

QUANTITATIVE EASING AND THE NEW MONETARY TRINITY: SYSTEMATIC REVIEW ANALYSIS

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Abstract

Amid the global financial crisis caused by the COVID-19 pandemic, central banks in many countries implemented quantitative easing (QE) by purchasing government bonds and other securities to stabilize macroeconomic conditions. In addition to inflation control, financial stability has become a critical policy objective. This study explores the transformation from the “impossible trinity” to the “new monetary trinity,” which redefines the balance between exchange rate stability, financial openness, and monetary independence. Employing a Systematic Literature Review (SLR) combined with bibliometric analysis, 146 publications from ScienceDirect and Scopus (2020 to 2023) were examined using VOSviewer and Microsoft Excel. The findings reveal distinct methodological preferences. Dynamic Stochastic General Equilibrium (DSGE) models were found to be dominant in advanced economies, while Vector Autoregression (VAR), Autoregressive Distributed Lag (ARDL), and Vector Error Correction Models (VECM) have been more commonly applied in emerging markets. Evidence indicates that quantitative easing plays a significant role in managing capital flows, stabilizing exchange rates, and maintaining policy autonomy. However, trade-offs still exist, particularly in small open economies. This study offers structured insights into the effectiveness of quantitative easing within the framework of the new monetary trinity during a global crisis and contributes to the literature by systematically mapping how quantitative easing interacts with the evolving trilemma framework, providing context-specific lessons for post-crisis monetary strategy.

Keywords: COVID-19, Financial Stability, Global Financial Crisis, New Monetary Trinity, Quantitative Easing

INTRODUCTION

The recent global financial crisis fundamentally transformed the paradigm of central banking. Prior to this crisis, most central banks focused almost exclusively on maintaining price stability, typically relying on short-term interest rate instruments to achieve this objective. However, the crisis exposed the vulnerability of financial systems, underscoring the need to integrate financial stability into the core objectives of monetary policy. It became increasingly

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clear that price stability alone is insufficient to ensure macroeconomic resilience, especially in the face of systemic shocks and the financial implication of global contagions. The complexity of balancing the dual objectives of price and financial stability has since become a central theme in post-crisis monetary frameworks (Subbarao, 2012a). This is reinforced by the findings of Markham (2022), who analyzed the monetary policies of different central banks from the “Great Recession” up to the economic crisis caused by the COVID-19 pandemic, highlighting how these shocks prompted the adoption of asset purchase programs as unconventional tools.

Asset purchases are made to reduce long-term interest rates and mitigate an ongoing decline in economic activity (Kolasa & Wesołowski, 2020). Research by Gertler and Karadi (2011) and Carlstrom et al. (2017) defined quantitative easing as the process by which central banks purchase bonds issued by the government or private sector. Central banks can ease interbank market conditions by purchasing government bonds or engaging in credit operations with commercial banks, thereby lowering interbank interest rates within the policy corridor and stimulating economic activity (Arce et al., 2020).

Juhro and Goeltom (2015) argued that when facing global uncertainty, the objective of monetary policy is to strike a balance between mitigating adverse impacts on domestic economic growth and maintaining medium-term macroeconomic stability. This objective requires a comprehensive understanding of the Mundell-Fleming trilemma, which highlights the fundamental challenge faced by central banks in simultaneously achieving capital mobility, exchange rate stability, and monetary policy independence. As suggested by their findings, monetary authorities must carefully navigate and, where feasible, reconcile these conflicting goals to ensure sustainable macroeconomic stability—encompassing both price stability and financial system resilience. In alignment with this view, Subbarao (2012b) emphasized that the global financial crisis served as a stark reminder to central banks of the risks associated with prioritizing price stability at the expense of financial stability.

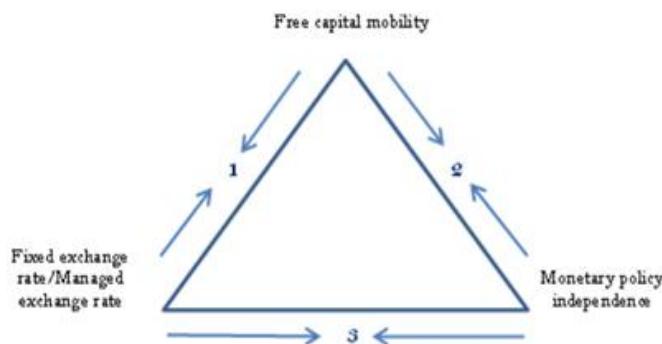
The debate surrounding the “open economy trilemma,” introduced by Robert Mundell and Marcus Fleming, posits that a country can only simultaneously achieve two out of the three policy objectives: exchange rate stability, financial market openness, and monetary policy independence (Fleming, 1962; Mundell, 1963). The Mundell-Fleming framework underscores that an independent monetary policy is only feasible under a regime of flexible exchange rates in the presence of high capital mobility, a condition widely recognized as the “Mundellian trilemma” (Froyen & Guender, 2021). Interest rate differentials across countries often trigger capital movements, as investors pursue higher returns by selling domestic currency, leading to exchange rate depreciation. To ease the resulting pressure on the exchange rate under capital account liberalization, central banks are frequently compelled to tighten domestic liquidity by intervening in foreign exchange markets, typically through large-scale foreign currency purchases.

