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Macroeconomic Determinants of Stock Market in the United States and a China-Related Market

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Abstract

This study analyzes the short-run macroeconomic determinants of stock market dynamics in the United States and a China-related equity market using the Autoregressive Distributed Lag (ARDL) approach. Monthly data are employed for the S&P 500 Index and the Hang Seng Index, along with key macroeconomic variables: Economic Policy Uncertainty (EPU), Consumer Price Index (CPI), Industrial Production Index (IPI), and Bitcoin (BTC) prices. Unit root test results show mixed orders of integration, supporting the use of the ARDL framework. However, bounds testing finds no evidence of cointegration, indicating the absence of a long-run relationship and justifying a focus on short-run dynamics. The findings reveal clear market asymmetries. In the United States, industrial production has a significant negative effect on stock returns, while BTC prices exert a positive and significant influence, reflecting risk-on behavior and liquidity effects. In contrast, EPU in China shows a positive and near-significant effect, suggesting uncertainty is perceived as a signal of potential policy intervention. Inflation remains insignificant in both markets, highlighting structural differences between mature and policy-driven economies.

Keywords: *Economic Policy Uncertainty, Consumer Price Index, Industrial Productivity Index, Bitcoin, and Stock Market*

JEL: *E44 And E66*

Abstrak

Studi ini menganalisis determinan makroekonomi jangka pendek yang memengaruhi dinamika pasar saham di Amerika Serikat dan pasar saham yang terkait dengan China menggunakan pendekatan Autoregressive Distributed Lag (ARDL). Data bulanan digunakan untuk Indeks S&P 500 dan Indeks Hang Seng, bersama dengan variabel makroekonomi utama: Ketidakpastian Kebijakan Ekonomi (EPU), Indeks Harga Konsumen (CPI), Indeks Produktivitas Industri (IPI), dan harga Bitcoin (BTC). Hasil uji akar unit menunjukkan urutan integrasi yang campur aduk, mendukung penggunaan kerangka ARDL. Namun, uji batas tidak menemukan bukti kointegrasi, menunjukkan ketidakhadiran hubungan jangka panjang dan membenarkan fokus pada dinamika jangka pendek. Temuan menunjukkan ketidakseimbangan pasar yang jelas. Di Amerika Serikat, produksi industri memiliki efek negatif yang signifikan terhadap pengembalian saham, sementara harga BTC memberikan pengaruh positif dan signifikan, mencerminkan perilaku risiko dan efek likuiditas. Di sisi lain, EPU di China menunjukkan efek positif dan hampir signifikan, menyarankan bahwa ketidakpastian dipandang sebagai sinyal potensi

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intervensi kebijakan. Inflasi tetap tidak signifikan di kedua pasar, menyoroti perbedaan struktural antara ekonomi yang matang dan ekonomi yang didorong oleh kebijakan.

Kata Kunci: *Ketidakpastian Kebijakan Ekonomi, Indeks Harga Konsumen Indeks Produktivitas Industri, Bitcoin, dan Pasar saham*
JEL: *E44 dan E66*

INTRODUCTION

Over the past decade, the global economy has experienced a series of major shocks that have reshaped the dynamics of international financial markets. The escalation of the trade war between the United States and China in 2018, for instance, triggered Economic Policy Uncertainty (EPU), suppressed global trade, and undermined stock market stability across various countries (Fajgelbaum et al., 2019). Shortly thereafter, the COVID-19 pandemic during 2020–2022 paralyzed global economic activity and sparked investor panic, leading to heightened volatility in international financial markets (Zhang et al., 2020). These successive events underscore that global uncertainty has increasingly become a key determinant of the trajectory of world financial markets.

In the context of the contemporary international economy, countries with major economic power play a central role in either safeguarding or destabilizing global financial stability. Shocks such as financial crises, commodity price fluctuations, shifts in economic policy, and technological innovations often exert disproportionate impacts on dominant economies, which subsequently spill over to the rest of the world. Fiscal, monetary, and international trade policies adopted by leading economies not only affect domestic conditions but also shape the architecture of global economic governance. Consequently, strategic decisions taken by major economic powers such as the United States and China are often used as benchmarks by other nations in formulating their macroeconomic policies and financial strategies.

The United States, as the world's largest economy in terms of Gross Domestic Product (GDP) and as an international financial hub, holds a dominant role in steering global financial dynamics. The Federal Reserve's benchmark interest rate policy, for example, has demonstrated widespread spillover effects. Following the COVID-19 pandemic, the Fed's aggressive interest rate hikes not only shook the domestic capital market but also influenced international capital flows, exchange rates, and investment strategies across countries. This confirms that U.S. monetary policy remains a critical determinant in shaping both global stability and uncertainty (Obstfeld, 2019).

Meanwhile, China, as the world's second-largest economy, plays a strategic role as both a global manufacturing hub and a massive consumer market. Its economic growth, largely driven by industry and exports, has faced several structural challenges in recent years (Lardy, 2020). Government interventions through capital market regulations, inflation controls, and stringent policies targeting the technology sector illustrate how China's domestic factors can produce systemic effects on global supply chains. Furthermore, its geopolitical rivalry with the United States has intensified global uncertainty, particularly in the realms of economics, trade, and technology (Morrison, 2019).

