# A Review of Research on the Relationship between Macroeconomic Variables and Stock Market Returns

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**Abstract.** This paper provides a comprehensive review of research on the relationship between macroeconomic variables and stock market returns. Theoretical foundations such as the Capital Asset Pricing Model (CAPM), Arbitrage Pricing Theory (APT), and Discounted Cash Flow (DCF) models explain how macroeconomic factors influence asset pricing through risk premiums, factor exposures, and corporate cash flows. Foreign studies, which began earlier, have developed mature analytical frameworks ranging from linear regressions to dynamic and nonlinear models such as VAR/SVAR, GARCH, and copula functions. Their findings generally confirm stable and significant linkages between macroeconomic indicators and stock returns in mature markets. In contrast, domestic research emphasizes market inefficiency, policy intervention, and investor behavior, employing methods such as cointegration analysis, event studies, and semi-parametric models. Results often reveal weak or stage-specific correlations, reflecting incomplete transmission mechanisms. Overall, macroeconomic variables—including GDP, inflation, money supply, interest rates, and exchange rates—affect stock markets through multiple channels, but the strength and stability of these effects depend on institutional and structural contexts. Future research should incorporate high-frequency data, strengthen expectation and behavioral modeling, refine industry-level analysis, and expand cross-market comparisons to better capture the complex dynamics between macroeconomics and financial markets.

**Keywords:** Macroeconomic variables, Stock market returns, Asset pricing models, VAR/SVAR, GARCH, Policy uncertainty.

## 1. Introduction

CAs an essential part of the modern financial system, the stock market both allocates capital and serves as a "barometer" of macroeconomic conditions. In theory, macroeconomic variables affect stock returns by shaping corporate earnings expectations, investor risk preferences and market liquidity, implying a close linkage between macroeconomic movements and stock performance. In practice, however, this relationship varies across countries. Mature markets generally reflect macro fundamentals more effectively, while emerging markets often show weaker connections due to limited efficiency, policy interventions and speculative behaviour.

Since China's capital market emerged in the 1990s, institutional development and investor diversification have progressed alongside rapid economic growth. As a result, research on macroeconomic influences on stock returns has expanded, covering overall market relationships, sectoral differences, announcement effects and systemic risk. Methods such as cointegration analysis, VAR/SVAR, GARCH models and event studies have been widely applied.

International studies typically find strong, stable links between macro variables and stock returns, whereas domestic findings often reveal weak or unstable correlations, attributed to market inefficiency, behavioural biases and imperfect policy transmission. As China's market continues to mature, examining macro-financial linkages remains both theoretically valuable and practically important.

This paper reviews major domestic and foreign studies, compares methodologies and conclusions, traces research development and proposes future research directions.

## 2. Theoretical Basis

The relationship between macroeconomic variables and stock market returns is an important topic at the intersection of finance and macroeconomics. The theoretical foundations mainly derive from asset pricing theory and discounted cash flow models, which reveal from different angles how macroeconomic factors affect stock prices and returns by influencing corporate earnings, investor expectations and market risk premiums. With the deepening of research, scholars have also combined these theories with the institutional characteristics of the Chinese market to form diversified analytical frameworks.

### 2.1. Asset Pricing Models

The Capital Asset Pricing Model (CAPM) is one of the earliest theoretical bases for studying the relationship between macroeconomic variables and stock returns. Proposed by Sharpe (1964) and Lintner (1965), it posits that the expected return on an asset is determined by the risk-free rate and a market risk premium linked to systematic risk. Within the CAPM framework, macroeconomic variables indirectly affect stock returns by influencing the risk-free rate (e.g., interest rate policies) and the market risk premium (e.g., economic fluctuations and inflation expectations). For example, rising interest rates increase the risk-free return, raising discount rates and depressing stock prices; stronger expectations of economic growth may lower the risk premium and elevate stock returns. However, CAPM relies on strict assumptions such as complete market efficiency and rational investors-assumptions that often do not hold in emerging markets like China. Thus, although CAPM theoretically provides a logical path for macro variables to influence stock returns, its explanatory power in China is limited.

