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BÁO CÁO TỔNG KẾT
ĐỀ TÀI NGHIÊN CỨU KHOA HỌC SINH VIÊN
NĂM 2024

CAUSALITY BETWEEN ECONOMIC POLICY UNCERTAINTY, ECONOMIC GROWTH AND STOCK LIQUIDITY: EVIDENCE FROM ASEAN MARKETS

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Đại diện nhóm nghiên cứu   **Giảng viên hướng dẫn**   **Chủ tịch Hội đồng**

(Ký, họ tên)   *(Ký, họ tên)*   *(Ký, họ tên)*

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TABLE OF CONTENTS

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DECLARATION

The authors hereby declare that the research thesis with the topic "Political affiliate cluster machine learning" is our research work under the scientific guidance of MBA Phan Huy Tam. The data and research results in the thesis are completely honest and have clear origins. References and citations as well as data collected and processed are clearly documented. The authors take full responsibility for the legality of the scientific research of this thesis.

ABSTRACT

This research investigates the causal relationships among economic policy uncertainty, economic growth, and stock market liquidity in ASEAN markets, focusing on the extent and directionality of these relationships. Utilizing Granger causality tests on data from six ASEAN countries, the study assesses the impact of economic policy uncertainty on economic growth and both on stock market liquidity using price-range and volume-based measures. The findings reveal no significant causal effect of economic policy uncertainty on economic growth or stock market liquidity but identify significant causal effects of economic growth on stock market liquidity for price-range measures and of stock market liquidity on economic policy uncertainty. This underscores the complex interplay within emerging markets and suggests resilience against policy uncertainty. Recommendations emphasize the need for investors and policymakers to consider broader economic indicators and market-specific liquidity measures when evaluating the impact of economic policy uncertainty, advocating for diversified strategies and policies aimed at stabilizing economic growth to indirectly enhance market liquidity.

Keywords: Economic Policy Uncertainty, Stock Market Liquidity, ASEAN Markets

JEL codes: G14, E44, F65

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

No.	Abbreviations	Full name in English
1	EPU	Economic Policy Uncertainty
2	GDP	Gross domestic product
3	VAR	Vector autoregression
4	ADF	Augmented Dickey-Fuller
5	ASEAN	The Association of Southeast Asian Nations
6	WUI	World Uncertainty Index

1. Introduction

The relationship between economic policy uncertainty, economic growth, and stock liquidity is a critical area of research that has garnered significant attention in recent years. The intricate dynamics among these variables are pivotal in understanding how policy-induced uncertainties influence the broader economic landscape and financial markets. Economic Policy Uncertainty refers to the unpredictability regarding the economic policy framework that can affect investment decisions, consumer spending, and overall economic performance. Economic growth, a key indicator of the health of an economy, is influenced by a myriad of factors, including policy stability. Stock liquidity, the ease with which stocks can be bought or sold in the market without affecting their price, is another essential factor that reflects the confidence and the health of financial markets. These three variables are interlinked, as economic policy uncertainty can deter economic growth through reduced investment and consumption, while also impacting the liquidity of stocks due to increased market volatility and investor uncertainty.

Existing literature has explored various facets of the relationship between economic policy uncertainty, economic growth, and stock liquidity. For instance, Baker et al. (2016) introduced an index of economic policy uncertainty based on newspaper coverage frequency, tax code provisions, and disagreement among economic forecasters, which has been widely used to measure economic policy uncertainty. Their findings suggest that increased policy uncertainty is associated with lower investment, lower output, and higher unemployment. Further, studies like Brogaard and Detzel (2015) have examined the impact of economic policy uncertainty on stock market liquidity, revealing that higher uncertainty leads to lower market depth and higher spreads, indicating reduced liquidity.

Building upon the foundational work of Baker et al. (2016), the academic discourse on economic policy uncertainty, economic growth, and stock liquidity has expanded, encompassing a variety of empirical methodologies and global contexts. For example, the work of Colombo (2013) delves into the European market, revealing that economic policy uncertainty significantly impacts economic growth rates across several European countries,

with pronounced effects in economies with higher levels of debt. This study underscores the nuanced relationship between policy uncertainty and economic performance, suggesting that the impact of economic policy uncertainty may be contingent upon a country's fiscal health and economic structure.

In addition to the macroeconomic perspective, the microeconomic implications of economic policy uncertainty have also been a focus of recent research. Man and Toan (2023) explore the link between economic policy uncertainty and stock liquidity in the context of the ASEAN stock markets. Their findings indicate that economic policy uncertainty negatively affects stock liquidity, particularly in emerging markets where the financial system may be more vulnerable to policy shocks. This research highlights the importance of considering market maturity and systemic resilience when assessing the impacts of policy uncertainty on market dynamics.

Furthering the investigation into the financial market's response to economic policy uncertainty, Kang et al. (2020) provide an analysis of how economic policy uncertainty influences commodity markets, including oil and gold. Their study illustrates that increases in economic policy uncertainty leads to higher trading volumes and volatility in these markets, reflecting investors' flight to safety during times of heightened uncertainty. This body of work suggests that economic policy uncertainty not only affects traditional stock markets but also has far-reaching implications for commodity markets, which play a critical role in global economic stability.

Moreover, the interplay between economic policy uncertainty, economic growth, and stock liquidity has been explored through the lens of investor behavior. Antonakakis et al. (2013) examine how economic policy uncertainty influences the correlation between stock and bond markets, finding that periods of high uncertainty led to a flight-to-quality movement among investors. This behavior, in turn, affects the liquidity and volatility of these markets, further complicating the relationship between policy uncertainty and market dynamics. These studies collectively enrich our understanding of the multifaceted impacts of economic policy uncertainty, suggesting that its effects permeate various levels of economic activity and financial market behavior.

This research is grounded in three main rationales. First, the macroeconomic expectations hypothesis posits that stock markets are forward-looking, suggesting that liquidity measures should reflect economic information (Switzer & Picard, 2016). In the context of ASEAN, where economic policy changes can be rapid and impactful, understanding how these uncertainties influence trading behaviors and consequently, market liquidity, is crucial (Phan et al., 2021). Second, the debate over the predictive power of stock market liquidity for economic growth is particularly relevant for an emerging market ((Næs et al., 2011). Finally, the liquidity shock hypothesis, which suggests that liquidity influences macroeconomic policy through investment channels, is especially pertinent in emerging market, where the stock market's liquidity can significantly impact economic growth and stability (Erdogan et al., 2015; Levine, 1991).

Despite its importance, the existing literature on the link between economic policy uncertainty and aggregate stock market liquidity is limited. This study aims to bridge this gap by examining the time series relationship between the economic policy uncertainty index, economic growth, and the aggregate stock market liquidity in ASEAN markets. The key questions we address are whether there is causality and co-movement between economic policy uncertainty, economic growth, and aggregate stock market liquidity, and if so, which leads the other and under what conditions.

The significance of this research lies in its potential to provide insights into how economic policy uncertainty can serve as a precursor to changes in economic growth patterns and fluctuations in stock market liquidity. By understanding these relationships, policymakers can devise strategies to mitigate the adverse effects of uncertainty on the economy and financial markets. Additionally, investors and market participants can better navigate the investment landscape by considering the implications of economic policy uncertainty on market conditions.

The objective of this research is to empirically analyze the causality and the extent of the relationship between Economic Policy Uncertainty, economic growth, and stock liquidity. This study aims to contribute to the existing body of literature by providing a comprehensive analysis that incorporates recent data and employs advanced econometric

techniques to unravel the complex dynamics among these variables. Through this research, we seek to offer valuable insights that could guide policy formulation, investment decision-making, and economic forecasting.

The structure of this study is as follows: (i) Section 1 introduce the research topic & rationales, (ii) Section 2 presents the literature review, (iii) Section 3 describes the methodology, (iv) Section 4 discusses the empirical results, and (v) Section 5 concludes the paper.