Empirical research by Prabheesh et al. (2021) shows that for small open economies such as Indonesia, capital inflows during certain periods can lead to excessive domestic credit expansion and asset price inflation. Conversely, during periods of capital reversals, these economies face heightened risks of financial market illiquidity and sharp corrections in asset prices. This dual risk scenario poses substantial threats to both monetary and financial stability. Harun and Gunadi (2022) further explain that the increasing integration of global financial markets and the volatility of capital flows have driven monetary authorities to move away from “corner solutions” (such as rigid exchange rate pegs or complete policy independence) toward more pragmatic “middle-ground strategies”. This adaptive shift in approach signifies transformation from the classical impossible trinity into a more dynamic and flexible “new monetary trinity.”

This article aims to examine the dimensions and complexities of the evolving monetary trilemma by tracing its transformation through the global financial crisis during and following

the COVID-19 pandemic. It offers a comprehensive literature review of studies investigating the role of quantitative easing (QE) as a monetary policy response to economic shocks during the pandemic, with particular emphasis on its effects on macroeconomic variables and the financial system. Furthermore, the review integrates the conceptual transition from the “impossible trinity” to the “new monetary trinity”, a framework that has gained increasing relevance in understanding the interplay between economic growth and financial stability in the context of global economic pressures. According to Juhro et al. (2022), the original trilemma posits that policymakers can only simultaneously achieve two out of the three policy objectives: exchange rate stability, monetary policy independence, and capital mobility.

Figure 1 The Impossible Trinity of Monetary Policy



Source : Mundell et al. (1963)

The global financial cycle underscores the reality that countries cannot fully shield themselves from external shocks (Basri & Sumartono, 2023). This vulnerability reveals several key considerations in formulating effective macroeconomic policy responses. First, economic stability often comes at the expense of monetary policy independence. While ensuring financial stability is imperative, it may necessitate limiting the central bank's autonomy in certain policy decisions. Second, capital flows play a dual role, as they can stimulate investment and economic growth, yet also serve as a conduit for volatility and financial disruption (Rey, 2015). Sudden stops or surges in capital flows can destabilize domestic financial systems, particularly in emerging markets with limited buffers. Third, exchange rate management has inherent limitations. Although adopting a flexible exchange rate regime may offer some insulation against external shocks, it is not a guarantee of financial stability. Managing exchange rates effectively is often costly and technically challenging, especially amid volatile and large-scale capital movements. Given these complexities, countries must adopt a multifaceted policy approach. This includes the use of macroprudential regulations to strengthen the financial system, the strategic application of capital controls to moderate inflows and outflows, and international coordination with other central banks to ensure financial stability in an increasingly interconnected global economy.

However, exchange rate depreciation becomes inevitable when foreign reserves are depleted, as observed during the Asian financial crisis (Sun & Payette, 2016). In such scenarios, countries that prioritize exchange rate stability and capital mobility, such as those within the Eurozone, must relinquish monetary policy independence. Conversely, countries that seek to maintain exchange rate stability and monetary autonomy, such as those under the Bretton Woods system with fixed exchange rates, are compelled to restrict capital mobility in order to preserve policy consistency (Wagner, 2021a). The policy configurations within the trilemma framework do not operate in isolation. They often interact in complex and non-linear ways, sometimes reinforcing one another and at other times producing contradictory outcomes. These

interactions become particularly pronounced under conditions of macroeconomic disequilibrium or financial distress, where short-term imbalances amplify underlying tensions. During crises, the trade-offs become more severe, differing markedly from those observed under standard economic conditions (Ligonniere, 2018).

Several strands of literature have critically examined the validity of the trinity policy framework in the context of increasing global integration (Bhatta et al., 2022). From a political economy perspective, Wagner (2021b) argues that it is inherently impossible to achieve all three vertices of the trilemma, monetary independence, capital mobility, and exchange rate stability, simultaneously. Wagner draws an analogy in a broader geopolitical context, suggesting that prioritizing democracy may necessitate sacrificing either globalization or national sovereignty. Likewise, embracing globalization often entails compromising either democratic principles or national autonomy. Rey (2016) further challenges the foundational assumptions of the trilemma by asserting that in the presence of free capital mobility, the traditional policy space collapses rendering the trilemma obsolete. Instead, the environment in the post-global financial crisis (GFC) period reflects a transformation of the trilemma into a dilemma, where policymakers face a more acute trade-off, particularly between monetary independence and capital account openness. This suggests that the theoretical trilemma may no longer be operationally viable under current global financial conditions. In contrast, Ligonniere (2018) provides a more nuanced perspective, suggesting that the trilemma does not universally collapse into a dilemma. Instead, the traditional trilemma framework remains valid during periods of economic expansion, whereas during financial crises, trade-offs tend to intensify, creating the appearance of a dilemma. This interpretation highlights that the applicability of the trilemma is highly conditional, shaped by prevailing macroeconomic conditions.