To overcome CAPM's dependence on a single risk factor, Arbitrage Pricing Theory (APT), proposed by Ross (1976), became an important advancement. APT posits that asset returns are influenced by multiple systematic factors, which may include macroeconomic variables such as inflation, industrial production, money supply and interest rates. APT's advantage lies in its flexible structure: it does not require the existence of a market portfolio and is independent of specific utility functions, making it more suitable for empirical research on macroeconomic influences. Chen, Roll and Ross (1986) first applied APT to macroeconomic variables and found that industrial production, inflation and risk premiums significantly explained U.S. stock market returns. In China, APT has also been widely used to construct multi-factor regression frameworks to identify the risk exposures (beta coefficients) of macro variables, but its stability and replicability remain challenged by subjective variable selection and data quality issues.

### 2.2. Discounted Cash Flow Models

The Discounted Cash Flow (DCF) model, approaching the issue from corporate valuation, emphasises that stock price equals the discounted value of future cash flows. Macroeconomic variables affect stock prices through corporate profitability (i.e., cash flows) and investors' discount rates (i.e., required returns). For example, GDP growth generally implies higher corporate sales and profits, raising future cash flows and boosting stock prices; rising interest rates increase discount rates, reduce present values and push prices lower. Changes in inflation also influence profitability expectations through cost structures and real interest rates. Inflation can erode corporate profits when rising costs outpace the adjustment of product prices, which in turn places downward pressure on stock valuations. From this perspective, the discounted cash flow model offers a clear economic explanation: macroeconomic variables influence the stock market through both the profitability of firms and the discount rates applied by investors. In other words, changes in growth, interest rates, or inflation alter expected cash flows and the cost of capital, thereby shaping stock prices via the “cash flow–discount rate”channels.

In summary, CAPM, APT and DCF models respectively construct the theoretical basis for macroeconomic variables to influence stock returns from the perspectives of risk pricing, factor exposure and corporate valuation. While these models exhibit strong explanatory power in mature markets, in emerging markets like China-where market efficiency is insufficient, investor composition is unique and policy interventions are frequent-these theories require adaptation to local features. Against this backdrop, numerous empirical studies in recent years have sought to combine these theories with the Chinese market to build more explanatory analytical frameworks.

## 3. Mechanisms of Key Macroeconomic Variables

In exploring the relationship between macroeconomics and stock returns, indicators such as gross domestic product (GDP), inflation, money supply, interest rates and exchange rates are usually regarded as representative macro variables. These variables form the main transmission channels of macroeconomic effects on stock markets by influencing corporate profitability, market liquidity, investor expectations and funding costs.

### 3.1. GDP

GDP and its growth rate are core indicators of a country's overall economic performance and the basis for long-term stock market trends. In theory, economic growth often accompanies improved corporate profitability and stock price rises. Fama (1981) and other early research highlighted a significant positive correlation between GDP growth and stock returns. However, this relationship is not stable in China. On the one hand, GDP growth largely depends on policy-driven investment and may not directly translate into corporate profits; on the other hand, structural problems and speculative behaviour in the stock market itself may weaken its reflection of macroeconomic conditions. Thus, even though GDP growth should theoretically correlate positively with stock returns, domestic empirical studies often find weak or time-specific correlations.

### 3.2. Inflation

Inflation, often measured by the consumer price index (CPI) or retail price index (RPI), is a key factor affecting corporate cost structures and investor expectations. In a high-inflation environment, rising input costs compress profit margins if product prices adjust slowly, placing downward pressure on stock prices. Moreover, inflation often triggers tighter monetary policy, increasing financing costs. Fama's "reverse relationship hypothesis" suggests a negative correlation between inflation and stock returns, supported by empirical evidence in various countries. In China, some studies also find a significant negative relationship between CPI and stock returns, particularly during periods of volatile inflation expectations.