2. Literature review

2.1 Background theories

In exploring the multifaceted impact of economic policy uncertainty on stock market liquidity, it is imperative to consider various theoretical perspectives that collectively provide a nuanced understanding of market dynamics. The Efficient Market Hypothesis, Information Asymmetry Theory, Behavioral Finance Theory, Liquidity Preference Theory, and updated insights from Agency Theory each offer unique lenses through which the complexities of financial markets can be examined. While these theories originate from distinct academic traditions and address different aspects of market behavior, their integration is particularly insightful in understanding how economic policy uncertainty affects stock market liquidity, especially in emerging markets like ASEAN. This section delves into how these theories intersect and illuminate the diverse ways in which economic policy uncertainty can influence stock market behavior, ranging from information processing and investor psychology to corporate governance and liquidity preferences. The synthesis of these theories not only enriches our understanding of market dynamics under uncertainty but also provides a comprehensive framework for examining the specific challenges and opportunities in emerging markets.

The Efficient Market Hypothesis and Information Asymmetry Theory offer contrasting yet complementary views on market behavior under economic policy uncertainty. While Efficient Market Hypothesis, as developed by Fama (1970), suggests that stock prices in efficient markets quickly reflect all available information, the presence

of economic policy uncertainty complicates this efficiency. Studies like those by Antonakakis et al. (2013) and He et al. (2020) demonstrate that such uncertainty can lead to increased volatility and reduced liquidity, as it hampers the immediate assimilation of information into stock prices. In contrast, the Information Asymmetry Theory, articulated by Akerlof (1978) and further developed by Grossman and Stiglitz (1980) posits that uneven information distribution among market participants leads to inefficiencies. Under conditions of economic policy uncertainty, this asymmetry is exacerbated, as some investors may have access to better or more timely information than others, leading to decisions that may not reflect the true value of stocks and thereby affecting market liquidity.

Behavioral Finance Theory and Liquidity Preference Theory delve into the psychological and behavioral aspects of investors under economic uncertainty. Behavioral Finance, as outlined by Shiller (2003), focuses on how investors' psychological reactions to uncertainty, such as herding behavior and overreaction, influence market dynamics. Studies by Baker and Wurgler (2007) and Hirshleifer (2015) illustrate how these biases can lead to market inefficiencies. Similarly, Liquidity Preference Theory highlights that in uncertain times, investors prioritize liquidity, shifting towards assets that can be easily converted into cash (Keynes, 1937). This shift, as Brunnermeier and Pedersen (2009) noted, affects market liquidity by decreasing the trading volume in less liquid assets.

Recent advancements in Agency Theory, particularly regarding board dynamics and their influence on a firm's information environment as explored in studies by (Prommin et al., 2014), Ali et al. (2017), Mbanyele (2020), and Biswas (2020), intersect with the concepts of information asymmetry and behavioral finance. Effective board governance can mitigate information asymmetry, enhancing market liquidity.

In emerging markets like ASEAN, these theories collectively provide a nuanced framework for understanding the multifaceted impact of economic policy uncertainty on stock market liquidity. The interplay between market efficiency, information distribution, investor psychology, and corporate governance becomes particularly crucial in these markets. Understanding how these diverse yet interrelated factors influence market behavior under uncertainty can offer insights into the unique dynamics of emerging

economies and guide effective policy and corporate governance strategies to enhance market stability and investor confidence.

2.2 Empirical studies & hypotheses development

Economic policy uncertainty and stock liquidity:

Economic policy uncertainty exerts a significant influence on stock market liquidity through various channels. According to real options theory, high levels of uncertainty prompt managers to postpone or reduce irreversible investments, as posited by Gulen and Ion (2016). Furthermore, the reaction of stock markets, in terms of returns and volatility to economic policy changes, as investigated by (Li et al., 2016), underlines the sensitivity of financial markets to policy shifts (Li et al., 2020). This sensitivity is a key factor in emerging economies, where markets are more susceptible to fluctuations in policy and investor sentiment.

In such environments, managers might be inclined to withhold investment information from the market to prevent adverse reactions in stock prices (Dash et al., 2021). This tendency exacerbates information asymmetry, as firms become more inclined to conceal or delay revealing crucial information. Consequently, the delay in disseminating information from insiders to potential investors fosters uninformed trading, and in periods of heightened uncertainty, trading activity might diminish. The resulting information asymmetry in the capital market complicates the evaluation of a firm's quality by potential investors, leading to reduced trading volumes and lower offered prices for stocks (Debata & Mahakud, 2018). This reluctance to engage with companies that have poor information disclosure practices ultimately contributes to illiquid stocks.

Economic policy uncertainty often results in lower transparency from firms, negatively impacting investor sentiment, as evidenced in studies by Pastor and Veronesi (2012). This decline in confidence can lead to increased cost of capital, making it more challenging for businesses to secure funding. These factors cumulatively contribute to reduced liquidity in the stock market, as investors become more cautious and risk-averse. The direct and indirect effects of these factors on market liquidity are critical, especially in

less stable economic environments common in emerging markets. Besides, the global financial crisis of 2008–2009, examined by Acharya et al. (2013), provides a stark example of how economic downturns, fueled by policy uncertainty, can dry up market liquidity. This historical context sets the stage for the expected outcomes of the current study, which aims to explore how economic policy uncertainty impedes stock market liquidity through various channels, including information dissemination and investor behavior.

Further, the presence of heightened systemic risk during periods of significant uncertainty leads to cautious investment behavior, as risk-averse investors reduce their activity in the stock market. As Copeland and Galai (1983) note, in times of elevated uncertainty, investors become more selective, and risky stocks tend to become less liquid. The challenge in accurately predicting stock performance under uncertain conditions dampens the enthusiasm of investors to acquire and trade stocks rapidly, thus contributing to stock illiquidity, as discussed by Debata and Mahakud (2018). Additionally, the increased costs of capital acquisition during these periods, due to a heightened risk premium (Biswas, 2020), exacerbate the situation. The widening of bid-ask spreads in securities is a reaction to compensate for the elevated liquidity risk born from negative investor sentiment under uncertain governmental policy conditions.

Macroeconomic variables such as exchange rates, economic growth, money supply, interest rates, and inflation are intricately linked to stock market performance. Government policies significantly influence these variables, with any shocks in economic policy having substantial effects on stock market activities. As (Pastor & Veronesi, 2012) highlight, stock prices are particularly sensitive to changes in the operational environment driven by government policies. Uncertainty surrounding these policies can trigger negative investor sentiment and a more cautious approach to trading securities, leading to reduced trading activity and depressed stock prices. Wang et al. (2022) further elucidates this in the context of emerging markets, noting that weak legal institutions and unstable political systems contribute to higher illiquidity costs.

Paule-Vianez et al. (2020) provide an in-depth analysis of how economic policy uncertainty affects stock market returns and volatility. Their study reveals that economic

policy uncertainty impact varies across different phases of the economic cycle, influencing stock returns and market volatility more significantly during recessions compared to periods of economic expansion. This finding suggests that the stock market's reaction to policy uncertainty is contingent on the broader economic context, highlighting the complexity of market behaviors under varying economic conditions. Complementing these insights, Wang et al. (2019) explore the relationship between economic policy uncertainty and Credit Default Swap (CDS) spreads. They find that higher levels of economic policy uncertainty are associated with wider CDS spreads, indicating that market participants perceive greater credit risk during times of policy uncertainty. This increase in perceived risk, as reflected in CDS spreads, underscores the broader impact of economic policy uncertainty on credit markets and investor sentiment.

