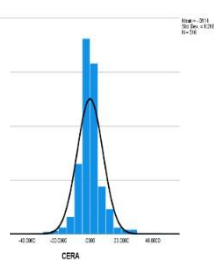


Fig. (9): Weekly return

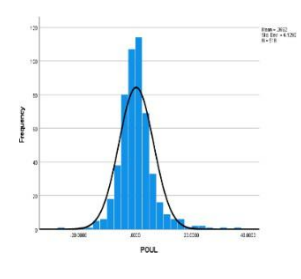


Fig. (10): Weekly

of ACRO

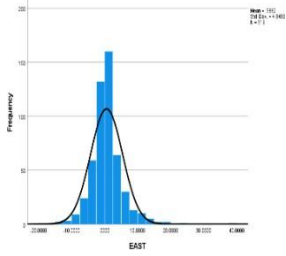


Fig. (11): Weekly return of EAST

of CERA

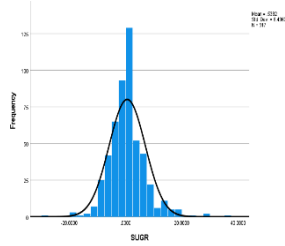


Fig. (12): Weekly return of SUGR

return of POUL

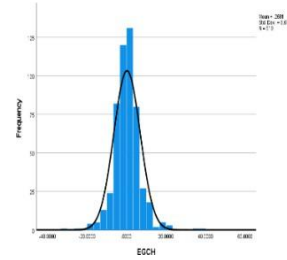


Fig. (13): Weekly return of EGCH

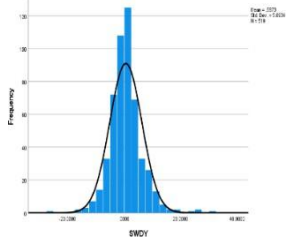


Fig. (14): Weekly return of SWDY

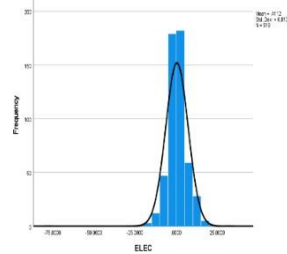


Fig. (15): Weekly return of ELEC

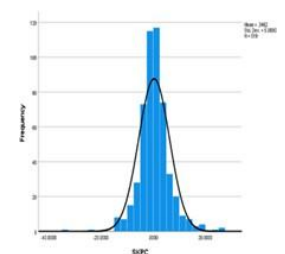


Fig. (16): Weekly return of SIPC

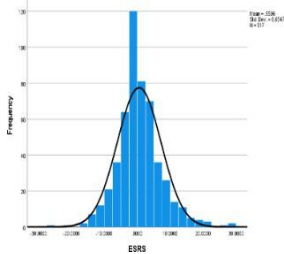


Fig. (17): Weekly return of ESRS

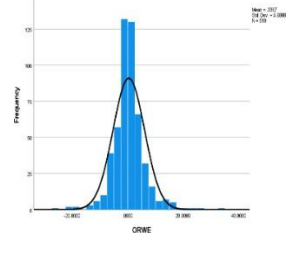


Fig. (18): Weekly return of ORWE

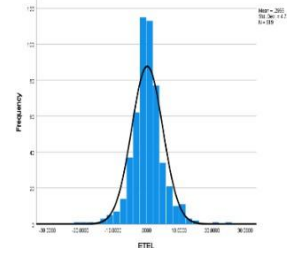


Fig. (19): Weekly return of ALCN

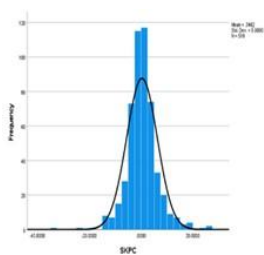


Fig. (20): Weekly return of SKPC

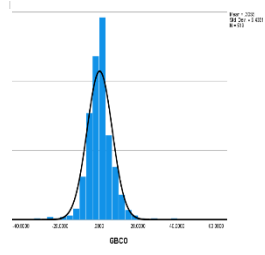


Fig. (21): Weekly return of GBCO

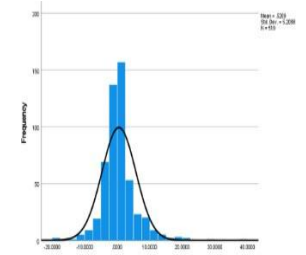


Fig. (22): Weekly return of ABUK

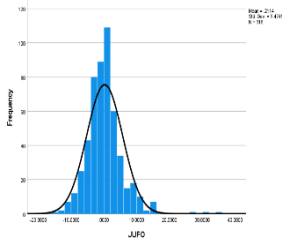


Fig. (23): Weekly return of JUFO

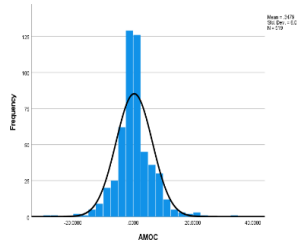


Fig. (24): Weekly return of AMOC

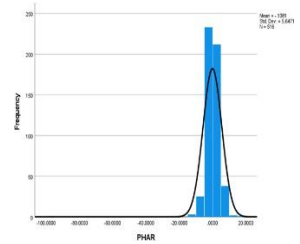
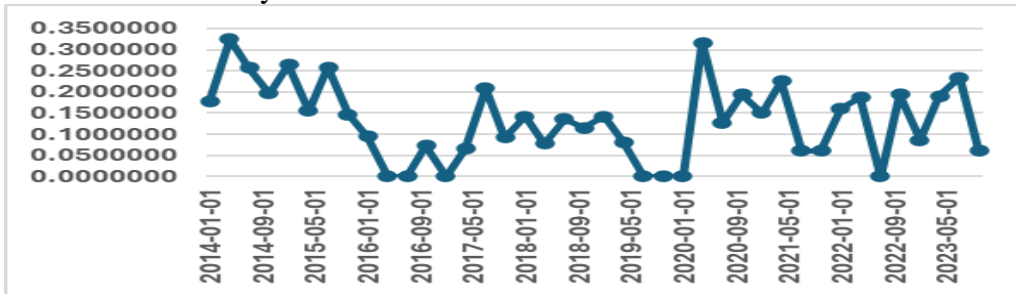


Fig. (25): Weekly return of PHAR

Figures (5) to (25) show variations in the distribution pattern of weekly returns for the study sample. Some stocks have a nearly ideal normal distribution, such as “Medical Packaging -MEPA (figure 6) and “Elsewedy Electric– SWDY (figure 14)” compared to other stocks with non-systematic distribution patterns, such as “Egyptian International Pharmaceuticals - PHAR (figure 25)”, and “Juhayna Food Industries -JUFO (figure 23)”.