### 3.3. Money Supply

Money supply, especially broad money (M2), reflects market liquidity and is a major tool of central bank regulation. Expansionary monetary policy increases market liquidity and reduces financing costs, typically boosting stock prices in the short term. Over the long run, however, excessive money growth may induce inflation, reduce real returns, and even lead to asset bubbles and market volatility. Changes in money supply often exert delayed and uneven effects on asset prices, shaping market dynamics in complex ways. In China, the transmission of monetary policy is not yet fully market-oriented, which means that the influence of broad money (M2) on stock performance is mediated by policy expectations, credit structures, and investor behavior. As a result, the impact of liquidity changes on the stock market tends to follow diverse and variable paths, sometimes supporting short-term gains but also carrying risks of inflationary pressure or asset bubbles over the longer horizon.

### 3.4. Interest Rates

Interest rates are crucial determinants of corporate financing costs and investors' discount rates. Generally, rising interest rates increase borrowing costs, suppress investment and consumption, and raise discount rates, thereby depressing stock prices. Conversely, falling rates stimulate economic activity and enhance corporate earnings expectations, benefiting the stock market. In mature markets, a negative relationship between interest rates and stock returns is fairly stable. In China, however, interest rate liberalisation is incomplete and policy rates and market rates diverge, so the effect of interest rates on stocks is often stage-specific and structural, closely tied to the direction of monetary policy.Studies on the government bond yield curve further reveal its predictive ability for macroeconomic effects and stock market dynamics (Sun, Dang & Miao, 2024).

### 3.5. Exchange Rates

Exchange rates and trade indicators affect stock returns by influencing export profits and international capital flows. Domestic currency appreciation reduces export competitiveness and compresses profits for export-oriented firms, depressing related stock prices, whereas depreciation benefits export revenues and supports stock prices. Exchange rate fluctuations can also affect foreign capital inflows and market risk sentiment. As the renminbi exchange rate becomes more market-driven, its impact on the stock market has grown, with particularly pronounced effects during periods of exchange rate volatility.

To summarise, key macroeconomic variables influence stock returns through multiple channels. The direction and strength of these effects depend not only on the variables themselves but also on market structures, policy environments and investor behaviour. Therefore, empirical research must consider specific market contexts and institutional characteristics when examining the relationship between macro variables and stock returns.

## 4. Progress in Foreign Research

Research on the relationship between macroeconomic variables and stock market returns began earlier abroad; the theoretical system is relatively mature and empirical methods have evolved continuously. From initial correlation tests to multi-factor models and the introduction of dynamic structures and nonlinear models, this field has developed a systematic analytical framework with increasingly rich perspectives.

Early research focused on the static correlation between macroeconomic variables and stock returns. Fama (1981) proposed the "reverse relationship hypothesis", finding a significant negative relationship between stock returns and inflation. He argued that rising inflation often accompanies a slowdown in real economic activity, reducing corporate profitability and stock prices. Geske and Roll (1983) modified this perspective, suggesting that the link reflects interactions among government spending, budget deficits and monetisation. Chen, Roll and Ross (1986) applied APT to macroeconomic variables and found that industrial production, inflation, risk premiums and interest rates significantly explained U.S. stock returns, promoting the widespread application of multi-factor models in this field.

In the 1990s, research methods shifted toward dynamic modelling. Fama (1990) emphasised that stock market volatility is driven not only by current macroeconomic variables but also by investors' expectations of future economic trends. Campbell and Shiller (1988) introduced expectations theory and information decomposition, highlighting the central role of expectations in stock price formation. Vector autoregression (VAR) models and cointegration analysis became mainstream tools for describing dynamic relationships between macro variables and stock returns. James, Koreisha and Partch (1985) used VAR models to examine the causal relationship between U.S. stock returns and inflation and money supply and found that the growth rate of base money had significant predictive power for stock returns.