While these studies offer substantial insights into the effects of economic policy uncertainty on different segments of the financial market, their focus predominantly on developed economies or specific market segments may limit the generalizability of their findings. The extent to which these insights apply to emerging markets or other financial sectors remains an area for further exploration. Moreover, the varying methodologies and contexts of these studies underscore the need for a comprehensive approach that considers different economic environments and market structures (Berger et al., 2022; Paule-Vianez et al., 2020; Wei et al., 2022).

Considering the theoretical underpinnings and empirical evidence, particularly in the realm of emerging markets characterized by dynamic institutional environments, this study puts forward the following refined hypothesis to explicitly address the causal relationship:

Hypothesis 1a: There is a causal relationship between economic policy uncertainty and stock market liquidity in ASEAN markets.

Hypothesis 1b: There is no causal relationship between economic policy uncertainty and stock market liquidity in ASEAN markets.

This revised hypothesis emphasizes the directional causal effect of economic policy uncertainty on stock market liquidity, focusing on the context of emerging markets where

the interplay between policy dynamics and market responses may be more pronounced due to evolving institutional frameworks.

Economic policy uncertainty and economic growth:

The exploration of economic policy uncertainty and its impact on economic growth has evolved, with recent studies employing diverse methodologies and data across different geographical contexts, further enriching our understanding of this complex relationship. The consensus remains that heightened economic policy uncertainty undermines economic growth by adversely affecting investment and consumption. However, recent research has offered new insights and nuances into this dynamic, highlighting the role of economic policy uncertainty in emerging markets and its specific effects on various economic activities.

A group of studies focusing on emerging markets has shed light on the nuanced effects of economic policy uncertainty on economic growth. For instance, Balcilar et al. (2022) utilized a mixed-frequency Granger causality approach to reveal that economic policy uncertainty significantly impacts GDP growth rates in emerging economies like Brazil, Chile, and India. Their methodological innovation, employing mixed-frequency data to account for the differing sampling frequencies of economic indicators, uncovers the subtleties of economic policy uncertainty's impact, distinguishing their findings from traditional low-frequency analyses. This approach helps to circumvent the distorting effects of temporal aggregation, providing a clearer picture of the causal relationship between economic policy uncertainty and economic growth. Similarly, Sahinoz and Erdogan Cosar (2018) constructed an economic policy uncertainty index for Turkey, finding that periods of heightened policy uncertainty, marked by elections and financial crises, correlate with declines in economic growth, investment, and consumption. Their study emphasizes the tangible adverse effects of economic policy uncertainty within a specific emerging market context, contributing to the broader narrative of economic policy uncertainty's negative implications for economic activity.

On the methodological front, these studies collectively highlight the importance of employing varied empirical techniques, such as Granger causality tests, VAR models, and the novel mixed-frequency data approach, to capture the multifaceted impact of economic policy uncertainty on economic growth. However, they also underscore the inherent limitations associated with these methods, including the challenge of accurately capturing the complex, dynamic nature of policy uncertainty and its transmission mechanisms across different economies (Chen et al., 2019; Gholipour, 2019). The reliance on economic policy uncertainty indices based on newspaper coverage or other proxies might not fully encapsulate the nuanced realities of policy uncertainty in various countries, pointing to a potential area for further methodological refinement (Khan et al., 2022; Ng et al., 2023).

Moreover, comparative analyses, like those conducted by Choi and Shim (2019), differentiate the effects of financial versus policy uncertainty in emerging markets, revealing that financial uncertainty often exerts a more significant impact on economic activity than policy uncertainty, except in unique regulatory environments like China. This comparison sheds light on the relative importance of different types of uncertainty in shaping economic outcomes, suggesting that the context-specific nature of these uncertainties can significantly modulate their effects on economic growth (Aslan & Acikgoz, 2023).

Furthermore, the studies highlight the complexity of capturing the multidimensional nature of economic policy uncertainty and its differential effects across countries and economic sectors. Limitations such as the availability of high-quality, high-frequency data and the challenge of disentangling the direct effects of economic policy uncertainty from other concurrent economic shocks are recurrent themes. The diverse methodologies and scopes of these studies, while enriching the literature, also call for caution in directly comparing results across different contexts and models (Huang et al., 2023; Xue et al., 2022; Yu et al., 2021).

Overall, the updated literature review reaffirms the detrimental impact of economic policy uncertainty on economic growth, while also revealing the methodological diversity and complexity of measuring and interpreting this relationship. The findings from recent

studies not only corroborate earlier research but also extend our understanding by highlighting the variability of economic policy uncertainty effects across different economic environments and through the lens of advanced econometric techniques.

Based on the literature review and the findings from recent empirical studies on the relationship between economic policy uncertainty and economic growth, the following hypothesis can be formulated to examine the causal effect of economic policy uncertainty on economic growth:

Hypothesis 2a: There is a causal relationship between economic policy uncertainty and economic growth in ASEAN markets.

Hypothesis 2b: There is no causal relationship between economic policy uncertainty and economic growth in ASEAN markets.

This hypothesis is grounded in the theoretical framework that suggests economic policy uncertainty can deter investment and consumption, two critical drivers of economic growth, by creating an environment of risk and unpredictability. The empirical evidence, as discussed in the literature, supports the notion that heightened economic policy uncertainty, manifested through various indicators such as policy uncertainty indices, election periods, and financial crises, correlates with and potentially causes a reduction in economic activity, as reflected in lower GDP growth rates, reduced investment, and diminished consumption levels, particularly in emerging markets. The hypothesis aims to be tested through appropriate empirical methodologies that can capture the dynamic interactions between economic policy uncertainty and economic growth, considering potential lag effects and the multifaceted nature of economic policy uncertainty.

Economic growth and stock liquidity:

The interplay between economic growth and stock market liquidity has been a focal point of academic research, revealing intricate dynamics that underscore the symbiotic relationship between these two facets of the economic landscape. Scholars have delved into this relationship across various contexts, employing a range of empirical methodologies that shed light on the nuances of this interaction.

Research efforts, such as those by Bekaert et al. (2001) and Rousseau and Wachtel (2011), have predominantly utilized vector autoregression (VAR) models within developed markets to uncover the bidirectional nature of the relationship between economic growth and stock market liquidity. These studies collectively suggest that not only does economic growth enhance stock market liquidity through increased investor participation and confidence, but improved liquidity conditions can also contribute to economic expansion by facilitating more efficient capital allocation. The findings from these analyses are echoed in comparative studies like those conducted by Kim (2013) and Chu and Chu (2020), which extend the investigation to a cross-country analysis, revealing that the strength of this relationship is significantly modulated by market maturity. Specifically, in mature markets, the economic growth-stock liquidity nexus is stronger and more consistent, highlighting the pivotal role of developed financial systems in fostering this dynamic.

Emerging markets, however, present a contrasting picture, as evidenced by the work of Jun et al. (2003), who employed a mixed-methods approach to explore the relationship. Their findings underscore that while economic growth is a precursor to enhanced stock market liquidity, the reverse causality—whereby stock liquidity predicts economic growth—is not as prevalent in these markets. This divergence is attributed to the unique economic and regulatory landscapes of emerging markets, where external factors such as political stability and regulatory frameworks exert a more pronounced influence on the economic growth-liquidity relationship.

Methodologically, the use of Granger causality tests, as seen in the studies focusing on emerging markets, provides a robust framework for establishing directionality in the relationship between economic growth and stock market liquidity. However, this approach, alongside VAR models, faces limitations in capturing the full spectrum of factors that influence this dynamic, including political events and global economic shocks. Moreover, the variability in liquidity measures and economic indicators across studies poses challenges for comparability and generalizability of findings, highlighting a need for standardization in future research endeavors.