The complex relationship between the United States and China within the global economic order carries significant implications for capital market stability, including in emerging economies. This condition highlights the importance of research aimed at understanding how global uncertainty and rivalries between major economic powers can influence investor behavior and stock trading activities in emerging markets.

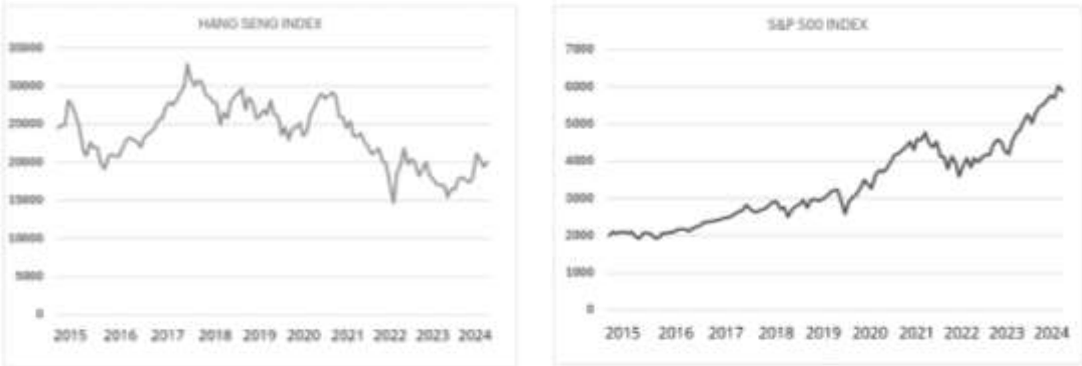


Fig 1. Graphic Volume of S&P500 and Hang Seng based on price index 2015-2024

Source: investing.com (data processed by researcher,2025)

As shown in Figure 1, the comparison between U.S. and Chinese stock market trends reveals distinct patterns. The U.S. stock index has generally exhibited a consistent upward trajectory from 2015 to 2024, although with fluctuations during certain periods. This positive performance aligns with the role of the United States as a global financial hub, where post-pandemic recovery, large-scale fiscal stimulus, and the rapid development of the technology sector have encouraged greater investor participation. Despite facing pressures such as high inflation in 2022 and the Federal Reserve's tight monetary policy, the U.S. stock market has continued to demonstrate resilience and long-term growth. In contrast, the Chinese stock market has shown more volatile movements. The Chinese index recorded significant gains around 2020–2021 but experienced a sharp decline during 2022–2023 before slightly recovering in 2024. These fluctuations were largely driven by domestic factors, such as government interventions in the technology sector, the property market crisis, and the impact of the U.S.–China trade war in 2018–2019. Nevertheless, China managed to sustain relatively strong growth at the beginning of the decade, supported by industrial productivity and substantial manufacturing capacity. This divergence highlights that the U.S. stock market reflects greater long-term stability, whereas the Chinese market is more affected by volatility resulting from a combination of global and domestic factors.

In addition to price index movements, trading volume plays a vital role as an indicator of market liquidity. Trading volume reflects the level of investor participation and the market's sensitivity to changes in macroeconomic conditions and policy uncertainty (Zhang et al., 2020). Factors such as industrial productivity index (IPI), Consumer Price Index (CPI), and EPU have been shown to influence investor behavior, which in turn determines the intensity of capital market transactions.

IPI is positioned as a real-sector information shock that influences stock trading volume through revisions to firms' expected cash flow and risk. When an IPI release signals strengthening output in manufacturing, mining, and utilities, market participants reassess earnings prospects and reduce information asymmetry, thereby prompting portfolio rebalancing, increased order submissions, and deeper limit-order books. Contemporary evidence also shows that industrial production surprises are among the releases that significantly raise trading activity in equity markets, underscoring the role of real-activity news in driving liquidity (Heinlein, 2022)

Besides that, there is EPU as a primary indicator reflecting macro-level uncertainty that can influence stock trading volume through channels of revised cash flow expectations and perceived risk. When EPU increases, market participants tend to anticipate that firms may delay investment, reduce production, or face higher financing costs mechanisms that often lead to higher trading activity as investors adjust portfolios and closely monitor market liquidity (Shao et al., 2022). Sectoral-level evidence from the United States further demonstrates that spikes in policy uncertainty are significantly associated with increases in trading volume across multiple S&P 500 industries, suggesting that EPU shocks heighten market participation as investors respond to rising uncertainty (Heinlein, 2022) Therefore, EPU is included as a key explanatory variable for analyzing changes in stock trading volume in the U.S. and China over the period 2015–2024, as it operates through the information–sentiment–liquidity transmission mechanism that links policy uncertainty to market behavior.