As econometric methods advanced, researchers began to employ more sophisticated models to capture nonlinearity and structural changes in the relationship between macroeconomic variables and stock market returns. Approaches such as GARCH family models, structural VAR frameworks, and copula functions have been widely applied to better describe volatility dynamics and complex dependence structures. These methods reveal that factors like business cycles, credit spreads, and inflation can effectively predict fluctuations in equity returns, while nonlinear dependence models highlight the stable yet varying correlations between macroeconomic indicators and stock performance, particularly during periods of heightened uncertainty. More recent work has also emphasized the role of economic policy uncertainty, showing that shifts in policy expectations and investor sentiment can significantly amplify market reactions. Together, these developments illustrate a clear methodological evolution from simple linear regressions to dynamic and nonlinear models, enriching the understanding of how macroeconomic forces interact with financial markets.

Overall, foreign research generally concludes that macroeconomic variables and stock returns have significant and stable relationships, especially in mature markets with well-developed institutions and transparent information where stock markets effectively reflect macroeconomic fundamentals. Methodologically, research has evolved from linear regression and correlation tests to multi-factor and dynamic models and nonlinear modelling, significantly expanding the depth and breadth of analysis. Content-wise, research has shifted from single variables to multi-dimensional factors, from static relationships to dynamic expectations and risk transmission mechanisms, building a comprehensive theoretical and empirical system.

## 5. Progress in Domestic Research

Compared with the well-established system of foreign research, domestic research on the relationship between macroeconomic variables and stock returns started later. However, with the development of China's capital market and improved data availability, research has gradually become richer and methodologically diverse. From the overall market to industry sectors and from information announcements to methodological innovations, researchers have explored theoretical and empirical analyses with Chinese characteristics, gradually forming a distinct research trajectory.

### 5.1. Overall Market Level

At the market-wide level, researchers often employ cointegration analysis and VAR models to examine the long-term equilibrium and short-term dynamics between macroeconomic variables and stock returns. Findings generally suggest that while GDP growth may show occasional positive correlations with stock indices, other variables such as money supply, interest rates, and inflation often fail to demonstrate stable linkages, reflecting the limited efficiency of China’s capital market. Analyses using economic climate indices indicate that macroeconomic conditions can exert short-term positive effects on stock returns, yet the reverse influence of the stock market on the broader economy remains weak, underscoring a disconnect between financial markets and real activity. Studies based on SVAR models further reveal that macroeconomic changes are largely explained by their own internal factors, with stock returns and monetary policy contributing only marginally.Taken together, this evidence suggests that China’s stock market has not yet fully assumed the role of a reliable“barometer”of the economy, and the transmission mechanisms of macroeconomic variables remain incomplete and imperfect.Early domestic studies also examined the linkage between macroeconomic indicators and stock returns, finding weak or unstable correlations in China’s A-share market (Li & Chen, 2009; Cui, Qin & Liao, 2011). More recent work highlights dynamic interactions between financial risk and macroeconomic prosperity (Deng et al., 2018). Daily-frequency analyses and broader macro fluctuation studies complement market-wide evidence, showing conditional and time-varying linkages (Gu, 2014; Jin, 2010).

### 5.2. Industry and Sector Levels

With deeper research, scholars have increasingly focused on the heterogeneous effects of macroeconomic variables across different industries and sectors. Findings suggest that while macro variables may significantly influence stock returns at the micro level, misalignment along the transmission chain can lead to a disconnect between macroeconomic conditions and market performance. At the industry level, structural impacts are more evident, with certain indicators showing stronger correlations with profitability measures. These insights highlight the importance of industry differentiation and suggest that future research should refine sector classifications to better capture how macroeconomic variables propagate and their varying sensitivities across industries.

In addition, some studies have tested predictive models on large-cap index constituents to validate the applicability of machine learning methods across different sectors (Lin, 2022). Complementing this line of work, researchers have also proposed crash-risk early warning frameworks based on machine learning to identify extreme downside states and tail dependence, enriching the toolkit for sector-level risk measurement (Zhang, 2024).