Based on the synthesis of empirical findings and theoretical discussions within the academic literature on the relationship between economic growth and stock market liquidity, the following hypothesis can be proposed to examine the causal effect of economic growth on stock market liquidity:

Hypothesis 3a*: There is a causal relationship between economic growth and stock market liquidity in ASEAN markets.*

Hypothesis 3b*: There is no causal relationship between economic policy uncertainty and stock market liquidity in ASEAN markets.*

This hypothesis is grounded on the premise that economic expansion leads to increased corporate earnings, higher consumer confidence, and greater investment opportunities, all of which can enhance trading volumes and reduce transaction costs in the stock market, thereby improving liquidity. The empirical evidence, as discussed in the literature review, consistently points towards a positive relationship between these two variables, suggesting that as economies grow, they tend to support more liquid and efficient stock markets. This hypothesis aims to be tested through appropriate empirical methodologies that can accurately capture the dynamics between economic growth and stock market liquidity, taking into consideration potential lag effects and the multifaceted nature of economic expansions.

3. Methodology

3.1 Data

The dataset underpinning this research encompasses a total of 480 observations, meticulously compiled to analyze the interplay between economic policy uncertainty, stock market liquidity, and economic growth across six ASEAN countries: Vietnam, Thailand, Malaysia, Indonesia, the Philippines, and Singapore. This selection of countries provides a diverse and representative sample of the Southeast Asian economic landscape, allowing for a comprehensive examination of regional trends and dynamics within the specified research framework. For the assessment of economic policy uncertainty, the dataset incorporates

indices from www.policyuncertainty.com, aligned with studies of Baker et al. (2016) or Dash et al. (2021), tailored to each of the six countries. These indices offer a quantifiable measure of policy-related economic uncertainty, crucial for understanding its impact on regional economic growth and stock market behavior.

Stock market data, including historical prices and trading volumes, are central to analyzing market liquidity within these economies. The specifics of the stock market indices used for each country, vital for capturing the nuances of market dynamics, are systematically outlined in **Table 1**. This table provides detailed descriptions of the market indices selected for Vietnam, Thailand, Malaysia, Indonesia, the Philippines, and Singapore, ensuring clarity and precision in the dataset's scope and facilitating a nuanced understanding of stock market liquidity across different economic contexts.

Table 1: Stock market indexes for countries in the dataset

Country	Stock market index
Vietnam	VN-Index
Thailand	SET Index
Malaysia	KLSE Index
Indonesia	JKSE Index
Singapore	STI
Philippines	PSI

Source: by author

GDP data, sourced from Our World in Data, offers a robust framework for evaluating economic growth trends over the two-decade period from 2004 to 2023. Collected on a quarterly basis, this data provides a granular view of economic expansion and contraction cycles, enriching the analysis with temporal depth and economic insight. Spanning twenty years and segmented into quarterly intervals, the dataset's temporal scope allows for an in-depth exploration of long-term trends, cyclical patterns, and the interrelations among economic policy uncertainty, stock market liquidity, and economic growth. With 480 observations across the six ASEAN countries, the research is poised to deliver

comprehensive insights into the regional economic dynamics, underpinned by a rich and meticulously curated dataset.

3.2 Variable measurement

Economic policy uncertainty

In this study, the measurement of economic policy uncertainty is a critical component, and the data for this analysis is sourced from the World Uncertainty Index (WUI) database, accessible at worlduncertaintyindex.com. The utilization of this database is in line with contemporary practices in economic research, where the quantification of uncertainty has become increasingly pivotal in understanding market dynamics (Ahir et al., 2022).

The study utilizes a single proxy to measure economic policy uncertainty: the yearly World Uncertainty Index. This index is a comprehensive metric derived by quantifying the frequency of the word 'uncertainty' (or its variants) in the Economist Intelligence Unit country reports. It is normalized by the total number of words in each report and rescaled by multiplying the resulting value by 1,000. The premise of this method is that an increased frequency of 'uncertainty' mentions in official reports signals a higher level of economic policy uncertainty. Through normalization and rescaling, the index provides a standardized and comparable measure of uncertainty across different reports and time periods. This approach is chosen for its ability to offer a broad overview of economic policy uncertainty, reflecting its impact on the dynamics of the ASEAN stock markets. By focusing on the World Uncertainty Index as the sole proxy, the study aims to deliver a streamlined and focused analysis of how economic policy uncertainty influences market conditions, particularly relevant in the context of ASEAN market.

Economic growth

Measuring economic growth through Gross Domestic Product (GDP) growth is a widely accepted and practiced method in economic research and policy analysis. GDP, which represents the total dollar value of all goods and services produced over a specific period within a nation's borders, is a comprehensive indicator of economic activity and health. The use of GDP growth as a measure of economic growth is rooted in its ability to

encapsulate the output of an economy, providing a clear and quantifiable measure of changes in economic performance over time.

Kuznets (1946), in his pioneering work, laid the foundation for GDP as a critical economic indicator, arguing that GDP measures the aggregate economic performance of a country, making it an essential tool for comparing economic productivity and living standards over time and across borders. The rationale behind using GDP growth as a measure of economic growth is further supported by its comprehensive coverage of all economic activities, including consumption, investment, government spending, and net exports. This holistic approach allows policymakers and researchers to gauge the health of an economy in a single measure, facilitating the comparison of economic performance across different periods and geographical regions.

Moreover, the use of GDP growth as a proxy for economic growth is validated by its correlation with various socio-economic indicators. Barro (1991) and Mankiw et al. (1992) demonstrated that GDP growth is closely associated with improvements in living standards, including higher income levels, better education outcomes, and improved health status. These studies underscore the relevance of GDP growth not just as a measure of economic activity but also as an indicator of societal progress.

However, it is important to acknowledge the limitations of GDP growth as a measure of economic growth. Critics, such as Stiglitz et al. (2009), have pointed out that GDP does not account for environmental degradation, income inequality, and non-market activities, suggesting that sole reliance on GDP growth may overlook important aspects of human well-being and sustainable development. Despite these limitations, GDP growth remains a vital and widely used indicator of economic growth, providing a quantifiable measure that is crucial for economic analysis and policymaking.

In conclusion, measuring economic growth through GDP growth remains a cornerstone methodology within the field of economics. Its widespread acceptance stems from the comprehensive coverage that GDP offers regarding economic activities, coupled with its capability to provide a quantifiable benchmark of economic performance. Despite

the acknowledgment of its limitations, both the academic and policy-making communities persist in their reliance on GDP growth as a pivotal indicator of economic progress. This reliance is fortified by its empirically demonstrated correlation with a variety of socio-economic outcomes. In the context of this research, we specifically adopt GDP growth as a proxy to measure economic growth. This decision is informed by the methodology's established credibility and the broad consensus regarding its utility in capturing the essence of economic expansion within a measurable and comparative framework.

Stock liquidity

This research applies two distinct yet complementary methods: the Price Range-Based Measure and Volume-Based Measures for the assessment of stock liquidity. These methodologies are chosen for their applicability and relevance to the available data and the specific context of the ASEAN stock markets.

First, the Price Range-Based Measure leverages the high and low prices of stocks to estimate their volatility, thereby providing an indirect indication of liquidity. This method, based on the daily or weekly price range (difference between high and low prices), is particularly suitable for datasets where detailed bid-ask spreads are not available. A wider price range is generally indicative of greater stock volatility and, consequently, lower liquidity. This relationship stems from the principle that significant price movements often reflect the impact of trades on less liquid stocks. The measure is calculated by normalizing the absolute price range by the closing price of the stock, following the formula:

Price Range-Based Measure = (High Price – Low Price) / Closing Price

This approach aligns with the methodology outlined in market microstructure literature, offering a practical means of assessing liquidity in the absence of more direct data (e.g., Kyle, 1985; Hasbrouck, 2009).