### - World Uncertainty Index for Egypt

Egypt witnessed a state of instability; Figure (26) shows many prominent cases of uncertainty from 2014-2023.



Source: <https://fred.stlouisfed.org/series/WUIEGY>

Fig. (26): World Uncertainty Index for Egypt between 2014-2023

Political conflict, along with terrorism, drove the highest level of uncertainty in 2014, while the COVID-19 pandemic drove the second-highest level of uncertainty, which was achieved in 2020. In contrast, the value of the local currency (the Egyptian pound against the US dollar) caused an increase in uncertainty in 2017 and 2023.

**Descriptive analysis and the correlation matrix of study Variables**

Table (3) shows the parametric results of the descriptive analysis of both stock price crash risk, information asymmetry, and economic policy uncertainty.

Table (3) : Descriptive analysis of study Variables

| <b>Descriptive Statistics</b> |     |         |         |        |                |
|-------------------------------|-----|---------|---------|--------|----------------|
|                               | N   | Minimum | Maximum | Mean   | Std. Deviation |
| WUIEGY                        | 210 | .07     | .32     | .2122  | .07550         |
| BAS                           | 210 | .37     | 1.45    | .9684  | .20257         |
| SPCR                          | 210 | -1.69   | 2.67    | 1.2793 | .79310         |
| Valid N (listwise)            | 210 |         |         |        |                |

Source: Statistical Package for the Social Sciences Outputs

According to Table (3), the mean stock price crash risk was 1.2793, the mean world uncertainty index for Egypt was 0.2122, and the mean bid-ask spread (BAS) was 0.9684. However, Table (4) illustrates the correlation matrix between stock price crash risk, information asymmetry, and economic policy uncertainty.