### 5.3. Information Announcement Effects

Information announcement effects represent another important research direction in China, often examined through event study methods to assess how stock markets respond to macroeconomic data releases. Analyses generally show that abnormal returns tend to occur around the release of key indicators such as GDP and CPI, reflecting issues of information leakage and delayed market reactions. Other studies highlight that market volatility is noticeably higher on announcement days compared with normal trading days, confirming the perturbation effects of macroeconomic information. Overall, these findings suggest that macroeconomic announcements in China influence both stock returns and market volatility, while also exposing irrational elements in the information transmission mechanism.Evidence on market reactions to macro data releases further documents abnormal returns and volatility around announcement windows (Wang & Yang, 2008).

### 5.4. Methodological Innovations and Risk Measurement

In recent years, as econometric tools have diversified, domestic research has explored more complex model structures to enhance explanatory power. Some scholars have incorporated macro policy variables into the CAPM framework, building macro-micro hybrid factor models to better portray systematic risk. Others have used semi-parametric additive models to uncover nonlinear relationships between macro variables and stock returns. Attention has also turned to policy uncertainty and investor behavioural biases, promoting the integration of macroeconomic and behavioural finance analyses. This trend shows that domestic research is gradually moving beyond early linear frameworks toward more explanatory and adaptive models.

Recent methodological innovations include integrating macro policy variables into multifactor models (Chen and Yu, 2025), applying machine learning to macroeconomic data fusion (Huang, Gao and Han, 2022), exploring AI-based portfolio prediction (Fang,Chen and Wei, 2022). These approaches enrich the explanatory power of traditional frameworks highlight the growing role of computational techniques in financial analysis.

Beyond these mainstream directions, scholars have also experimented with portfolio selection optimization leveraging machine learning (Li and Tu, 2024; Zhang, Dang and Huang, 2024). Such studies emphasize practical applications, showing how algorithmic methods can improve asset allocation efficiency risk management in China's evolving capital market.

At the same time, survey-style syntheses of asset return prediction (Li, Li and Li, 2025) provide a broader perspective, summarizing the strengths weaknesses of different modelling approaches. These reviews help consolidate fragmented findings guide future methodological choices, offering a roadmap for subsequent empirical work.

Other contributions focus on exping the toolkit of macroeconomic modelling. For example, Liu (2024) explores AI-driven approaches to capture complex nonlinearities, while Huang and Yu (2018)

Chen and Wang (2019) investigate hybrid designs that combine econometric models with machine learning to better explain volatility return anomalies. Jiang, Ma and Zhang (2021)further merge dynamic CAPM structures with machine learning, offering a promising path to reconcile traditional theory with modern computational power.

## 6. Comparison and Evaluation

Existing literature reveals clear differences between domestic and foreign research on the relationship between macroeconomic variables and stock market returns in terms of theoretical construction, methodological choices and empirical conclusions. These differences stem from varying stages of market development and institutional environments and reflect different approaches to understanding the macro-financial interaction.

Methodologically, foreign research began earlier and developed a mature analytical system. Starting from classic asset pricing models such as CAPM and APT, researchers introduced multi-factor frameworks, VAR/SVAR models, GARCH family models and copula functions, progressing from linear to nonlinear structures and from static to dynamic modelling. Domestic research mostly started with cointegration analysis and VAR models; recently, SVAR, event study methods and semi-parametric models have been adopted, but analysis still largely relies on linear structures, with limited focus on expectations and nonlinearity. Moreover, foreign studies emphasise robustness checks and cross-market comparisons, while domestic studies often interpret results in the context of policy background and institutional features.

In terms of empirical conclusions, foreign research generally shows that macroeconomic variables exert a stable and significant influence on stock returns, especially in mature markets where institutional frameworks are sound and information disclosure is transparent. Indicators such as GDP growth, interest rate changes, and inflation are widely recognized as key drivers of market fluctuations, and the transmission mechanisms in these markets tend to be efficient and predictable. By contrast, evidence from China reveals a more fragmented and conditional relationship: correlations are often weak, stage-specific, or even disconnected, reflecting structural issues such as incomplete transmission channels, frequent policy interventions, and speculative investor behavior. While macroeconomic announcements can trigger abnormal returns and heightened volatility, the overall explanatory power of macro variables remains limited, suggesting that China's stock market has not yet fully assumed the role of a reliable "barometer" of the real economy.