In addition to the Price Range-Based Measure, the study also adopts Volume-Based Measures to assess stock liquidity. This method utilizes trading volume, which is the total number of shares or contracts traded over a given period. A higher trading volume typically suggests greater stock liquidity, as it indicates a more active market where securities can be

bought and sold with relative ease. The turnover ratio, which is the ratio of trading volume to the number of outstanding shares, further refines this assessment by contextualizing trading activity relative to the size of the stock. Volume-Based Measures are widely recognized in financial literature for their direct and intuitive reflection of market liquidity (Amihud and Mendelson, 1986; Chordia, Roll, and Subrahmanyam, 2001).

The rationale for employing these methods lies in their effectiveness in capturing different dimensions of liquidity and their adaptability to the available data. While the Price Range-Based Measure provides insights into liquidity based on stock price movements, Volume-Based Measures offer a more direct assessment through trading activity. This dual approach allows for a more nuanced and comprehensive analysis of liquidity in the ASEAN stock market, accommodating the limitations and strengths of the available dataset. Moreover, the combination of these methods aligns with the study's objective to provide a holistic understanding of market dynamics in an emerging market context, as advocated in the literature (Brockman and Chung, 2002; Goyenko, Holden, and Trzcinka, 2009).

3.3 Methodological approach

In this study, the methodological approach to quantify the causal effects between variables is anchored in the application of Granger causality testing. This econometric technique is instrumental in determining whether one time series is predictive of another, providing a statistical basis to test for causality between pairs of variables within the research's causality model. The use of Granger causality is aligned with studies of Chen et al. (2019), Gholipour (2019), Dash et al. (2021), Balcilar et al. (2022)…

Figure 1 outlines a causality model that illustrates the hypothesized relationships between Economic Policy Uncertainty, Economic Growth, and Stock Market Liquidity. The directional arrows in the diagram indicate the presumed causal effects among these three key economic variables.
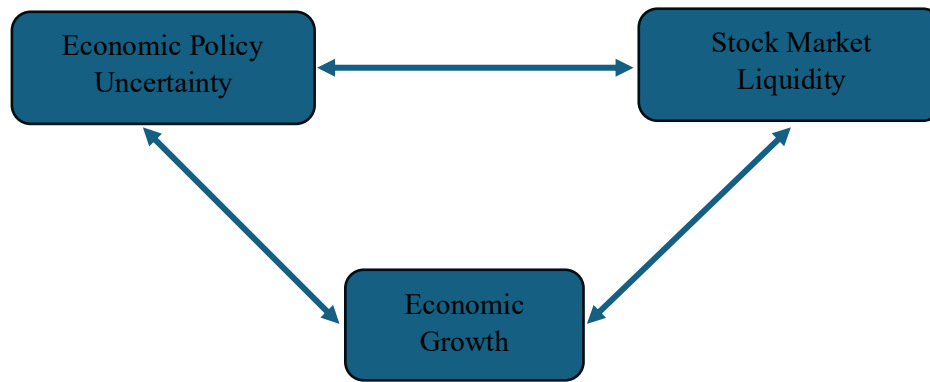
Figure 1: Causal effects of variables

Source: By author

The provided model delineates a series of hypothesized causal relationships among three pivotal economic constructs: economic policy uncertainty, stock market liquidity, and economic growth. According to this model, economic policy uncertainty is theorized to exert a direct influence on economic growth. This assertion is founded on the principle that the unpredictability inherent in economic policies can significantly sway the decision-making process of both investors and consumers. A heightened sense of uncertainty may precipitate a reduction in investment and consumption behaviors, which are integral components of economic expansion.

Simultaneously, the model posits that economic policy uncertainty has a consequential impact on stock market liquidity. The rationale for this relationship lies in the concept that increased uncertainty typically heightens investor risk aversion, which can result in less frequent trading activity, thus impairing the liquidity of stock markets. This liquidity is a critical attribute of efficient markets, allowing for the rapid execution of trades without substantial price changes.

Moreover, the model anticipates a causal connection from economic growth to stock market liquidity. This linkage suggests that as economies expand and corporate earnings escalate, there is likely to be an upsurge in investor confidence, culminating in elevated trading volumes and improved market liquidity. The depicted bidirectional relationship between economic growth and stock market liquidity underscores a reciprocal influence:

economic growth can stimulate liquidity, and conversely, a fluid stock market can create a conducive environment for further economic growth.

Empirical evidence from academic literature lends credence to the relationships portrayed in the model. For instance, the correlation between heightened economic policy uncertainty and diminished investment, as well as economic contractions, has been documented in the work of (Baker et al., 2016). Additionally, the interconnection between economic growth and market liquidity has been empirically reinforced, suggesting that burgeoning economies are often characterized by more vibrant and liquid markets, a state that facilitates capital availability and investment (Levine, 1991).

In the empirical analysis phase, the research utilizes Granger causality testing to scrutinize the directionality of the influence that each variable asserts on the others. This approach is essential for unraveling the complex network of causal links that govern the interactions between economic policy uncertainty, stock market liquidity, and economic growth. The application of this method across the ASEAN countries, over the two-decade span of the study, is aimed at providing a thorough examination of the interplay among these vital economic indicators. The end goal is to illuminate the causative channels that drive the intricate machinery of economic activity within the region.

4. Results & Discussion

4.1 Descriptive analysis

Table 2 provides a descriptive statistical analysis of four economic indicators: GDP, Economic Policy Uncertainty (EPU), Liquidity 1, and Liquidity 2, across 480 observations. The GDP, which spans a wide range of values, has an average (mean) of approximately 1.75 million USD, though there is considerable variability in the dataset as indicated by the standard deviation of around 1.55 million USD. The minimum GDP recorded is 53,513 USD, and the maximum reaches over 7 million USD, reflecting a broad spectrum of economic sizes. The median value, or the 50th percentile, is about 1.59 million USD, suggesting that half of the GDP observations lie below this figure. Economic Policy Uncertainty shows an average value of 0.153%, with a relatively high standard deviation in

comparison to the mean, reflecting significant fluctuations in policy uncertainty across the dataset. EPU values range from 0% to almost 1%, with the median at 0.110%, indicating that half of the observations are below this level of uncertainty.

Table 2: Descriptive analysis

	gdp	epu	liquidity_1	liquidity_2
count	480	480	480	480
mean	1,754,895	0.153	0.144	8.21E+10
std	1,553,112	0.163	0.101	2.07E+11
min	53,513	0	0.023	0
25%	244,246	0	0.080	11,441,764
50%	1,591,469	0.110	0.117	1.04E+10
75%	2,761,958	0.218	0.171	6.54E+10
max	7,050,564	0.999	0.835	1.51E+12

Note: GDP & liquidity_2 in USD, epu & liquidity_1 in %

Source: by author's calculation

Liquidity 1, which is also measured in percentages, has a mean of 0.144% and a lower standard deviation of 0.101%, indicating less relative variability than EPU. The minimum value recorded is 0.023%, the median is 0.117%, and the maximum is 0.835%, suggesting a smaller range of variation compared to GDP and EPU. Liquidity 2, expressed in USD, presents a significantly large mean of approximately 82.1 billion USD, accompanied by an even larger standard deviation of 207 billion USD, which points to a highly dispersed set of values. The maximum value for Liquidity 2 is exceedingly high at approximately 1.51 trillion USD, further underscoring the vast differences in stock market liquidity within the dataset. The 25th and 75th percentiles show that there is a wide interquartile range, demonstrating that the middle 50% of the data is spread across a wide spectrum of liquidity levels.