Table (4): The correlation matrix of the study variables.

|        |                     | <b>Correlations</b> |        |        |
|--------|---------------------|---------------------|--------|--------|
|        |                     | SPCR                | BAS    | WUIEGY |
| SPCR   | Pearson Correlation | 1                   | .699** | .550** |
|        | Sig. (2-tailed)     |                     | <.001  | <.001  |
|        | N                   | 210                 | 210    | 210    |
| BAS    | Pearson Correlation | .699**              | 1      | .591** |
|        | Sig. (2-tailed)     | <.001               |        | <.001  |
|        | N                   | 210                 | 210    | 210    |
| WUIEGY | Pearson Correlation | .550**              | .591** | 1      |
|        | Sig. (2-tailed)     | <.001               | <.001  |        |
|        | N                   | 210                 | 210    | 210    |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: Statistical Package for the Social Sciences Outputs

Table (4) shows significant correlations between the three variables at the 1% level.

**Examining the impact of economic policy uncertainty on the stock price crash risk under information asymmetry as a moderating variable:**

The study uses two types of statistics — cross-sectional analysis and hierarchical regression analysis — on twenty-one common stocks trading on EGX to examine how economic policy uncertainty affects stock price crash risk when there is an information asymmetry.

**cross-sectional analysis**

Two tests were conducted on the cross-sectional analysis, the first included economic policy uncertainty, and the second included economic policy uncertainty and information asymmetry. Table (5) shows the outputs of the first test.

Table (5): the cross-sectional analysis for economic policy uncertainty

Dependent Variable: SPCR  
 Method: Panel Least Squares  
 Date: 08/22/24 Time: 21:05  
 Sample: 2014 2023  
 Periods included: 10  
 Cross-sections included: 21  
 Total panel (balanced) observations: 210

| Variable                              | Coefficient | Std. Error            | t-Statistic | Prob.  |
|---------------------------------------|-------------|-----------------------|-------------|--------|
| C                                     | -0.134124   | 0.123191              | -1.088750   | 0.2777 |
| WUIEGY                                | 6.694015    | 0.547111              | 12.23522    | 0.0000 |
| Effects Specification                 |             |                       |             |        |
| Cross-section fixed (dummy variables) |             |                       |             |        |
| R-squared                             | 0.526886    | Mean dependent var    | 1.286323    |        |
| Adjusted R-squared                    | 0.474038    | S.D. dependent var    | 0.823366    |        |
| S.E. of regression                    | 0.597132    | Akaike info criterion | 1.905500    |        |
| Sum squared resid                     | 67.03446    | Schwarz criterion     | 2.256149    |        |
| Log likelihood                        | -178.0775   | Hannan-Quinn criter.  | 2.047255    |        |
| F-statistic                           | 9.969879    | Durbin-Watson stat    | 1.950424    |        |
| Prob(F-statistic)                     | 0.000000    |                       |             |        |

Source: EViews Outputs

According to Table (5), based on the adjusted R-squared, economic policy uncertainty interpreted 47.4% of the stock price crash risk. The previous statistical results showed that economic policy uncertainty positively impacted the stock price crash risk, which was significant at the 0.01 level. So, the study rejects the null hypothesis and accepts the following alternative hypothesis.

**Economic Policy Uncertainty has a significant impact on stock price crash risk.**

But the second test was Cross-sectional analysis conducted under conditions of information asymmetry, that illustrates in Table (6)



Table (6): The cross-sectional analysis for economic policy uncertainty within information asymmetry

Dependent Variable: SPCR  
Method: Panel Least Squares  
Date: 08/22/24 Time: 21:08  
Sample: 2014 2023  
Periods included: 10  
Cross-sections included: 21  
Total panel (balanced) observations: 210

| Variable | Coefficient | Std. Error | t-Statistic | Prob.  |
|----------|-------------|------------|-------------|--------|
| C        | -2.838917   | 0.101664   | -27.92464   | 0.0000 |
| WUIEGY   | 1.991399    | 0.361169   | 5.513759    | 0.0000 |
| BAS      | 4.703154    | 0.153563   | 30.62690    | 0.0000 |

| Effects Specification                 |          |                       |          |
|---------------------------------------|----------|-----------------------|----------|
| Cross-section fixed (dummy variables) |          |                       |          |
| R-squared                             | 0.721358 | Mean dependent var    | 1.286323 |
| Adjusted R-squared                    | 0.712107 | S.D. dependent var    | 0.823366 |
| S.E. of regression                    | 0.244102 | Akaike info criterion | 0.120588 |
| Sum squared resid                     | 11.14255 | Schwarz criterion     | 0.487176 |
| Log likelihood                        | 10.33826 | Hannan-Quinn criter.  | 0.268786 |
| F-statistic                           | 99.58539 | Durbin-Watson stat    | 1.911509 |
| Prob(F-statistic)                     | 0.000000 |                       |          |