According to Subbarao (2012b), managing the inherent tensions among monetary independence, exchange rate stability, and capital mobility, lies at the core of the policy trilemma. The instruments employed to achieve these objectives within the framework of the new trilemma often interact in complex and sometimes unintended ways. In certain contexts, these instruments may be mutually reinforcing; in others, they may be in direct conflict. Importantly, the trade-offs that emerge during periods of economic crisis tend to differ significantly from those observed under normal macroeconomic conditions, thereby complicating policy formulation and implementation.

On the other hand, an expanding body of literature has increasingly questioned the ongoing relevance of the trinity framework in the context of deepening globalization (Bhatta et al., 2022). From a political economy standpoint, Wagner (2021b) contends that the trilemma inherently precludes the simultaneous attainment of all three goals. He illustrates this impossibility by arguing that a country prioritizing democracy may need to sacrifice either globalization or national sovereignty, while pursuing globalization could entail a trade-off with either democratic governance or national autonomy. Rey (2016) provides a critical contribution by arguing that under conditions of free capital mobility, the conventional trilemma no longer holds. Instead, the post-global financial crisis (GFC) landscape reveals a shift toward a policy dilemma, wherein countries face a binary trade-off, particularly between monetary autonomy and capital account openness, thereby undermining the feasibility of maintaining all three objectives. In contrast, Ligonniere (2018) offers a conditional perspective, proposing that the trilemma holds theoretical validity during periods of economic expansion but may evolve into a dilemma during crises, when trade-offs and institutional constraints become more pronounced. This suggests that the trilemma's empirical relevance is highly context-dependent, reflecting its shift from a static theory to a dynamic policy framework.

The objectives embedded in the monetary trinity, which include price stability, financial system stability, and national debt sustainability, are not always attainable at the same time.

Trade-offs and policy tensions become particularly pronounced in the short term, especially during periods of off-target inflation, vulnerabilities in the financial sector, or increasing levels of public debt. As policymakers navigate these challenges, the traditional trilemma evolves into a new monetary trilemma in which each objective interacts with the others through dynamic cause-and-effect relationships. For instance, pursuing price stability may compromise financial stability or constrain fiscal flexibility, while efforts to sustain public debt levels can impact inflationary dynamics or credit conditions. As Subbarao (2012b) emphasizes, the policy instruments aimed at achieving these three goals interact in complex and sometimes conflicting ways. During periods of crisis, policy tensions and trade-offs tend to intensify, often differing substantially from those observed under stable economic conditions. These circumstances call for a more adaptive and integrated policy approach that can effectively balance competing objectives within a volatile and interconnected macro-financial environment.

This article aims to explore the dimensions and complexities of the new monetary trilemma, tracing its evolution from the global financial crisis to the COVID-19 pandemic. It provides a critical review of the existing literature on the role of Quantitative Easing (QE) as a monetary policy intervention during episodes of economic shock during the pandemic era. The analysis focuses on the impact of QE on key monetary and macroeconomic variables, financial system dynamics, and a broader transformation from the traditional “impossible trinity” to the “new monetary trinity,” a shift that carries significant implications for economic growth and macro-financial stability.

This literature review covers the period of the COVID-19 pandemic and includes studies from both emerging and advanced economies. It assesses the methodologies used, the core issues examined, and the types of economic shocks addressed, whether through simulation models, forecasting approaches, or empirical analyses, based on historical data and forward-looking scenarios. The study employs a Systematic Literature Review (SLR) in combination with bibliometric techniques, providing a quantitative overview of research trends. The literature was sourced from ScienceDirect and Scopus databases, with data processed using VOSviewer for network mapping and Microsoft Excel for descriptive statistical analysis.

2. METHOD

2.1 Review Scope

This study investigates the effects of monetary policy interventions, particularly Quantitative Easing (QE), in response to economic shocks ranging from the Global Financial Crisis to the COVID-19 pandemic. It examines the impact of QE on key macroeconomic variables and the financial system, as well as the extent to which monetary authorities have managed to achieve the objectives embedded within the monetary trinity—namely, exchange rate stability, capital flow openness, and monetary policy independence. The methodology employs a Systematic Literature Review (SLR) combined with bibliometric analysis, offering a rigorous quantitative approach to synthesizing scientific publications and identifying research trends, patterns, and gaps in the existing literature.

The data utilized in this study were sourced from reputable academic databases, namely ScienceDirect and Scopus, and were analyzed using VOSviewer and Microsoft Excel to perform a systematic bibliometric review. This methodological approach facilitates the identification of prevailing research trends, thematic clusters, and gaps within the literature related to monetary policy responses during periods of economic turmoil.