CPI is treated as a macro-financial shock that influences stock trading volume through channels of revised expected real returns, discount rates, and investor risk perceptions. When inflation rises unexpectedly, market participants anticipate tighter monetary policy, higher real interest rates, and squeezed corporate margins, prompting adjustments in portfolios and heightened trading activity. When survey data combined and actual trading behavior during a period of historically high inflation and find that investors beliefs about the inflation-return relation are heterogenous and overly optimistic, and that past return information during inflationary episodes triggers downward updates in return expectations which in turn shape trading behavior (Schnorpfeil et al., 2024). Furthermore, inflation uncertainty shocks transmit globally and affect investment and policy rates, highlighting how inflation dynamics themselves have become a major source of market adjustment and liquidity changes (LI et al., 2025). Given these mechanisms, including CPI as a key explanatory variable for monthly trading volume in the U.S. and China is justified because it captures a foundational macro-shock that triggers investor behavior adjustments and subsequent variations in market liquidity.

Moreover, the development of digital assets such as Bitcoin (BTC) has introduced a new dimension to the relationship between traditional financial markets and alternative financial instruments. Recent studies indicate a connection between BTC price volatility and stock market fluctuations, particularly during crises, when investors tend to diversify their portfolios into assets perceived as safer (Conlon et al., 2020). This phenomenon suggests that capital market dynamics are shaped not only by conventional macroeconomic variables but also by the evolution of digital instruments.

Furthermore, the economic policies adopted by major powers such as the United States and China have become increasingly intertwined with the dynamics of digital asset markets. Chen (2025) demonstrated that fluctuations in cryptocurrency prices explain up to 27 percent of variance in stock and commodity prices, highlighting a macro-financial transmission channel through digital assets. Kang et al. (2025) also emphasized a perceptual shift, noting that BTC is no longer viewed solely as a speculative asset but increasingly as a potential safe haven during periods of heightened economic uncertainty. Thus, BTC's evolution represents more than a digital financial phenomenon, it is now an integral part of the global monetary system, compelling nations to adapt their macroeconomic and financial policy frameworks. This underscores the importance of analyzing how macroeconomic policy shifts, particularly in the United States and China, may influence global financial stability through the transmission mechanism of digital assets such as BTC.

Within the framework of rational expectations, changes in economic information will be anticipated by market participants and reflected in price behavior as well as trading volume. Stock trading volume can be viewed as one of the indicators of how investors realize changes in expectations, for instance, through portfolio rebalancing. The rational expectations theory was first introduced by Muth (1961) as a new way of modeling how economic agents form expectations about the future. Muth argued that "expectations, since they are informed predictions of future events, are essentially the same as the predictions of the relevant economic theory" (Muth, 1961).

Accordingly, research on the impact of global policy uncertainty, BTC price volatility, and macroeconomic factors on stock trading volume has become increasingly relevant. A comparative analysis between the United States and China is essential, as both countries possess distinct market characteristics, policy structures, and roles in the global financial system. Focusing on stock trading volume not only reflects price dynamics but also represents the collective response of investors to international economic shocks.

According to the rational expectations theory, the announcement of important macroeconomic indicators will cause investors to update their expectations, thereby increasing trading volume around the announcement time due to portfolio adjustment transactions. For example, high-frequency studies found "large and significant increases in average stock trading volume within the first 30 minutes after China released Industrial Production (industrial production) data" (Gutierrez et al., 2025). IPI data that are higher or lower than predictions directly trigger significant trading activity on the Chinese Stock Exchange(Baum et al., 2015). Therefore, the announcement of the CPI as a measure of inflation is known to affect market activity. Subhani et al. (2011) found evidence of a significant relationship between CPI and stock trading volume, where in the Karachi Stock Market, an increase in CPI is negatively correlated with the trading volume of the KSE-100 Index.

The EPU variable reflects the level of uncertainty regarding the direction of policy (such as regulatory changes, trade wars, or political turmoil) and has become a popular macroeconomic variable in financial research in recent years. Within the framework of rational expectations, increased uncertainty will affect investors' expectations of future income and risk, which in turn can alter trading behavior. A recent study by Cai et al. (2020) analyzed U.S. stock trading volume before and during the U.S.–China trade frictions and found that increased economic uncertainty was associated with decreased stock trading volume. Cryptocurrencies such as BTC have emerged as new factors that can influence investor sentiment and portfolio allocation in global markets. From the perspective of rational expectations, BTC prices can reflect investors expectations of global risk or alternative liquidity, so changes in BTC prices may be related to stock trading volume, especially if investors shift funds between crypto and stock markets.

Empirical studies indicate that EPU exerts a significant yet divergent influence between China and the United States. Canh et al. (2025) found that increases in domestic EPU in China significantly reduce firm-level stock returns, particularly among highly leveraged firms, whereas global EPU exerts a weaker effect. Wang (2022) demonstrated that China's energy sector is the most vulnerable to economic policy fluctuations, where heightened uncertainty induces higher volatility and declines in stock valuations. In contrast, Javaheri et al. (2022) asserted that in the United States, EPU functions as a channel of global volatility transmission, amplifying cross-sectoral fluctuations and increasing short-term risks in the equity market. Zhao (2024) expanded this understanding using a Panel Vector Autoregression (PVAR) model across 20 developed and emerging economies, including the U.S. and China, to assess the dynamic linkages between EPU and stock returns. Their findings revealed that positive shocks to foreign EPU (particularly from the U.S.) significantly depress stock returns in other countries, whereas higher stock returns tend to reduce both domestic and global EPU.