Source: EViews Outputs

As shown in Table (6), based on the adjusted R-squared, economic policy uncertainty and information asymmetry interpreted 71.21% of the stock price crash risk. The previous statistical results showed that economic policy uncertainty and information asymmetry positively impacted the stock price crash risk, which was significant at the 0.01 level. Demonstrating its influential role in explaining the change in stock price crash risk. Other factors not included in the regression models account for the remaining 28.89%. So, the study rejects the null hypothesis and accepts the following alternative hypothesis:

**Information asymmetry moderates the relationship between Economic Policy Uncertainty and stock price crash risk.**

#### 4.5.2 Hierarchical Regression Analysis

Hierarchical regression analysis included two stages. The first stage only investigated the impact of economic policy uncertainty on the stock price crash risk. In contrast, the second stage investigated the impact of economic

policy uncertainty on the stock price crash risk under information asymmetry as a moderating variable. This is illustrated in Table (7).

Table (7): Variables Entered

| <b>Variables Entered/Removed<sup>a</sup></b> |                     |                   |        |
|--|---------------------|-------------------|--------|
| Model  | Variables Entered   | Variables Removed | Method |
| 1  | WUIEGY <sup>b</sup> | .                 | Enter  |
| 2  | BAS <sup>b</sup>    | .                 | Enter  |

a. Dependent Variable: SPCR

b. All requested variables entered.

Source: Statistical Package for the Social Sciences Outputs

Table (8) shows the ANOVA test output, which measures the significance of the regression models as a whole:

Table (8): ANOVA test output

| <b>ANOVA<sup>a</sup></b> |            |                |     |             |         |                    |
|--------------------------|------------|----------------|-----|-------------|---------|--------------------|
| Model                    |            | Sum of Squares | df  | Mean Square | F       | Sig.               |
| 1                        | Regression | 39.735         | 1   | 39.735      | 90.105  | <.001 <sup>b</sup> |
|                          | Residual   | 91.726         | 208 | .441        |         |                    |
|                          | Total      | 131.461        | 209 |             |         |                    |
| 2                        | Regression | 67.955         | 2   | 33.977      | 110.749 | <.001 <sup>c</sup> |
|                          | Residual   | 63.507         | 207 | .307        |         |                    |
|                          | Total      | 131.461        | 209 |             |         |                    |

a. Dependent Variable: SPCR

b. Predictors: (Constant), WUIEGY

c. Predictors: (Constant), WUIEGY, BAS

Source: Statistical Package for the Social Sciences Outputs

According to Table (8), the F coefficient in the first stage was 90.105, while in the second stage it was 110.749. These values were significant at the 1% level. Table (9) shows the significance of each variable in the regression models.

Table (9): T test of beta's variable

**Coefficients<sup>a</sup>**

| Model |            | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig.  |
|-------|------------|-----------------------------|------------|---------------------------|--------|-------|
|       |            | B                           | Std. Error | Beta                      |        |       |
| 1     | (Constant) | .054                        | .137       |                           | .392   | .695  |
|       | WUIEGY     | 5.776                       | .608       | .550                      | 9.492  | <.001 |
| 2     | (Constant) | -1.367                      | .187       |                           | -7.307 | <.001 |
|       | WUIEGY     | 2.207                       | .629       | .210                      | 3.508  | <.001 |
|       | BAS        | 2.249                       | .235       | .574                      | 9.591  | <.001 |

a. Dependent Variable: SPCR

Source: Statistical Package for the Social Sciences Outputs

Table (9) reveals significance for the variables in the regression models at a significance level of 1% based on the beta coefficient. Economic policy uncertainty and information asymmetry positively impact stock price crash risk. Lastly, Table (10) allows us to use the interpretation rate of these variables for stock price crash risk.