The purpose of this analysis is to provide a comprehensive understanding of how Quantitative Easing (QE) interventions were applied during the COVID-19 pandemic, and to assess their macroeconomic and financial impacts. This evaluation offers valuable insights for

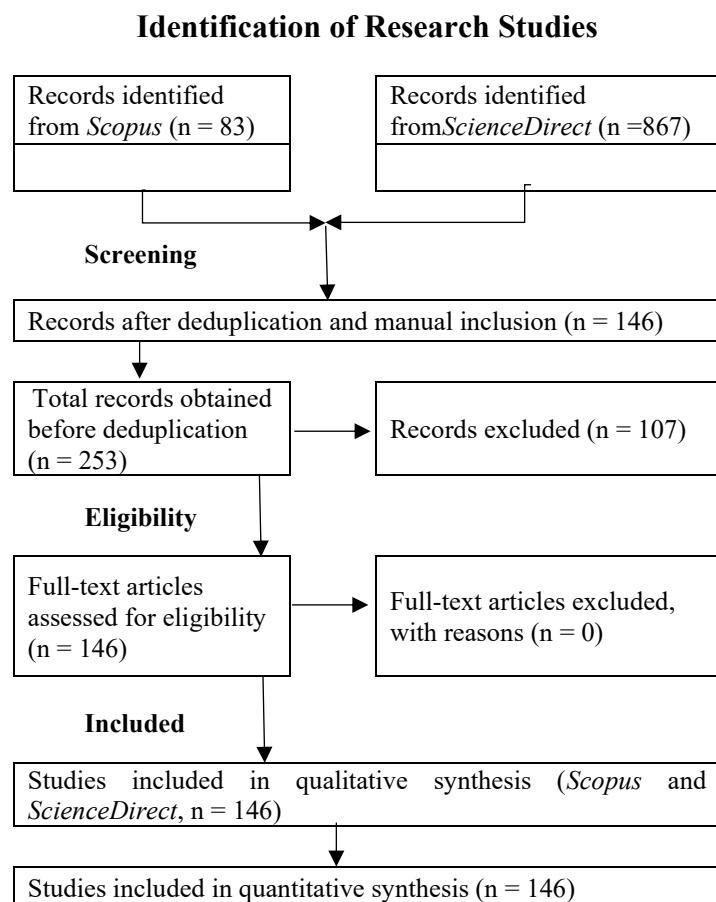
policymakers aiming to navigate the evolving challenges of the new monetary trinity, particularly in the face of rising global uncertainty and structural imbalances.

2.2 Strategy and Selection Criteria for Literature Review

This study employed a comprehensive search strategy guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework (Moher et al., 2009) to ensure methodological rigor, transparency, and replicability. Keywords used included combinations of “monetary AND policy”, “quantitative AND easing”, “burden AND sharing”, “pandemic AND COVID”, as well as “impossible trinity” and “new trinity”. The search was conducted across two major databases: Scopus and ScienceDirect.

From Scopus, an initial 83 articles were identified. After title and abstract screening, 27 articles were retained, with an additional 5 articles added using the keyword DSGE, bringing the total to 32. From ScienceDirect, 867 articles were retrieved using the same keyword combinations. After applying filters for article type (research), subject area (Economics, Econometrics, and Finance), and language (English, open-access), 228 articles were retained. A DSGE-specific search yielded 92 additional relevant documents. After removing duplicates and assessing article relevance using Microsoft Excel, 135 unique articles were identified. Furthermore, 11 highly relevant articles identified during manual pre-screening (not captured by the automated search) were added. In total, 146 peer-reviewed journal articles were included in the final synthesis for bibliometric and qualitative analysis.

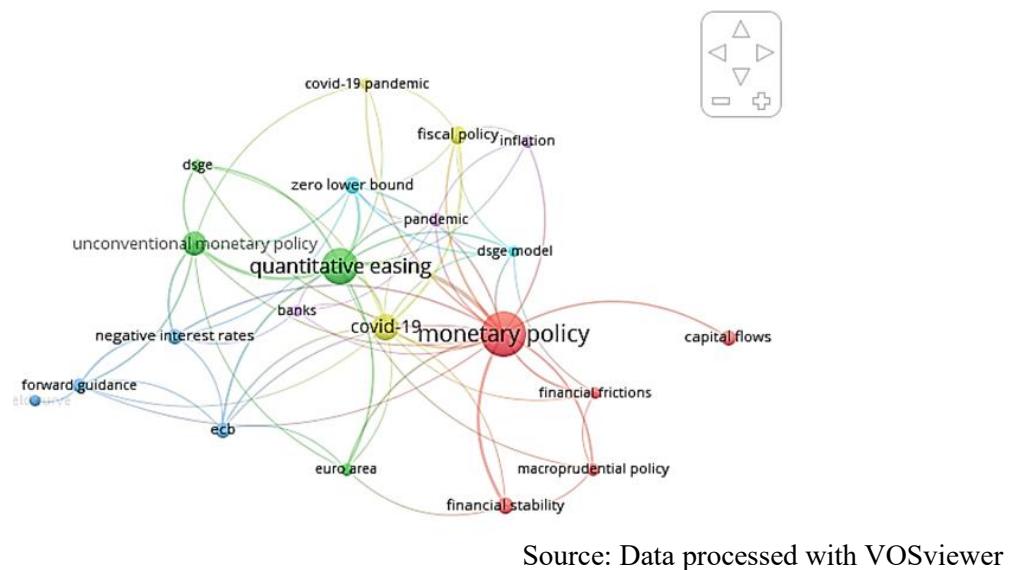
Figure 2 PRISMA Flowchart Model for Systematic Review and Meta-Analysis (PRISMA)



3. RESULTS

The bibliometric analysis was conducted using bibliographic data processed through VOSviewer, which generated a network visualization illustrating the relationships among the key research themes in the literature published between 2020 and 2023. Figure 3 presents the resulting density visualization, with clusters indicating areas of high term co-occurrence and thematic concentration.