The relationship between inflation and stock market performance has long attracted the attention of financial economists, especially in large economies such as the United States and China. Jacob et al. (2025), employing an Autoregressive Distributed Lag (ARDL) model, found a positive long-run relationship between inflation and stock returns in China, suggesting that equities serve as an effective hedge against inflation. This finding implies that the link between inflation and stock prices in emerging markets such as China tends to be weak and unstable, depending on the monetary structure and market efficiency. Empirically, Guenichi et al. (2021) also confirmed that rising inflation reduces global equity returns, including in the U.S. and China, as high inflation is typically accompanied by higher interest rates that compress corporate profit margins. Amiti et al. (2025) revealed that trade protection policies through tariffs during the U.S. and China trade war significantly lowered stock prices and long-term productivity expectations.

Based on a specific-factors model, they showed that tariff announcements increased market uncertainty, encouraged investors to shift toward safe-haven assets, and reduced firm market valuations by an average of 11.5% during the announcement period thereby indirectly suppressing inflation expectations and long-term productivity growth. Meanwhile, Yue et al. (2020), using an information transfer entropy approach, examined cross-sector information transmission between U.S. and Chinese equity markets. Their findings indicated that macroeconomic shocks such as inflation changes and trade policies have asymmetric effects: the U.S. market transmits macro signals more strongly to China than vice versa. Hence, inflation and global price policies including tariffs and input price expectations affect the stock markets of both countries differently, in the U.S. through monetary expectations and trade protection channels, and in China through structural dependence on external sentiment and policy volatility.

The relationship between BTC and the stock markets of the United States and China is complex, dynamic, and asymmetric. Zhang (2024), using a GARCH-MIDAS model on the Shanghai Composite Index, S&P 500 Index, and BTC prices, analyzed stock market volatility under two different policy regimes. Their results showed that BTC has a significantly negative relationship with stock market volatility in both China and the U.S., with a stronger stabilizing effect in the latter indicating

BTC's potential as a diversification asset. Xie (2024) extended this analysis using a TVP-VAR extended joint connectedness approach and identified asymmetric risk spillovers between cryptocurrencies and China's financial markets, where risk spillovers from BTC to Chinese equity markets were stronger than in the opposite direction, particularly for the CSI 300 and Hang Seng indices. Studies applying a General-to-Specific VAR model to U.S. equity markets also found a negative relationship between BTC prices and sectoral volatility, suggesting that increases in BTC prices can reduce portfolio risk in certain stock sectors (Ahmed et al., 2023). Furthermore, Li et al. (2023) employed mutual coupling analysis among five major cryptocurrencies and global stock indices, finding that Bitcoin exerts a dominant effect in cross-market volatility transmission especially in the U.S., which is more open to digital assets.

The relationship between the IPI and the stock market has long been a key indicator of economic fundamentals in the United States and China. Chiang (2017) examined the relationship between economic growth represented by the IPI and gross domestic product and the stock markets of both countries using cointegration and Granger causality models. Their findings revealed a bidirectional relationship in the U.S., where industrial growth drives stock prices and is, in turn, influenced by financial market performance. In contrast, the relationship in China was unidirectional from industrial production to the stock market indicating that the real sector remains the primary driver of capital market movements. Wang (2020) reinforced these findings through continuous wavelet analysis, identifying a significant positive relationship between IPI growth and stock returns in China over the medium and long term. However, this relationship proved unstable in the short run due to high sensitivity to economic cycles. Meanwhile, Chen (2024) found that industrial production factors in the United States systematically affect variations in aggregate stock returns through an economic attribution model. They emphasized that industrial growth strengthens stock market fundamentals in the long run but may temporarily suppress returns during rapid expansion phases due to rising capital costs. Overall, these studies confirm that IPI is a crucial macroeconomic factor influencing stock markets in both the U.S. and China, with asymmetric effects depending on each country's economic structure and financial market depth.

the preeminent roles of the United States and China as the primary engines of global economic growth, where their domestic policy shifts and equity market fluctuations exert profound spillover effects on international financial stability. The urgency of this research stems from the necessity to re-examine macroeconomic transmission channels amidst heightened global uncertainty and evolving geopolitical tensions in the post-pandemic era. Departing from conventional literature that predominantly focuses on traditional indicators, this inquiry integrates Bitcoin as a non-conventional variable to evaluate the extent to which digital assets have permeated traditional equity frameworks. This investigation is critical for investors and policymakers alike to discern whether mature markets, such as the United States, and policy-driven markets, exemplified by China, exhibit convergent or asymmetrical responses to macroeconomic shocks and crypto-asset liquidity. By employing an ARDL framework to capture short-run dynamics, this research offers a strategic contribution by providing more precise investment navigation within an increasingly complex and evolving market structure.

The stock markets of both nations not only reflect domestic conditions but also respond to global developments encompassing policy uncertainty, price pressures, industrial activity, and digital asset innovations. Furthermore, This article consists discussion following with analysis and concluding section.