Table (10): models summary

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .550 <sup>a</sup> | .302     | .299              | .66407                     |
| 2     | .719 <sup>b</sup> | .517     | .512              | .55389                     |

a. Predictors: (Constant), WUIEGY

b. Predictors: (Constant), WUIEGY, BAS

Source: Statistical Package for the Social Sciences Outputs

Table (10) records an adjusted R square of 0.299 in the first stage and 0.512 in the second, suggesting that economic policy uncertainty accounts for only 29.9% of the stock price crash risk. Information asymmetry, on the other hand, enhances this explanation to 51.2%, demonstrating its influential role in explaining the change in stock price crash risk. Other factors not included in the regression models account for the remaining 48.8%. So, the study rejects the null hypothesis and accepts the following alternative hypothesis:

**Information asymmetry moderates the relationship between Economic Policy Uncertainty and stock price crash risk.**

## **Conclusion and Recommendations**

A stock price crash refers to a significant decrease in the value of a corporation's shares over a specific time period (Jin & Myers, 2006). The dynamic relationship between economic uncertainty policy, information asymmetry, and stock price crash risk is a complex and multifaceted phenomenon with significant implications for investors, corporate decision-makers, and policymakers. The findings from the extant literature provide valuable insights into the intricate mechanisms through which these key factors interact to shape the stability and resilience of financial markets.

At the core of this relationship is the tension between corporate managers, who possess superior information about the corporation's operations and prospects, and outside investors, who face informational disadvantages (Saleem & Usman, 2021; Han et al., 2023). Economic policy uncertainty (EPU) plays a crucial role in exacerbating this information asymmetry, as managers may be incentivized to withhold or manipulate information to protect their own interests during periods of heightened economic risk and ambiguity (Jin et al., 2019; Luo & Zhang, 2020; Cao et al., 2023).

The accumulation of bad news, driven by managers' opportunistic behavior, has been identified as a key precursor to stock price crashes (Saleem & Usman, 2021; Han et al., 2023). As negative information is withheld, it gradually builds up within the corporation until it reaches a critical threshold and is ultimately released, triggering a sharp decline in stock prices (Saleem & Usman, 2021; Han et al., 2023). Information asymmetry between managers and investors can amplify this "bad news hoarding" mechanism (Saleem & Usman, 2021; Han et al., 2023).

Investor heterogeneity and disagreement also play a crucial role in amplifying the relationship between EPU and stock price crash risk (Luo & Zhang, 2020). When investors hold divergent beliefs and expectations about a corporation's prospects, driven by informational asymmetry, it can increase market volatility and a heightened likelihood of stock price crashes (Luo & Zhang, 2020). The release of previously withheld negative information can trigger a sudden shift in investor sentiment and a collective retreat from the stock, leading to a rapid price decline (Luo & Zhang, 2020).

Beyond the direct impact of EPU on information asymmetry and crash risk, the literature also suggests that economic uncertainty can influence other corporate-level characteristics that, in turn, affect stock price dynamics. For instance, EPU may exacerbate financial distress (Andreou et al., 2021), further incentivizing managers to engage in opportunistic behavior and withhold bad news, ultimately increasing the risk of stock price crashes (Andreou et al., 2021).

Our primary study question asks whether information asymmetry significantly impacts the relationship between economic policy uncertainty (EPU) and stock price crash risk as a moderating variable. With the help of hierarchical regression and cross-sectional analysis, the study looks at how information asymmetry impacts the stock price crash risk when uncertain economic policy. According to hierarchical regression analysis, an adjusted R square of 0.299 without information asymmetry and 0.512 within information asymmetry suggests that economic policy uncertainty only interpreted 29.9% of the stock price crash risk. Information asymmetry, on the other hand, enhances this explanation to 51.2%, demonstrating its influential role in explaining the change in stock price crash risk. Other factors not included in the regression models account for the remaining 48.8%. However, according to cross-sectional analysis, an adjusted R square of 0.474 without information asymmetry and 0.7121 within information asymmetry suggests that economic policy uncertainty accounts for only 47.4% of the stock price crash risk. Information asymmetry, on the other hand, enhances this explanation to 71.21%, demonstrating its influential role in explaining the change in stock price crash risk. Other factors not included in the regression models account for the remaining 28.89%.

This conclusion agrees with the literature; it is the critical role of information asymmetry in contributing to stock price crash risk (Kim & Zhang, 2016; Ren et al., 2023). Information asymmetry, where corporate insiders possess private information that is not readily available to outside investors, has been consistently identified as a key driver of stock price crash risk (Kim & Zhang, 2016). When managers withhold negative information, allowing it to accumulate, it eventually reaches a critical threshold, leading to a sudden and sharp decline in stock prices (Ren et al., 2023). This phenomenon has been explored in studies examining factors such as corporate tax avoidance (Saleem & Usman, 2021), managerial incentives (Saleem & Usman, 2021), and accounting conservatism (Kim & Zhang, 2016) as influencing the likelihood of stock price crashes.