Figure 3 Research Density Visualization



Source: Data processed with VOSviewer

As shown in Figure 3, the most prominent clusters included monetary policy, quantitative easing (QE), financial stability, macroprudential regulation, and economic responses to the COVID-19 pandemic. Among these, monetary policy and quantitative easing emerged as central themes, reflecting strong scholarly interest and frequent investigation across the reviewed studies. While important related concepts—such as the zero lower bound and forward guidance—were also present, notably absent from the visualization are the theoretical constructs of the “impossible trinity” and the “new monetary trinity”. This absence is not due to oversight, but rather reflects the results of the keyword co-occurrence analysis performed through VOSviewer, indicating a limited presence or underrepresentation of these terms within the metadata and abstracts of the selected literature. Consequently, this bibliometric outcome highlights a critical gap in the current academic discourse, reinforcing the relevance and novelty of this study, which seeks to systematically elevate the visibility of the evolving monetary trinity framework in post-crisis monetary policy research.

Table 1 provides comprehensive descriptive statistics of the analyzed 2020 – 2023 publication data. A total of 146 documents were reviewed, revealing an annual growth rate of 101.04%, an exceptional rate compared to typical bibliometric studies. This significant growth underscores heightened research interest and activity in the field. Each article received an average of approximately 8.80 citations, indicating strong influence and recognition within the academic community. A substantial number of references, totaling 11,976, were identified, involving 356 authors. Out of these, 41 documents were single-authored, with an average of 2.55 co-authors per document. Notably, international collaboration was present in 26.71% of these publications, emphasizing the global relevance and collaborative nature of this research area.

Table 1 Summary of the Descriptive Information

| Main Information about Data | Results |
|---------------------------------|-----------|
| Period | 2020:2023 |
| Documents | 146 |
| Annual Growth Rate % | 101.04 |
| Document Average Age | 1.88 |
| Average citations per document | 8.801 |
| References | 11,976 |
| DOCUMENT CONTENTS | |
| Keywords Plus (ID) | 236 |
| Author's Keywords (DE) | 542 |
| AUTHORS | |
| Authors | 356 |
| Authors of single-authored docs | 39 |
| AUTHORS COLLABORATION | |
| Single-authored docs | 41 |
| Co-Authors per Doc | 2.55 |
| International co-authorships % | 26.71 |

Figure 4 illustrates trends in article citations and publication counts from 2020 to 2023. The data shows a substantial rise in publications, increasing from 9 in 2020 to 68 in 2023. Conversely, average citations per article have declined from 31.00 in 2020 to 5.50 in 2023. This decline suggests that, although newer publications have become more numerous and accessible, their individual citation impact might not yet be fully realized or is dispersed across a broader array of recent research.

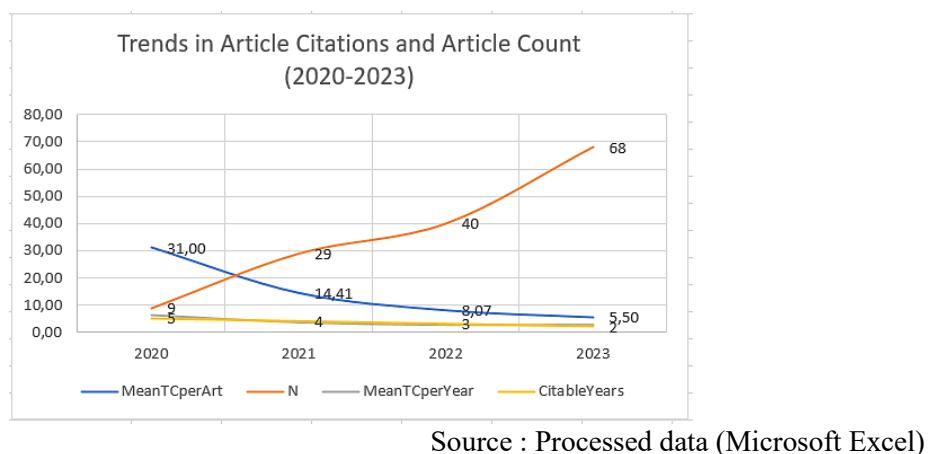
Figure 4 Trends in Article Citations and Article Count (2020-2023)

Table 2 provides details of the classification of empirical research published between 2020 and 2023, focusing on the types of econometric methods applied in studies addressing monetary policy dynamics across different country groups. Rather than emphasizing the prevalence of specific models, this table aims to categorize methodological diversity and highlight how research in advanced economies (AE) and emerging markets (EM) has evolved in the post-crisis period. It emphasizes the analytical preferences observed within the literature, setting the stage for comparative analysis based on structural and institutional contexts.