DATA AND METHODOLOGY

The research employs a quantitative approach using time-series econometrics, focusing on short-run and long-run relationships among macroeconomic variables through the Autoregressive Distributed Lag (ARDL) model (Pesaran et al., 2001). This approach enables the analysis of dynamic relationships among variables that may exhibit different orders of integration (I(0) and I(1)) without losing long-run information. Compared with traditional approaches such as Johansen cointegration, ARDL offers greater flexibility in handling mixtures of stationery and non-stationary variables and yields super-consistent parameter estimates for both short-run and long-run dynamics. The data consist of monthly time-series observations over 2015–2024 compiled from official sources.

This study uses the S&P 500 index represent of U.S stock market and Hang Seng index represent of China-related market as the dependent variables, Although This study does not aim to represent the mainland Chinese A-share market directly. Instead, it focuses on a China-related equity market by employing the Hang Seng Index. This choice reflects the openness and international integration of the Hong Kong market, which allows China's policy uncertainty and macroeconomic signals to be rapidly incorporated into asset prices. Consequently, the Hang Seng Index provides a suitable setting for examining the transmission of China-related macroeconomic uncertainty to equity markets. while the independent variables comprise country-specific EPU, inflation as measured by the CPI, IPI for both the United States and China, and BTC prices. Market and macroeconomic series (stock indices, CPI, IPI, and Bitcoin) are obtained from Investing.com, whereas EPU data are sourced from the official EPU website. Following data collection, frequency harmonization, and preliminary cleaning, the variables are summarized to characterize their distributions. These covariates are selected to represent external and internal factors that shape the dynamics of capital market, namely global policy uncertainty, fluctuations in digital assets, macroeconomic stability, and real-sector activity.

Table 1. Measurement of variables and sign expectation

Variable	Description	Measurement	Empirical Evidence	Expected sign
Dependent Variable				
STOCK	1.S&P 500 2.Hang Seng	$\frac{Sum\ of\ market\ value}{Divisor}$	Fajgelbaum et al. (2019),D. Zhang et al.(2020),Cai et al. (2020), Shao et al. (2022),Chen (2024),Amiti et al. (2025)	
Independent Variable				
EPU	Economic Policy Uncertainty	$\frac{\text{Target Articles}}{\text{All articles}} \times 100$	Javaheri et al. (2022),Zhao (2024),Wang (2022)	-
CPI	Consumer Price Index	$\frac{Current\ price\ level}{\text{Basse price level}} \times 100$	Amiti et al. (2025)Yue et al. (2020),Jacob et al. (2025)	-
BTC	Bitcoin	$\frac{Total\ traded\ value}{Total\ traded\ volume}$	Ahmed et al. (2023),Xie (2024),Zhang (2024)	+
IPI	Industrial Productivity Index	$\frac{\text{Industrial output today}}{\text{Industrial output in base year}} \times 100$	Chiang (2017),Wang (2020),Chen (2024)	+

Source: data processed by researcher,2025

The ARDL model is specified as follows:

$$\Delta STOCK_{c,t} = \mu_c + \sum_{i=1}^{p-1} \gamma_{c,i} \Delta STOCK_{c,t-i} + \sum_{j=0}^{q_1-1} \delta_{1c,j} \Delta EPU_{c,t-j} + \sum_{j=0}^{q_2-1} \delta_{2c,j} \Delta CPI_{c,t-j} + \sum_{j=0}^{q_3-1} \delta_{3c,j} \Delta BTC_{c,t-j} + \sum_{j=0}^{q_4-1} \delta_{4c,j} \Delta IPI_{c,t-j} + \epsilon_{c,t} \quad (1)$$

This ARDL model describes the dynamic relationship between the dependent variable STOCK (e.g., stock index) and several independent variables such as EPU, CPI, BTC, and IPI. In this model, $STOCK_{t-1}$ indicates an autoregressive effect, namely the influence of previous stock values on the current period, while the coefficients of all independent variables on the model measure the short-term sensitivity of the STOCK variable to each independent variable. The $\epsilon_{c,t}$ component represents the error term that captures other factors outside the model. The structure of this model allows for both short-term and long-term analysis, so it can be used to test whether there is a cointegration relationship or long-term equilibrium between the stock market and macroeconomic factors.

DISCUSSION AND ANALYSIS

Table 2. Descriptive Statistics of Variables

Variable	Obs.	Mean	Max	Min	Std. Deviation	Skewness	Kurtois
(US)							
S&P 500	120	8.070	8.705	7.560	0.321	0.135	1.828
EPU	120	172	504	77	72.355	2.013	8.163
CPI	120	2.882	9.100	-0.2	2.290	1.136	3.496
IPI	120	0.001	0.054	-0.112	0.014	-4.282	-4.282
(China)							
HANGSENG	120	10.060	10.401	9.595	0.178	-0.424	2.339
EPU	120	257.914	661.800	60.2	118.683	0.695	3.669
CPI	120	1.589	5.400	-0.800	1.768	0.542	3.957
IPI	120	0.057	0.351	-0.135	0.037	2.862	38.906
BTC	120	8.924	11.476	5.384	1.787	-0.628	2.196

Source: Source: Author's own calculation using Stata 17,2025

Data analysis follows the time-series methodological framework of Shrestha (2018). First, stationarity is assessed using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) tests to determine each variable's order of integration. Next, optimal lag lengths are selected using the Akaike Information Criterion (AIC) and the Schwarz Bayesian Criterion (SBC), to obtain an efficient model free from autocorrelation.