Heightened economic policy uncertainty (EPU) has also significantly impacted stock market dynamics. EPU can amplify investors' perception of risk and uncertainty, leading to a higher risk premium demanded for holding stocks (Saleem & Usman, 2021; Tang & Wan, 2022), which in turn can result in increased stock market volatility and lower stock prices (Saleem & Usman, 2021; Tang & Wan, 2022; Xiao et al., 2022). Recent studies have further explored the direct link between EPU and stock price crash risk, revealing that corporates are likelier to experience stock price crashes when EPU increases (Luo & Zhang, 2020). This is because EPU can exacerbate information asymmetry between corporate insiders and outside investors, enhancing

managers' incentives and abilities to withhold negative information (Luo & Zhang, 2020).

The dynamic relationship between economic uncertainty policy, information asymmetry, and stock price crash risk is a complex and multifaceted phenomenon that merits further investigation. The existing literature provides a solid foundation for understanding the theoretical underpinnings and empirical evidence underlying these relationships, highlighting the crucial role of information asymmetry as a key mediating channel. Continuing research in this area should explore the interplay between economic uncertainty, corporate-level characteristics, investor behavior, and other relevant factors to develop a more comprehensive understanding of how to mitigate the risks associated with stock price crashes and promote the stability and resilience of financial markets.

The current study presents several innovations and novel contributions compared to prior research. Here are the key innovations:

- a. **Focus on the Egyptian Exchange (EGX):** This study specifically examines the dynamic relationship between economic policy uncertainty (EPU), information asymmetry, and stock price crash risk in the context of the EGX, which is a less frequently studied market. Previous studies have largely focused on developed markets, making this study unique in its regional focus.
- b. **Use of Information Asymmetry as a Moderating Variable:** The study introduces information asymmetry as a moderating variable between economic policy uncertainty and stock price crash risk. While previous research has explored the individual impact of EPU on stock prices, this study is one of the first to systematically examine the interaction between EPU and information asymmetry.
- c. **Cross-Sectional and Hierarchical Regression Analysis:** The study applies both cross-sectional and hierarchical regression analysis on 21 non-financial firms listed on the EGX between 2014 and 2023. This dual approach strengthens the robustness of the findings, showing how information asymmetry influences the relationship between EPU and stock price crash risk.
- d. **Significant Quantitative Findings:** The research highlights the quantitative impact of EPU and information asymmetry on stock price crash risk. It finds that EPU accounts for 29.9% to 47.4% of the stock price crash risk, while information asymmetry enhances this to between 51.2% and 71.21%. These figures demonstrate a more comprehensive understanding of how these variables interact.

These contributions distinguish the study by providing a deeper understanding of how economic uncertainty and information asymmetry together drive stock price crash risk, particularly in an emerging market context like Egypt

### **Recommendations**

#### **Recommendations for Investors:**

Understanding the dynamic relationship between economic policy uncertainty and stock price crash risk allows investors to make more informed decisions. Investors can benefit from tools that help assess risk and better predict market volatility based on EPU levels. Emphasizing transparency in corporate disclosures and improving access to real-time market data would reduce informational gaps and help investors mitigate risks linked to economic uncertainty.

#### **Recommendations for Regulatory Authorities**

- *Creating more stable and predictable economic environments: Policymakers can mitigate stock price crash risks by reducing economic uncertainty. They can focus on creating more stable and predictable economic environments by adopting clearer, more consistent policies and improving communication of policy changes. This helps reduce the risk premium demanded by investors and supports market stability.*

- *strengthen the disclosure requirements and transparency measures for listed corporates: Higher-quality information disclosure can effectively offset the negative impact of EPU on stock liquidity and reduce information asymmetry (Wang et al., 2022). By mandating more comprehensive and timely disclosure of financial and operational information, regulators can help to narrow the information gap between corporate insiders and outside investors, diminishing managers' ability to hoard bad news (Luo & Zhang, 2020; Moradi et al., 2021)*

(a) Specific measures that regulators could consider include: Enhancing disclosure requirements for material events and risks: Regulators should mandate that corporates promptly disclose any significant developments or risks that may affect their financial performance and stock prices, rather than allowing for the selective disclosure or delay of negative information (Luo & Zhang, 2020; Moradi et al., 2021)

(b) Improving the quality and reliability of financial reporting: Regulators should strengthen accounting and auditing standards to ensure corporate financial statements' accuracy, transparency, and timeliness. This could involve measures such as mandatory adoption of International Financial Reporting Standards (IFRS), increased oversight of auditors, and stricter penalties for financial misreporting (Abdelghany, 2015; Moradi et al., 2021).