Table 3: Coefficient of Correlation

	gdp	epu	liquidity_1	liquidity_2
gdp	1			
epu	0.068	1		
liquidity_1	0.025	-0.071	1	
liquidity_2	0.197	-0.014	-0.090	1

Source: by author's calculation

On the other hand, **Table 3** illustrates the coefficient of correlation among the same variables, providing insights into their interrelatedness. The correlation coefficient values range from -1 to 1, where 1 represents a perfect positive linear relationship, -1 indicates a perfect negative linear relationship, and 0 implies no linear relationship. GDP shows a modest positive correlation with Liquidity 2 (0.197), hinting that larger economies tend to have more liquid stock markets. However, the correlations between GDP and both EPU and Liquidity 1 are weakly positive (0.068 and 0.025, respectively), suggesting a negligible direct linear relationship in these cases. EPU and Liquidity 1 are negatively correlated (-0.071), albeit weakly, which might suggest that higher policy uncertainty could be associated with slightly less liquid markets. Liquidity 2 has a very weak negative correlation with Liquidity 1 (-0.090) and an almost negligible correlation with EPU (-0.014), indicating that these liquidity measures do not strongly relate to policy uncertainty.

4.2 Granger causality test

Before delving into the Granger causality test analysis, it is crucial to ensure that the series under investigation are stationary, as the validity of Granger causality testing hinges on this condition. Stationarity implies that the statistical properties of the series, such as mean and variance, do not change over time, a prerequisite for accurately identifying causal relationships between time series data. To ascertain the stationarity of the variables involved in this study - GDP, Economic Policy Uncertainty (EPU), liquidity_1 (measure stock market liquidity by price-range base), and liquidity_2 (measure stock market liquidity by volume) - the Augmented Dickey-Fuller (ADF) test was employed, with the findings

detailed in Table 4. This preliminary step is essential, as it verifies the suitability of the data for Granger causality analysis by ensuring that the variables do not exhibit trends or unit roots that could distort the test results. The outcomes of the ADF test, as presented, confirm that except for GDP, all other variables meet the stationarity criterion, laying a solid foundation for the subsequent application of the Granger causality test to explore the dynamic interrelations among these economic indicators.

Table 4: Stationary test with ADF test

	gdp	epu	liquidity_1	liquidity_2
ADF Statistic	-2.174	-7.823	-5.145	-3.028
p-value	0.215	6.591	1.135	0.032
Critical Values at 1%	-3.444	-3.444	-3.444	-3.444
Critical Values at 5%	-2.867	-2.867	-2.867	-2.867
Critical Values at 10%	-2.570	-2.570	-2.570	-2.570

Source: by author's calculation

Table 4 presents the results of the Augmented Dickey-Fuller (ADF) test, a statistical test used to determine the stationarity of a time series. The table includes four key variables: GDP, EPU (Economic Policy Uncertainty), Liquidity 1, and Liquidity 2. For each variable, the table lists the ADF statistic, the p-value associated with this statistic, and the critical values for rejecting the null hypothesis of non-stationarity at three different significance levels (1%, 5%, and 10%).

The ADF Statistic is a measure used to test for a unit root; a more negative value suggests a stronger likelihood of stationarity. The p-value indicates the probability of observing the given or more extreme ADF statistic under the null hypothesis of non-stationarity. Critical values provide thresholds for the ADF statistic at different levels of confidence, where surpassing these thresholds (i.e., a more negative ADF statistic) would lead to rejecting the null hypothesis of non-stationarity.

In the preparatory phase of this research, a meticulous examination of the stationarity of the variables under study was conducted using the Augmented Dickey-Fuller (ADF) test, with the results revealing a diverse set of characteristics across the variables. Specifically, the GDP series presented an ADF statistic of -2.174 with a corresponding p-value of 0.215, which did not meet the critical thresholds for rejecting the null hypothesis of non-stationarity. This outcome suggests a probable non-stationary nature for the GDP series, indicating that it retains trends or patterns over time that could potentially affect causal analysis. On the contrary, the Economic Policy Uncertainty (EPU) series exhibited a significantly negative ADF statistic of -7.823, alongside a negligible p-value, substantially below the critical value thresholds. This result robustly indicates the stationarity of the EPU series, confidently allowing for the rejection of its non-stationarity. Similarly, the Liquidity 1 variable, with an ADF statistic of -5.145 and a virtually zero p-value, clearly surpasses the critical value thresholds, denoting its stationary status. The Liquidity 2 variable also demonstrates stationarity at the 5% significance level, with an ADF statistic of -3.028 and a p-value of 0.032, although it exhibits a slightly lower level of certainty in comparison to the EPU and Liquidity 1 variables. These findings collectively ensure that except for GDP, the remaining variables are adequately stationary, thus qualifying for further analysis using Granger causality tests to explore their interrelations within the economic framework of this study.

The stationarity test results from Table 4 indicate a mixed stationary profile among the examined variables. EPU, Liquidity 1, and Liquidity 2 demonstrate characteristics of stationarity, with their ADF statistics falling below the critical value thresholds at standard significance levels, and p-values low enough to reject the null hypothesis of non-stationarity. This suggests that these series do not have a unit root and are suitable for further time series analysis without the need for differencing or detrending to achieve stationarity. Conversely, the GDP series exhibits non-stationarity, as evidenced by its ADF statistic not meeting the critical value criteria and a relatively high p-value, indicating the presence of a unit root. This necessitates caution in its analysis and may require transformations such as differencing to ensure stationarity before conducting further econometric modeling.

So, the author re-tests the stationary for first difference of variable GDP and the application of the Augmented Dickey-Fuller (ADF) test to the first differenced GDP series yields compelling evidence regarding its stationarity. With an ADF statistic of -9.158, the test strongly suggests the series is stationary, as this value significantly surpasses the critical thresholds for all conventional significance levels (1%, 5%, and 10%). The accompanying p-value, virtually zero at approximately 2.57e-15, further bolsters this conclusion, indicating an overwhelming likelihood to reject the null hypothesis of non-stationarity. This statistical outcome is particularly noteworthy as it decisively meets the criteria for stationarity, thereby satisfying a crucial prerequisite for the subsequent Granger causality analysis. By achieving stationarity through first differencing, the GDP data is now devoid of unit roots, making it apt for exploring causal relationships within the econometric framework of this study. This transformation underscores the efficacy of differencing in preparing time series data for rigorous causal inference, ensuring that the foundational assumptions of the Granger causality test are adequately met.

The Granger causality test results, as outlined for inclusion in Table 5 of the research, present a comprehensive examination of the causal relationships between various economic indicators over different lags. The analysis includes tests on the first difference of GDP causing changes in economic policy uncertainty (EPU), liquidity measures, and vice versa, across lags ranging from 1 to 5.

Table 5: Granger causality test results

	Lag	ssr based chi2 test		ssr based F test	
		chi2 value	p_value	F value	p_value
gdp_diff causing epu	1	0.138	0.710	0.137	0.712
gdp_diff causing epu	2	0.176	0.916	0.087	0.917
gdp_diff causing epu	3	0.217	0.975	0.071	0.975
gdp_diff causing epu	4	0.966	0.915	0.237	0.917
gdp_diff causing epu	5	1.264	0.939	0.247	0.941

gdp_diff causing liquidity_1	1	4.800**	0.028	4.770**	0.029
gdp_diff causing liquidity_1	2	3.855	0.146	1.907	0.150
gdp_diff causing liquidity_1	3	2.294	0.514	0.753	0.521
gdp_diff causing liquidity_1	4	9.778**	0.044	2.398**	0.049
gdp_diff causing liquidity_1	5	11.540**	0.042	2.254**	0.048
gdp_diff causing liquidity_2	1	0.041	0.839	0.041	0.840
gdp_diff causing liquidity_2	2	1.674	0.433	0.828	0.437
gdp_diff causing liquidity_2	3	5.003	0.172	1.643	0.179
gdp_diff causing liquidity_2	4	3.272	0.513	0.803	0.524
gdp_diff causing liquidity_2	5	5.769	0.329	1.127	0.345
epu causing liquidity_1	1	1.465	0.226	1.455	0.228
epu causing liquidity_1	2	2.708	0.258	1.340	0.263
epu causing liquidity_1	3	4.327	0.228	1.421	0.236
epu causing liquidity_1	4	4.362	0.359	1.070	0.371
epu causing liquidity_1	5	6.179	0.289	1.207	0.305
epu causing liquidity_2	1	0.013	0.908	0.013	0.908
epu causing liquidity_2	2	0.445	0.801	0.220	0.803