Table 2 Research Conducted In Advanced Economic Countries And In Emerging Market Countries

| No. | Authors | Year | Cited by | Method | Country |
|-----|----------------------------------|------|----------|---|---------|
| 1 | (Çekin et al., 2021) | 2021 | 0 | VAR, Hamilton Filter dan Hodrick-Prescott (HP) Filter | AE |
| 2 | (Alessandria & Choi, 2021) | 2021 | 9 | ARDL, ECM | AE |
| 3 | (Hauser & Seneca, 2022) | 2022 | 2 | DSGE | AE |
| 4 | (Lokdam, 2020) | 2020 | 15 | ARDL, ECM | AE |
| 5 | (Spadaro et al., 2022) | 2022 | 9 | Meta Analisis, Multilevel Meta-Regression, Multilevel Model | AE, EME |
| 6 | (Benigno et al., 2022) | 2022 | 1 | DSGE, SVARs, BVAR | AE |
| 7 | (Coenen et al., 2023) | 2023 | 0 | DSGE, Stochastic Simulations, NAWM II | AE |
| 8 | (Basdekis et al., 2023) | 2023 | 1 | Panel Analysis, Fixed Effects and Random Effects Models, Profitability Measures, Tobins | AE |
| 9 | (Bahmani-Oskooee & Nasir, 2020) | 2024 | 24 | ARDL, ECM | AE |
| 10 | (Zhao et al., 2022) | 2022 | 1 | DSGE | AE |
| 11 | (Taghizadeh-Hesary et al., 2020) | 2020 | 12 | VECM | AE |
| 12 | (MacDonald & Popiel, 2020) | 2020 | 4 | B-SVAR | AE |
| 13 | (Creel & El Herradi, 2022) | 2020 | 0 | Panel VAR, | AE |
| 14 | (Nasir et al., 2021) | 2021 | 13 | TVSVAR, Bayesian Estimation | EM |
| 15 | (Stockhammer et al., 2020) | 2020 | 12 | Theoretical Analysis | AE |
| 16 | (Minford et al., 2021) | 2021 | 1 | DSGE | AE |

The methodological variation in Table 2 points to underlying differences in research objectives and data environments across countries. Studies on advanced economies typically leverage theoretical modeling capabilities, enabling in-depth simulations and macro-financial forecasting. Meanwhile, the few studies on emerging markets emphasize empirical adaptability, as seen in the adoption of Bayesian time-varying models. These patterns reflect broader institutional and structural realities—such as data limitations and policy volatility—that influence the choice of econometric tools. Highlighting this divergence provides context for identifying where future research could strengthen evidence-based monetary frameworks, particularly in underrepresented EM settings.

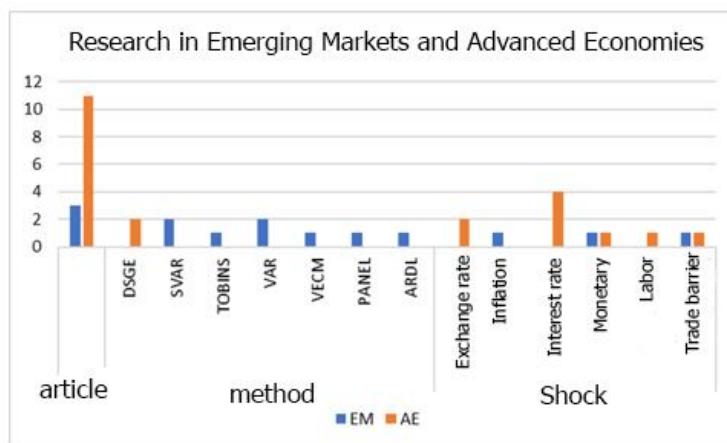
The ARDL approach proves particularly useful in emerging market contexts, where

data limitations and mixed integration orders are common, as it enables the analysis of both short-run dynamics and long-run equilibrium relationships among variables. Additionally, the Tobin model is often applied to evaluate the effects of monetary policy on asset prices and investment decisions, an especially relevant focus in emerging economies where policy interventions tend to yield immediate and pronounced impacts.

Furthermore, the divergence in methodological preferences reflects underlying structural distinctions between advanced and emerging economies. Advanced economies, characterized by mature financial systems and institutional stability, are well-positioned to adopt complex modeling frameworks such as DSGE that demand extensive data and theoretical calibration. In contrast, emerging markets frequently face heightened economic volatility and structural limitations, which require adaptable analytical tools. Methods such as VAR and SVAR offer practical flexibility, enabling timely and effective policy analysis even in the presence of incomplete or rapidly changing data environments. These tools provide essential support for policymakers seeking to navigate dynamic and uncertain economic conditions.

By highlighting these methodological distinctions, Table 2 emphasizes the importance of selecting analytical frameworks that are contextually appropriate. Empirical investigations into quantitative easing are predominantly concentrated in advanced economies, reflecting both data availability and institutional capacity for complex modeling. In contrast, research in emerging markets remains relatively limited but focuses on critical challenges such as inflation dynamics and external shocks. While studies in advanced economies frequently analyze monetary shocks, including interest rate changes and labor market responses, those in emerging markets tend to prioritize stability-oriented concerns, underscoring the need for diverse methodological and policy based approaches, tailored to differing macroeconomic realities.