(c) Promoting the disclosure of forward-looking information: Regulators should encourage corporates to provide more forward-looking disclosures, such

as management discussions, earnings forecasts, and strategic plans, to help investors better assess the corporate's future prospects and risks (Wang et al., 2022).

(e) Enhancing the monitoring and enforcement of disclosure rules: Regulators should establish robust monitoring and enforcement mechanisms to ensure that corporates comply with disclosure requirements. This may include regular audits, increased penalties for non-compliance, and greater transparency around regulatory actions (Abdelghany, 2015).

- To improve disclosure practices, regulators should also consider measures to strengthen the overall information environment and reduce information asymmetry in the Egyptian Exchange. Some potential actions include:

(a) Fostering the development of the analyst community: Regulators can incentivize financial analysts to provide more coverage and research on listed corporates, particularly smaller and less-followed corporates. This can help to improve the information environment and reduce information asymmetry (Jin et al., 2019; Du et al., 2022).

(b) Encouraging institutional investor participation: Regulators should implement policies and regulations that promote the participation of institutional investors, such as pension funds and mutual funds, in the Egyptian Exchange. Institutional investors often have greater resources and expertise to monitor and analyze corporate-level information, which can help to mitigate information asymmetry (Jin et al., 2019; Du et al., 2022).

(c) Enhancing the quality and accessibility of market data: Regulators should ensure that investors have easy access to high-quality, up-to-date, and reliable market data, including real-time stock prices, trading volumes, and other relevant information. This can help to level the playing field and reduce information disparities among market participants (Abdelghany, 2015).

According to the above, regulatory authorities in Egypt can work to address the information asymmetry issues that amplify the impact of economic policy uncertainty on stock price crash risk. Improving corporate transparency, strengthening the information environment, and fostering a more efficient and well-informed capital market can ultimately contribute to the stability and resilience of the Egyptian Exchange

### **Recommendations for Corporate**

Corporate leaders can focus on reducing information asymmetry to lower crash risk. Transparent financial reporting and more frequent disclosure of critical information can help managers build investor trust and reduce the likelihood of sudden stock price crashes caused by withheld negative news. Proactive measures like improved risk management strategies and forward-looking



disclosures would help navigate periods of high economic uncertainty more effectively.

- Enhancement of disclosure practices and transparency measures. Studies have shown that higher-quality information disclosure can effectively offset the negative impact of EPU on stock liquidity and reduce information asymmetry (Wang et al., 2022). By voluntarily providing more comprehensive and timely disclosure of financial and operational information, corporations can help to narrow the information gap between corporate insiders and outside investors, diminishing managers' ability to hoard bad news (Luo & Zhang, 2020; Moradi et al., 2021). Specific measures that corporate leaders could consider include:

(a) Proactive disclosure of material events and risks: Corporates should promptly disclose any significant developments or risks that may affect their financial performance and stock prices rather than allowing for the selective disclosure or delay of negative information (Luo & Zhang, 2020; Moradi et al., 2021). This can help to build trust and credibility with investors.

(b) Improving the quality and reliability of financial reporting: Corporations should strive to enhance their corporate financial statements' accuracy, transparency, and timeliness. This may involve adopting International Financial Reporting Standards (IFRS), engaging independent and reputable auditors, and implementing robust internal controls to ensure the integrity of financial information (Abdelghany, 2015; Moradi et al., 2021).

(c) Providing more forward-looking disclosures: Corporates should consider disclosing more forward-looking information, such as management discussions, earnings forecasts, and strategic plans, to help investors better assess the corporate's future prospects and risks (Wang et al., 2022). This can reduce information asymmetry and enable investors to make more informed decisions.

(d) Enhancing communication with investors: Corporate leaders should actively engage with investors, analysts, and other market participants through various channels, such as earnings calls, investor presentations, and one-on-one meetings. This can help to improve the flow of information, address concerns, and build trust with the investment community (Wang et al., 2022).