From the perspective of research trends, both domestic and foreign studies are extending their analytical boundaries. Abroad, researchers have expanded to issues such as policy uncertainty, investor expectations and behavioural finance, emphasising interactions between macro variables and market sentiment. Domestically, there is growing attention to sector heterogeneity, policy transmission paths and investor behaviour, integrating macroeconomic analysis with micro market structures to enhance explanatory power and practical relevance.The growing emphasis on macro uncertainty underscores its role in shaping excess returns and risk transmission (Ge, 2024).

Despite considerable achievements, several common shortcomings remain. First, most studies rely on monthly or quarterly data, making it difficult to capture high-frequency reactions and short-term shocks. Second, there is subjectivity in selecting and defining macro variables, reducing comparability among studies. Third, modelling of investor expectations remains thin, though expectations often play a key role in stock pricing. Finally, cross-market comparison and international perspectives remain limited, particularly regarding linkages between China and other emerging markets, leaving ample research space.

In sum, domestic and foreign research on the relationship between macroeconomic variables and stock returns shows both complementarity and divergence in methods, conclusions and perspectives. Future research needs further progress in methodological innovation, data precision, expectation modelling and international comparison to more fully reveal the complex interaction mechanisms between macroeconomics and financial markets.

## 7. Conclusion and Prospects

The relationship between macroeconomic variables and stock market returns remains one of the core issues at the intersection of finance and macroeconomics. This paper, starting from the theoretical foundations, systematically reviews the main progress of domestic and foreign research, covering methodological evolution, empirical conclusions and research trends, aiming to present a comprehensive picture and evolution of the field.

Overall, foreign research began earlier in theory and methodology and developed a mature analytical system. From the risk pricing logic of CAPM and APT to dynamic modelling with VAR, GARCH and copula techniques, researchers have continually expanded the explanatory paths between macro variables and stock returns. Empirical results generally show that in market environments with well-developed institutions and transparent information, stock markets effectively reflect macroeconomic fundamentals, and macro variables have stable and significant impacts on stock returns.

By comparison, domestic research focuses more on market inefficiency, frequent policy interventions and investor behavioural biases. Although research methods have become richer-ranging from cointegration analysis and SVAR models to event study methods and semi-parametric modelling- there is still weakness in the transmission mechanisms of macro variables, analysis of sector heterogeneity and modelling of expectations. Empirical results indicate that the relationships between China's stock market and macroeconomics are complex and vary across time and sectors, with no stable linkage yet formed.

Looking forward, research on the relationship between macroeconomics and stock market returns still has broad prospects. First, with the use of high-frequency data and big data techniques, researchers can more finely capture market reactions to macro information, improving timeliness and explanatory power. Second, modelling of investor expectations and behavioural biases should be strengthened by integrating behavioural finance with macro analysis to more realistically reflect market mechanisms. Third, industry and sectoral differentiation is becoming more pronounced, suggesting that research should further refine industrial structures and explore transmission pathways and sensitivities of macro variables in different economic sectors. Finally, incorporating cross-market comparison and international perspectives will help reveal China's particularities and commonalities, providing more reference value for policy-making and market regulation.

In conclusion, the relationship between macroeconomics and stock market returns is neither linear nor static but a dynamic, evolving and complex system. Understanding this system requires continuous theoretical and methodological updates and deep observation of market practice. As China's capital market further develops, this research field will continue to be an important area of convergence between finance and economics.

## Acknowledgments

This work was supported by the project: Project name:

Undergraduate Innovation and Entrepreneurship Training Program of Nanjing University of Science and Technology.

Project number: 202410288190Y

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