Figure 5 Research methods in Emerging Market and Advance Economy



Source : Processed data (Microsoft Excel)

Figure 5 illustrates the comparative distribution of research methods and thematic focuses between advanced economies (AE) and emerging markets (EM). AE studies demonstrate a strong inclination toward Dynamic Stochastic General Equilibrium (DSGE) models, enabled by their robust data infrastructure and capacity for theoretical calibration. Figure 5 confirms that AE studies are primarily associated with the DSGE approach, with minimal visual representation of alternative methods. In contrast, EM studies dominate in the use of empirical techniques such as VAR, SVAR, ARDL, and panel models, as reflected in figure 5. This finding aligns with the methodological diversity reflected in Table 2.

In contrast, the research conducted in EM contexts exhibits a broader methodological spread despite the lower number of studies. Methods such as Vector Autoregression (VAR),

Vector Error Correction Model (VECM), Structural VAR (SVAR), ARDL, and Tobin's model are commonly utilized, reflecting the need for more flexible tools that can operate under limited data availability and heightened structural volatility. The observed methodological choices are largely driven by pragmatic constraints, requiring models that adapt efficiently to uncertain and dynamic environments—particularly in small open economies often exposed to external shocks.

Figure 5 visualizes the thematic distribution of research related to economic shocks across advanced economies (AE) and emerging markets (EM). In AE, the dominant research themes center around interest rate shocks, exchange rate volatility, and employment fluctuations, reflecting their high exposure to international trade and capital flows. Interest rate dynamics are frequently studied due to their strong implications for financial stability and macroeconomic performance, particularly in the context of monetary-fiscal interactions. Similarly, exchange rate instability is a persistent concern in AE research, as it influences trade competitiveness and balance-of-payment positions. Additionally, employment-related variables are often analyzed to evaluate the impact of stabilization policies on labor market outcomes.

In contrast, emerging markets (EM) are more frequently affected by inflationary shocks, which often stem from volatile commodity prices, political instability, and fragmented policy regimes. These economies also demonstrate heightened vulnerability to external disturbances such as global financial crises and fluctuations in international commodity markets. In response, research in EM tends to utilize flexible and adaptive methodologies—particularly VAR and SVAR—that can effectively capture short- and medium-term dynamics under constrained data environments. Furthermore, monetary turmoil and trade barriers emerge as recurrent themes in both AE and EM studies, emphasizing the disruptive effects of abrupt policy shifts and protectionist measures on macroeconomic performance and international trade relations.

Moreover, studies in small open economies, particularly those categorized as advanced economies (AE), often concentrate on the volatility of exchange rates, interest rates, and labor market dynamics. These economies benefit from stable institutional environments and comprehensive datasets, enabling the use of complex macroeconomic models such as DSGE. In contrast, while emerging markets (EM) also experience significant market volatility, researchers in these contexts more commonly apply adaptable empirical techniques such as ARDL, VECM, and Panel VAR that are better suited for constrained data and rapidly shifting macroeconomic conditions. These methodological differences reflect the structural disparities in data quality, institutional strength, and the capacity to implement evidence-based policy.

By clearly distinguishing the research methods and types of economic shocks between advanced and emerging market economies, this review highlights the importance of aligning analytical frameworks with country-specific economic conditions. In advanced economies, the prevalence of DSGE models and focus on interest rates and labor market dynamics, reflects institutional capacity for complex policy modeling. Meanwhile, in emerging markets, the diversity of methods—ranging from VAR and SVAR to ARDL and Tobin's model—demonstrates a need for empirical tools that are responsive to volatile conditions and limited data availability. This methodological alignment ensures that research outputs are both practically applicable and contextually relevant, thereby enabling policymakers to make informed decisions in navigating diverse macroeconomic challenges.

Table 3 presents a structured synthesis of previous studies examining the transition from the “impossible trinity” to the “new monetary trinity.” It outlines a range of methodologies, including Threshold Vector Autoregression (TVAR), Vector Autoregression (VAR), Dynamic Stochastic General Equilibrium (DSGE), literature review, Autoregressive Distributed Lag (ARDL), Panel Error Correction Model (PECM), simultaneous equations, and

Ordinary Least Squares (OLS) analysis. The diversity of these approaches reflects the methodological complexity in addressing the interplay among exchange rate stability, capital mobility, and monetary policy autonomy. The findings across these studies highlight the context-specific and multifaceted nature of policy effectiveness in managing the evolving trilemma.