In the table, the measurement units reported for each variable are not uniform. The dependent variables, include S&P 500 and the Hang Seng Index are expressed in the respective domestic currency denominations of their markets. In contrast, the independent variables are reported in different units: EPU, CPI, and IPI are measured as index values, while BTC is quoted in U.S. dollars (USD).

This study first adopts the ARDL framework because it is suitable for time-series data with mixed integration orders I(0)/I(1) and relatively limited sample sizes, and because it allows the separation of short-run and long-run dynamics. The dependent variable is STOCK, while the regressors are EPU, CPI, BTC, and IPI, which capture policy uncertainty, price pressures, the crypto-asset market, and real-sector activity, respectively. All series are subjected to stationarity tests (ADF/PP) to ensure that none is I(2), after which consistent transformations are applied (e.g., logarithms for indices/prices and an inflation rate measure for CPI). Lag lengths are chosen using information criteria (AIC/SIC) with bounds appropriate to monthly frequency.

Before estimating the ARDL model and identifying both the short-run and long-run dynamics among the research variables, a crucial preliminary step is to ascertain the fundamental properties of each time series. In accordance with the analytical framework of this study, the initial procedure involves determining the integration order of each variable through unit root tests. This stage is essential because the results of stationarity testing will determine the econometric method applicable in the subsequent estimation process. If all variables are stationary at level, an OLS or VAR approach can be applied. Conversely, if all variables are non-stationary at level, the Johansen cointegration procedure becomes the appropriate choice. However, when the variables exhibit mixed integration orders between I(0) and I(1), as is commonly observed in monthly macroeconomic data, the ARDL model is the most suitable method because it can accommodate variables with different degrees of integration. (Shrestha, 2018).

Table 3. Unit Root Test

Variables	ADF		PP	
	Level	1st Diff.	Level	1st Diff.
(US)				
S&P 500	-0.266	-12.567***	0.01	-12.885***
EPU	-4.59***	-15.904***	-4.446***	-17.230***
CPI	-1.388	-6.302***	-2.363	-10.462***
IPI	-8.277***	-12.262***	-7.307***	-18.783***
(China)				
HANGSENG	-1.768	-11.418***	-1.648	-11.516***
EPU	-4.972***	-16.757***	-4.844***	-19.718***
CPI	-2.214	-10.466***	-2.363	-10.462***
IPI	-7.208***	-15.456***	-7.307***	-18.783***
BTC	-1.422	-9.464***	-1.406	-9.544***

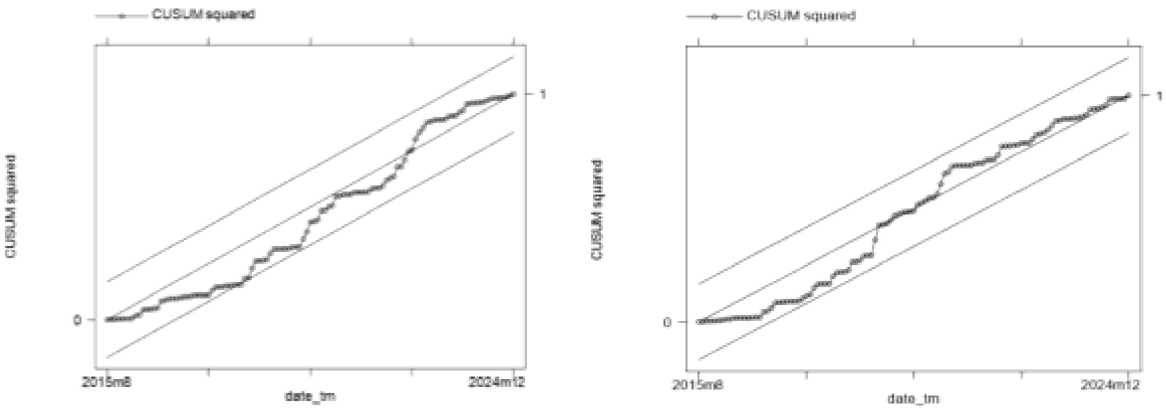
Source: Unit Root Test output using Stata 17, 2025

Based on the results of the Unit Root Test (URT), two out of the five variables in the dataset were found to be stationary at the level form, while the remaining variables became stationary only after first difference. So, a signification variable can be approved with 3 stars behind result. This pattern indicates that the variables in the model exhibit a mixed order of integration, combining both I(0) and I(1) characteristics. A mixed integration structure aligns precisely with the requirements for applying the Autoregressive Distributed Lag (ARDL) approach(Shrestha, 2018). The ARDL model is specifically designed to accommodate datasets where the explanatory and dependent variables possess different stationarity properties. Therefore, the presence of these mixed variables fully satisfies the methodological criteria for selecting ARDL.