epu causing liquidity_2	3	0.942	0.815	0.310	0.818
epu causing liquidity_2	4	1.513	0.824	0.371	0.829
epu causing liquidity_2	5	1.556	0.907	0.304	0.911
epu causing gdp_diff	1	0.103	0.748	0.103	0.749
epu causing gdp_diff	2	0.676	0.713	0.335	0.716
epu causing gdp_diff	3	1.151	0.765	0.378	0.769
epu causing gdp_diff	4	2.030	0.730	0.498	0.737
epu causing gdp_diff	5	4.961	0.421	0.969	0.436
liquidity_1 causing gdp_diff	1	2.559	0.110	2.543	0.111
liquidity_1 causing gdp_diff	2	5.879*	0.053	2.909*	0.056
liquidity_1 causing gdp_diff	3	6.732*	0.081	2.211*	0.086
liquidity_1 causing gdp_diff	4	6.132	0.190	1.504	0.200
liquidity_1 causing gdp_diff	5	6.008	0.305	1.174	0.321
liquidity_2 causing gdp_diff	1	0.014	0.907	0.014	0.907
liquidity_2 causing gdp_diff	2	0.078	0.962	0.039	0.962
liquidity_2 causing gdp_diff	3	0.241	0.971	0.079	0.971
liquidity_2 causing gdp_diff	4	2.083	0.721	0.511	0.728

liquidity_2 causing gdp_diff	5	4.762	0.446	0.93	0.461
liquidity_1 causing epu	1	6.562***	0.010	6.521**	0.011
liquidity_1 causing epu	2	6.597**	0.037	3.264**	0.039
liquidity_1 causing epu	3	13.145***	0.004	4.317***	0.005
liquidity_1 causing epu	4	14.099***	0.007	3.458***	0.008
liquidity_1 causing epu	5	12.923**	0.024	2.525**	0.029
liquidity_2 causing epu	1	0.056	0.813	0.056	0.813
liquidity_2 causing epu	2	0.053	0.974	0.026	0.974
liquidity_2 causing epu	3	0.415	0.937	0.136	0.938
liquidity_2 causing epu	4	0.758	0.944	0.186	0.946
liquidity_2 causing epu	5	2.362	0.797	0.461	0.805

*Note: *, **, and *** indicate statistic significance at 1%, 5%, and 10%*

Source: By author's calculations

For the causality direction from the first difference of GDP to EPU, the Chi-square values range from 0.138 at lag 1 to 1.264 at lag 5, with corresponding p-values indicating non-significance across all lags ($p > 0.7$ for lag 1, escalating to $p > 0.9$ for lag 5). The F-statistics mirror this pattern, starting from 0.137 at lag 1 with a p-value of 0.712, extending to 0.247 at lag 5 with a p-value of 0.941. This pattern of results suggests a lack of evidence for the first difference of GDP Granger-causing EPU within the observed lags.

The consistency in the non-significant p-values across both Chi-square and F-tests for each lag indicates a strong indication that variations in GDP do not Granger-cause changes in the EPU. This is a crucial observation, as it suggests that within the dataset and the specified lag structure, fluctuations in GDP are not predictive of shifts in economic policy uncertainty, at least directly in the manner tested.

In terms of broader implications, these findings contribute to the ongoing discourse on the predictive relationships between macroeconomic indicators. The absence of a

statistically significant Granger causality from GDP changes to EPU might indicate that policy uncertainty is influenced by factors beyond immediate economic performance, as measured by GDP. It also suggests a potential independence of policy uncertainty dynamics from the cyclical movements of the economy, which could have implications for policymakers and economic modelers alike.

It is essential to interpret these results within the context of the data and the specific methodologies employed. The Granger causality test, while powerful for detecting temporal precedences, does not necessarily imply a direct causation. Furthermore, the choice of lag structure and the transformation of variables (e.g., using the first difference of GDP) might affect the outcomes. Future research could explore alternative transformations, variable selections, and expanded lag considerations to further elucidate these relationships.

In summary, the analysis underscores the complexity of economic interrelations and the need for careful consideration of various factors when interpreting Granger causality test results. The non-significant findings across the board call for a nuanced understanding of the economic forces at play and suggest avenues for further investigation into the determinants of economic policy uncertainty.

5. Conclusion & Recommendation

5.1 Conclusion

The research meticulously explores the causal relationships among economic policy uncertainty, economic growth, and stock market liquidity in ASEAN markets, centering on the hypothesis that economic policy uncertainty could significantly affect economic growth and, by extension, stock market liquidity. Through rigorous Granger causality testing, the study offers nuanced insights that shed light on the complex interplay of these factors within emerging economies.

The meticulous exploration of the interplay between economic policy uncertainty, economic growth, and stock market liquidity within ASEAN markets has surfaced nuanced insights that both resonate with and diverge from the extant corpus of literature. First, the

research underscores the non-significance of economic policy uncertainty causal impact on economic growth, aligning with prior studies (Balcilar et al., 2022; Sahinoz & Erdogan Cosar, 2018) that have similarly posited the intricate effects of economic policy uncertainty on emerging economies. This finding lends credence to Hypothesis 1b by suggesting a lack of a direct causal linkage between economic policy uncertainty and stock market liquidity, thereby illustrating the complex dynamics at play in emerging markets like those within the ASEAN region. It challenges the conventional wisdom that policy uncertainty directly dampens economic dynamism, highlighting the resilience or distinct economic mechanisms operative in these economies.

Furthermore, the research reveals a statistically significant causal effect of economic growth on stock market liquidity at lag 1 for price-range-based liquidity measures, but not for volume-based measures. This specificity in the relationship underscores the differential impacts of economic dynamics on market liquidity facets, a finding that is particularly salient in the context of emerging markets. This discovery contrasts with previous studies like those by Bekaert et al. (2001) and Rousseau and Wachtel (2011), which suggested a more generalized impact of economic growth on market liquidity. Additionally, the significant causal effect of stock market liquidity on economic policy uncertainty for price-range-based measures at lag 1, and not for volume-based measures, introduces a novel perspective into the discourse, challenging existing narratives on the directionality and nature of these relationships. These insights not only extend the academic dialogue but also refine our understanding of the intricate interdependencies between policy uncertainty, economic growth, and liquidity in financial markets, encouraging a reevaluation of prevailing theories and empirical approaches.

Next, the investigation reveals that the causal effect of economic policy uncertainty on economic growth is not statistically significant. This finding suggests that contrary to Hypothesis 2a, fluctuations in policy uncertainty do not necessarily translate into immediate or observable impacts on economic expansion within the ASEAN context. This outcome resonates with the broader skepticism about the direct impact of economic policy uncertainty on economic performance, as posited by Hypothesis 2b, and aligns with the

findings of Balcilar et al. (2022), which highlight the intricate effects of economic policy uncertainty on emerging economies' GDP growth rates.

Regarding the relationship between economic growth and stock market liquidity, a statistically significant causal effect is observed from economic growth to stock market liquidity at lag 1 for the price-range-based measure but not for the volume-based measure. This specificity underscores the nuanced ways economic expansion influences market conditions, affecting price variability rather than trading volume. This result supports Hypothesis 3a for the price-range-based liquidity measure, indicating a nuanced causal pathway wherein economic expansion can lead to improved market liquidity under certain conditions. This finding diverges from previous studies like those by Bekaert et al. (2001) and Rousseau and Wachtel (2011), which found a more generalized effect of economic growth on market liquidity, suggesting that the impact may be more variable and measure-specific in emerging markets.