-Strengthens the internal information environment and reduces information asymmetry within the organization. Some potential actions include:

(a) Investing in information technology and data analytics: Corporations should leverage advanced information technology and data analytics capabilities to enhance their ability to collect, process, and disseminate information more efficiently. This can help to improve the timeliness and accuracy of information, reducing the potential for information asymmetry (Abdelghany, 2015).

(b) Fostering a culture of transparency and open communication: Corporate leaders should promote a corporate culture that values transparency, accountability, and open communication. This can involve initiatives such as

regular town hall meetings, employee training on ethical reporting, and clear whistleblower policies (Abdelghany, 2015).

(c) **Aligning executive compensation with long-term performance:** Corporations should consider linking executive compensation more closely to long-term financial and operational performance rather than short-term metrics. This can help to incentivize managers to make decisions that prioritize the long-term sustainability of the business and reduce the temptation to engage in opportunistic behavior, such as hoarding bad news (Luo & Zhang, 2020)

According to the above, corporate leaders in Egypt can work to address the information asymmetry issues that amplify the impact of economic policy uncertainty on stock price crash risk. Improving corporate transparency, strengthening the internal information environment, and fostering a more efficient and well-informed organization can ultimately contribute to the long-term stability and resilience of the corporation and the broader Egyptian Exchange.

**- Recommendations for Future Studies:**

Several avenues for future research could further enhance our understanding of the impact of economic policy uncertainty on stock price crash risk under information asymmetry as a moderating variable in emerging markets, including:

- **Investigation in non-linear economic policy uncertainty (EPU) -Stock Price Crash Risk:** One key area for future investigation is the potential non-linear or time-varying nature of the economic policy uncertainty (EPU) -Stock Price Crash Risk relationship. While the majority of studies have found a positive association between EPU and crash risk (Jin et al., 2019; Luo & Zhang, 2020; Moradi et al., 2021; Du et al., 2022), some researchers have reported a negative relationship, suggesting that increased policy uncertainty may encourage the incorporation of pessimistic investor sentiments into stock prices, thereby reducing the likelihood of sudden price crashes (Xi, 2018; Mou et al., 2021). Exploring the potential for non-linearity and time-varying effects could provide a more nuanced understanding of how EPU influences crash risk dynamics in emerging markets.

- **Investigate deeper into the channels and mechanisms through which EPU affects crash risk in the financial markets.** While the current study has highlighted the role of information asymmetry as a key moderating factor, other corporate-level and market-level characteristics may shape the EPU-crash risk relationship. For instance, researchers could investigate the impact of ownership structure, corporate governance practices, and regulatory environment on the linkage between EPU and stock price crash risk in the emerging Exchange.

- Investigation of the potential spillover effects of EPU from other countries, particularly major economies, on the stock price crash risk in the emerging Exchange. The existing literature has shown that international EPU can have significant spillover effects on stock market volatility and crash risk in various contexts (Zejiang et al., 2021), (He et al., 2020), (Han et al., 2023). Examining the cross-border transmission of EPU and its impact on emerging markets, such as the Egyptian exchange, would provide a more comprehensive understanding of the global factors influencing stock price crash risk in this market.

- Investigating the role of investor sentiment and behavioral biases in the EPU-crash risk relationship. The existing literature has primarily focused on information asymmetry and agency theory-based explanations, but the impact of EPU on investor psychology and decision-making could also be a significant factor (Luo & Zhang, 2020; Saleem & Usman, 2021). Exploring how EPU influences investor sentiment, risk perception, and herd behavior and how these behavioral factors interact with information asymmetry to affect crash risk could offer valuable insights.

- Investigation of the potential policy interventions and regulatory measures that could effectively mitigate the adverse effects of EPU on stock price crash risk in the emerging market such as the Egyptian exchange.

By addressing these research gaps, future studies can contribute to a deeper understanding of the complex interplay between economic policy uncertainty, information asymmetry, and stock price crash risk in the Egyptian Exchange, ultimately providing valuable insights for policymakers, corporate leaders, and market participants in navigating the challenges of this dynamic and evolving financial landscape.

#### **List of abbreviations**

|        |                                   |
|--------|-----------------------------------|
| EPU    | Economic Policy Uncertainty       |
| EGX    | Egyptian exchange                 |
| BAS    | Bid-Ask Spread                    |
| WUIEGY | World Uncertainty Index for Egypt |
| SPCR   | Stock Price Crash Risk            |

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