Based on the results of the Bounds Test presented in **table 4**, both the United States and China exhibit F-statistic and t-statistic values that fall below the I(0) critical bounds at all significance levels (10%, 5%, and 1%). For the United

States, the F-statistic of 0.217 and t-statistic of –0.643 do not exceed the lower critical thresholds (I(0)), while the relatively high p-values for both statistics indicate that the null hypothesis of no long-run relationship cannot be rejected. A similar pattern is observed for China, where the F-statistic of 0.388 and t-statistic of 0.411 remain closer to zero compared to the I(0) critical values, further confirming the absence of cointegration in the model. Therefore, for both countries, the test results demonstrate that the variables under study do not share a long-run equilibrium relationship, implying that the ARDL model can only be applied to analyze short-run dynamics without forming an Error Correction Model (ECM).

The ARDL results based on **table 5** indicates that both the United States and China exhibit a very high level of stock price persistence, as reflected by the lag coefficients of 0.9269 for the S&P 500 and 0.9350 for the Hang Seng, both of which are statistically significant. This suggests that past price movements are a primary determinant of current returns. However, the slightly higher value in China implies that its equity market is more path-dependent, or more strongly driven by historical dynamics, indicating that investors tend to absorb new information more slowly.



US ***CHINA***

Fig. 2 Graphic Cusum Square (CUSUMSQ)

Source: Cusum Square output using Stata 17, 2025

The analysis finds no evidence of parameter instability or significant structural shifts throughout the study period. The relatively smooth trajectory and the absence of extreme deviations beyond the confidence bounds indicate that the dynamic relationship between the dependent variable and the macroeconomic variables remains stable and consistent over time. This suggests that the model was resilient to various external shocks, rendering the estimated specification statistically robust for capturing both short-run dynamics and supporting reliable empirical conclusions without requiring additional structural adjustments.

Such stability aligns with the characteristics of a mature market like the United States, where higher information transparency and more efficient price formation mechanisms reduce the likelihood of abrupt structural changes conditions that stand in contrast to emerging markets, which more commonly exhibit herding behavior and weaker informational efficiency.

A clear structural difference appears in the macroeconomic response, particularly regarding policy uncertainty. In the United States, EPU does not exert a significant influence, suggesting that policy risks have already been internalized by market participants through forward guidance and rational expectations. Conversely, in China, EPU displays a positive direction and approaches statistical significance, implying that rising uncertainty is often interpreted not as a threat but as a signal of potential government intervention or policy stimulus. This pattern aligns with the heavily policy-driven nature of the Chinese market, where investors tend to prioritize governmental signals rather than fundamental indicators. Inflation, measured through CPI, shows no significant effect in either country, yet the IPI reveals a sharp contrast. In the United States, IPI has a negative and significant effect, indicating that real sector pressures weigh on equity valuations whereas in China, IPI is positive but not significant, signaling that industrial expansion is not yet strong enough to act as a short-term catalyst for stock performance.

The biggest divergence is observed in the role of Bitcoin. In the United States, Bitcoin exerts a positive and significant influence on stock returns, illustrating a risk-on mechanism in which increases in BTC prices encourage investors to increase exposure to other risk assets, including equities. Thus, Bitcoin does not operate as a safe-haven asset in relation to the U.S. equity market but rather functions as an indicator of speculative sentiment and global liquidity. In China, however, the effect of Bitcoin is negative and statistically insignificant, reflecting financial market segmentation caused by strict regulation of cryptocurrencies and limited integration of Chinese investors within digital asset ecosystems. Consequently, Bitcoin price movements fail to translate into a meaningful risk signal for the Chinese equity market.

Khan et al. (2020) re-examine the policy uncertainty stock price relationship using a dynamic ARDL simulation approach and report that policy uncertainty is a meaningful driver of U.S. stock price dynamics, with effects that are economically interpretable and robust within their specification. In contrast, U.S. estimates show not statistically significant EPU effect and emphasize instead parameter stability across the sample, IPI negative and significant, and Bitcoin positive and significant, consistent with a "risk-on" channel. A defensible interpretation is that, once BTC is included as a high-frequency proxy for speculative sentiment or global liquidity, the incremental explanatory power of EPU for U.S. equities may attenuate (especially in return-based specifications), while real-sector pressures captured by IPI can dominate the short-run valuation channel. In other words, relative to the U.S. literature that typically finds EPU to be priced as a risk premium component.

In China side estimates show EPU is positive (approaching significance), CPI remains insignificant, and IPI is positive but insignificant, while BTC is negative and insignificant, consistent with segmentation and regulatory frictions in crypto transmission. The key comparative argument to write in your discussion is that divergence is plausibly driven by market proxy and mechanism. EPU shocks can be interpreted by investors as a signal of prospective policy support/stimulus (a "policy put" channel) rather than purely an increase in risk premia. Meanwhile, crypto restrictions and limited investor integration weaken BTC's informativeness for Chinese equity pricing. Thus, relative to Chen et al. (2017)mainland-focused evidence where EPU is priced negatively as uncertainty risk, your estimates are consistent with a more policy-signal-dominant interpretation of uncertainty (directionally positive) and a weaker cross-asset risk transmission from BTC into the China-related equity market.