Conversely, the causal effect of stock market liquidity on economic growth is also found to be statistically significant at lag 2, but again, only for the price-range-based measure, not the volume-based measure. This bidirectional relationship highlights the complex feedback loop between market conditions and economic performance, suggesting that liquidity not only reflects but can also influence economic growth dynamics.

Furthermore, the causal effect of economic policy uncertainty on stock market liquidity does not reach statistical significance for either liquidity measure, aligning with Hypothesis 1b and challenging the assumption that policy uncertainty directly impacts market conditions. However, the significant causal effect of stock market liquidity on economic policy uncertainty at lag 1 for the price-range-based measure underscores a potentially overlooked channel of influence where market dynamics could feed back into policy uncertainty perceptions.

In conclusion, this research delineates the complex, multifaceted relationships between economic policy uncertainty, economic growth, and stock market liquidity in ASEAN markets. The findings highlight the importance of distinguishing between different

measures of liquidity and considering the specific economic context of emerging markets. While challenging some aspects of the existing literature, this study contributes to a more nuanced understanding of how economic policy uncertainty and economic growth interact with and influence stock market liquidity. Future research could build on these insights, exploring additional variables and broader datasets to further unravel the intricate dynamics at play in emerging economies.

5.2 Recommendation

Based on the findings of this research, tailored recommendations can be offered to investors, managers, and government agencies to navigate the nuanced economic landscape shaped by policy uncertainty, economic growth, and stock market liquidity in ASEAN markets:

For Investors: The absence of a statistically significant causal relationship between economic policy uncertainty and stock market liquidity suggests that investors should diversify their risk assessment strategies beyond monitoring economic policy uncertainty indicators. Given the significant relationship between economic growth and price-range-based measures of liquidity, investors are advised to pay close attention to economic growth indicators as potential predictors of stock market liquidity. Specifically, price variability could serve as a critical signal for liquidity conditions, which in turn may inform investment decisions. Investors should also consider the lagged effects of economic variables on market conditions, adjusting their portfolio strategies to anticipate these dynamics.

For Managers: Corporate managers, particularly those in emerging markets, should acknowledge the complex dynamics between economic growth and market liquidity. The evidence that economic growth significantly impacts stock market liquidity, albeit through specific liquidity measures, underscores the importance of economic conditions in strategic planning. Managers should integrate economic growth forecasts into their liquidity management and financing decisions, recognizing that improved economic conditions could lead to enhanced liquidity and potentially lower capital costs. Additionally, the feedback loop from stock market liquidity to economic growth highlights the role of corporate strategies in contributing to broader economic stability and growth.

For Government Agencies: The findings highlight the need for policy frameworks that stabilize economic growth to indirectly influence market liquidity. Given that economic policy uncertainty does not directly impact stock market liquidity or economic growth in a statistically significant way within the ASEAN context, government agencies should focus on policies that foster economic expansion and stability. This includes measures to enhance economic transparency, stability, and predictability, which could indirectly benefit market liquidity. Furthermore, recognizing the bidirectional relationship between stock market liquidity and economic growth, policies aimed at enhancing market infrastructure and reducing transaction costs could not only improve liquidity but also support economic expansion. Government agencies might also consider the implications of liquidity measures on policy perception, tailoring communication, and policy interventions to support market confidence.

This research provides a detailed examination of the causal relationships between economic policy uncertainty, economic growth, and stock market liquidity within ASEAN markets, revealing nuanced dynamics that contribute significantly to our understanding of these factors in emerging economies. Despite its contributions, the study is subject to certain limitations that naturally constrain the breadth and depth of its conclusions. Specifically, its geographical focus on ASEAN markets, while offering valuable insights into emerging economies, may limit the generalizability of the findings across different global contexts, where economic and regulatory environments vary widely. Additionally, the study's reliance on specific measures of stock market liquidity and the use of Granger causality tests, which are best suited for identifying linear relationships, may overlook more complex, non-linear interactions between the variables of interest. Furthermore, the temporal scope of the research confines its observations to a particular historical period, which may not fully capture the evolving nature of the relationships under study as market conditions and policy environments change.

These limitations, however, open avenues for further research that can extend and deepen the investigation into the interplay between economic policy uncertainty, economic growth, and stock market liquidity. Future studies could benefit from a comparative

analysis across different geographical regions, incorporating both developed and other emerging markets to assess the universality of the observed relationships. Expanding the dataset to include alternative liquidity measures and employing advanced econometric techniques could uncover hidden dynamics and provide a more comprehensive understanding of market behaviors. Moreover, sectoral, and firm-level analyses might reveal variances in how different parts of the economy respond to policy uncertainty, offering insights into potential mechanisms and mediators of these effects. By pursuing these lines of inquiry, subsequent research can build upon the current study's foundation, offering richer, more nuanced perspectives on the critical economic phenomena of policy uncertainty, growth, and liquidity in the global marketplace.

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APPENDICES

Appendix 1: Descriptive Statistics

	gdp	epu	liquidity_1	liquidity_2
count	480	480	480	480
mean	1754895	0.153304	0.144807	8.21E+10
std	1553112	0.16336	0.1018237	2.07E+11
min	53513.84	0	0.023713	0
25%	244246.8	0	0.0804421	11441764
50%	1591469	0.1105	0.117732	1.04E+10
75%	2761958	0.218	0.1718883	6.54E+10
max	7050564	0.999	0.8350779	1.51E+12

Appendix 2: Coefficient of Variation

```
Coefficient of Variation:
 Close           1.390995
Open             1.397280
Low              1.408235
High             1.380893
Volume           2.465922
gdp              0.885017
epu              1.065595
liquidity_1      0.703168
liquidity_2      2.518005
dtype: float64
```

Appendix 3: ADF Statistic

```
ADF Statistic for GDP: -2.1740470975864845
p-value for GDP: 0.21579931965367355
Critical Values:
    1%: -3.4444914328761977
    5%: -2.8677756786103683
    10%: -2.570091378194011


ADF Statistic for EPU: -7.823048552749505
p-value for EPU: 6.5916778735610265e-12
Critical Values:
    1%: -3.444133731419755
    5%: -2.8676183066831036
    10%: -2.5700075029117166


ADF Statistic for Liquidity 1: -5.145301650149465
p-value for Liquidity 1: 1.1358102202001438e-05
Critical Values:
    1%: -3.444250937448703
    5%: -2.867669873870454
    10%: -2.5700349866579657


ADF Statistic for Liquidity 2: -3.028065723161877
p-value for Liquidity 2: 0.032355248350369036
Critical Values:
    1%: -3.4446148284445153
    5%: -2.8678299626609314
    10%: -2.5701203107928157
```

Appendix 4: Correlation

	Close	Open	Low	High	Volume	gdp	epu	liquidity_1	liquidity_2
Close	1	0.994496	0.997957	0.997292	-0.23889	-0.51559	-0.20296	-0.1062	-0.24822
Open	0.994496	1	0.995806	0.997935	-0.23782	-0.51226	-0.2018	-0.08329	-0.24701
Low	0.997957	0.995806	1	0.995898	-0.23512	-0.51322	-0.19645	-0.12672	-0.24484
High	0.997292	0.997935	0.995898	1	-0.24114	-0.51606	-0.20489	-0.06989	-0.25022
Volume	-0.23889	-0.23782	-0.23512	-0.24114	1	0.186012	-0.02139	-0.09219	1
gdp	-0.51559	-0.51226	-0.51322	-0.51606	0.186012	1	0.068172	0.025725	0.197285
epu	-0.20296	-0.2018	-0.19645	-0.20489	-0.02139	0.068172	1	-0.07186	-0.01427
liquidity_1	-0.1062	-0.08329	-0.12672	-0.06989	-0.09219	0.025725	-0.07186	1	-0.09039
liquidity_2	-0.24822	-0.24701	-0.24484	-0.25022	1	0.197285	-0.01427	-0.09039	1