These findings demonstrate that the short-run determinants of both markets differ fundamentally. The U.S. market responds more closely to real-sector fundamentals and global financial dynamics, while the Chinese market is more sensitive to domestic policy expectations and institutional conditions. In other words, the U.S. equity market reflects an environment driven by macroeconomic fundamentals and global risk sentiment, whereas the Chinese equity market reflects investor behavior that is more reactive to government decisions and is not fully integrated with global financial indicators such as Bitcoin. These results indicate that monetary policy, investor behavior, and market structure not only influence the degree of volatility but also shape the transmission channels of information in stock price formation across countries.

THEORETICAL DISCUSSION OF FINDINGS

The empirical results of this study can be further elucidated through the lens of the Rational Expectations Theory. According to this framework, market participants are forward-looking and incorporate all available information to anticipate future economic conditions and policy shifts.

In the case of the United States, the significant negative impact of the Industrial Production Index (IPI) on the S&P 500 in the short run which contradicts traditional fundamental expectations can be interpreted as a rational response to anticipated monetary tightening. Under rational expectations, investors may perceive a surge in industrial output as a signal of an overheating economy, leading them to anticipate that the Federal Reserve will raise interest rates to curb inflation. Consequently, the market prices in the expected rise in borrowing costs and a potential slowdown, resulting in a current decline in stock prices. This aligns with the 'policy anticipation' hypothesis, where the rational expectation of future intervention outweighs current positive production data.

Similarly, the near-significant positive effect of Economic Policy Uncertainty (EPU) in the China-related market (Hang Seng) reflects a different form of rational anticipation. In a policy-driven environment, rational agents may interpret high uncertainty as a precursor to government-led economic stimulus or stabilizing interventions. Thus, investors do not necessarily retreat but rather position themselves for the 'policy floor' expected to be provided by the authorities. Furthermore, the high significance of lagged stock returns in both markets demonstrates that investors' rational expectations are partially formed by persistent historical trends, where past price movements serve as an information set for predicting immediate future returns, consistent with the adaptive-to-rational expectation transition in volatile market regimes.

CONCLUSSION & RECOMMENDATION

This study demonstrates that the short-term dynamics of the United States and Chinese stock markets are influenced asymmetrically by internal and external factors. The ARDL results confirm that both markets exhibit a very high degree of price persistence, indicating that stock movements are driven more by historical dynamics than by new macroeconomic shocks. EPU has no significant effect in the U.S. market, but successfully explains variations in China, reflecting a market structure that is strongly shaped by government policy direction. Inflation also does not play a dominant role in either market, while the IPI has a significant negative impact in the U.S. but not in China, highlighting differences in real-sector transmission mechanisms to equity valuation. Bitcoin emerges as the main differentiating factor: it functions as a risk-on indicator in the U.S. market but has no significant influence in China due to regulatory segmentation of digital assets. Overall, the underlying determinants show that the U.S. market is driven by global economic fundamentals, whereas the Chinese market is more responsive to domestic policy expectations, resulting in different channels of information transmission and investor reactions between the two economies.

This study demonstrates that identical macroeconomic variables do not necessarily generate uniform market responses. rather, such responses are shaped by differences in market maturity, institutional structures, and the role of government policy. The finding that the United States stock market as a relatively mature market does not respond significantly to EPU, while the China-related equity market exhibits a positive directional response to policy uncertainty, provides empirical evidence that investor expectations are regime-dependent. Accordingly, this study extends the rational expectations framework, which has traditionally been assumed to operate homogeneously across countries, by highlighting the conditional nature of expectation formation across different market regimes.

Overall, this research makes a substantive academic contribution by integrating macroeconomic factors, policy uncertainty, and digital financial innovation within a comparative cross-market analysis. The findings not only add new empirical evidence to the existing literature but also offer a richer interpretative framework for understanding how economic and policy-related information is translated into asset prices across markets with distinct institutional characteristics. Consequently, this study is relevant not only for the advancement of international finance literature but also as a conceptual and methodological reference for future research in financial economics and capital market studies.

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APPENDIX

Table 4. Bound Test

Countries		10%		5%		1%		P-value	
		I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
USA	f	2.475	3.598	2.922	4.142	3.910	5.314	0.217	0.405
	t	-2.542	-3.633	-2.854	-3.980	-3.465	-4.641	0.643	0.884
CHINA	f	2.501	3.591	2.951	4.129	3.940	5.285	0.388	0.736
	t	-2.563	-3.663	-2.872	-4.005	-3.476	-4.656	0.411	0.779

Source: Bound Test output using stata 17, 2025

Table 5. ARDL Test

VARIABLES	Coefficient	P
(US)		
S&P 500	0.9269***	0.000
EPU	-8.00e-06	0.892
CPI	-0.00238	0.291
IPI	-0.23738***	0.000
BTC	0.07738***	0.000
(China)		
HANGSENG	0.9350***	0.000
EPU	0.000093	0.097
CPI	-0.00271	0.657
IPI	0.13745	0.420
BTC	-0.00432	0.270

Source: ARDL output using Stata 17, 2025