Table 3 Previous Research on Impossible Trinity Becomes New Trinity

| No | Article | Method | | | | | New Trinity Findings | | |
|----|----------------------------|----------|------|-------------------|------|------|----------------------|-----|-----|
| | | TVAR/VAR | DSGE | Literature review | ARDL | PECM | Simultaneous | OLS | Yes |
| 1 | Mansur, 2023 | v | | | | | | | v |
| 2 | (Karau, 2023) | | v | | | | | | v |
| 3 | (Sun & Payette, 2016) | | | v | | | | | v |
| 4 | Li et al., 2021 | | | | v | | | | v |
| 5 | (Funke & Zhong, 2024) | | | | | v | | | v |
| 6 | Bhatta et al., 2022 | | | | | | v | | v |
| 7 | (Majumder & Nag, 2020) | | | | | | | v | v |
| 8 | (Lim & Goh, 2016) | v | | | | | | | v |
| 9 | (Padhan & Prabheesh, 2021) | | | v | | | | | v |
| 10 | (Hoang et al., 2021) | | | | | | v | | v |

The findings in Table 3 highlight critical challenges in implementing the new monetary trinity. Firstly, the role of exchange rate regimes is central to capital flow volatility, shaping the dynamics of the monetary trilemma (Lim & Goh, 2016). This relationship is further emphasized in the context of emerging market dynamics (Mansur, 2023). Contractionary monetary policy shocks tend to cause exchange rate appreciation in highly volatile regimes, yet this does not consistently ensure stable capital inflows. These findings expose the practical limits of the trilemma framework. This interpretation suggests a need for complementary tools, such as central bank securities, to better manage exchange rate fluctuations and support macroeconomic stability (Padhan & Prabheesh, 2021).

Secondly, existing research highlights the significant challenges that governments encounter in striving to fulfill the objectives of the new monetary trinity, particularly when foreign exchange reserves surpass critical thresholds (Karau, 2023). Under such conditions, the implementation of the trinity framework tends to become increasingly intricate, potentially triggering adverse macroeconomic consequences such as a decline in economic output and a rise in inflationary pressures (Majumder & Nag, 2020). These findings underscore the necessity for governments to maintain optimal levels of foreign exchange reserves and to adopt proactive, well-calibrated monetary policies to preserve economic stability.

Thirdly, financial innovation and its broader implications for financial system stability represent a critical dimension in the governance of the new monetary trinity (Sun & Payette,

2016). In addition, recent studies emphasize the role of technological advances in shaping central bank responses and regulatory frameworks (Li et al., 2021). Existing studies reveal that the effectiveness of trilemma-based policy frameworks is heavily influenced by the surrounding financial environment—encompassing factors such as financial stress, the maturity of financial markets, central bank interventions, and overall economic liquidity. Empirical evidence emphasizes that interventions by central banks in foreign exchange markets serve as vital instruments for alleviating financial constraints and reinforcing systemic stability (Funke & Zhong, 2024).

Moreover, the political dynamics of globalization add a further layer of complexity, particularly concerning the balance between global integration and national monetary sovereignty. Empirical evidence indicates that reductions in monetary policy independence can intensify macroeconomic vulnerabilities (Bhatta et al., 2022). This issue is especially pronounced in small open economies—such as India and Indonesia—where systemic crises have often evolved beyond the traditional trilemma, giving rise to more complex configurations such as “dilemmas” or even “quadrilemmas,” which reflect the growing difficulties in policy coordination and implementation (Bhatta et al., 2022).

Given these multifaceted challenges, the search for alternative strategies and policy instruments becomes increasingly imperative. Potential approaches include aligning monetary policy with global climate agendas, optimizing foreign exchange reserve management, and adopting adaptive monetary frameworks suited to each country’s structural and institutional characteristics. These measures underscore the importance of context-specific, evidence-based policymaking and the critical role of methodological precision in producing actionable policy insights.

This systematic review of the literature on the new monetary trinity also reveals clear differences in the nature of economic shocks confronting advanced and emerging economies. Advanced economies typically grapple with fluctuations in interest rates, exchange rates, and employment, making them well-suited to the use of complex DSGE models that allow for theoretical depth and policy simulation (Karau, 2023). In parallel, other studies further support the suitability of such models in capturing structural dynamics in advanced economies (Hoang et al., 2021). Conversely, emerging markets tend to face inflationary pressures and external economic shocks, which are more effectively addressed using flexible empirical methods such as VAR, SVAR, VECM, and ARDL (Lim & Goh, 2016). This methodological preference is reinforced by recent findings highlighting the structural vulnerability of emerging economies to global financial volatility (Mansur, 2023). These approaches offer adaptability and responsiveness, especially in environments characterized by data limitations and structural volatility.

Ultimately, this review highlights the necessity for aligning methodological frameworks with the specific economic conditions of each country. Through such alignment, policymakers and researchers are better equipped to generate relevant, high-impact insights that support economic resilience and stability in an increasingly interconnected global landscape.

4. DISCUSSION

The detailed results presented above underscore critical methodological differences and policy implications inherent in managing the transition from the “impossible trinity” to the “new monetary trinity.” These findings illuminate the intricate and context-specific challenges faced by policymakers in advanced economies and emerging markets alike.

Advanced economies predominantly employ Dynamic Stochastic General Equilibrium (DSGE) models due to their robust theoretical foundations and comprehensive data

infrastructure. This approach enables nuanced long-term policy analyses and sophisticated modeling of economic dynamics, particularly suited for economies characterized by stable institutions and well-developed financial markets. DSGE models effectively capture complex interactions among policy variables such as interest rates, employment, and exchange rates, allowing for precise and actionable insights into macroeconomic management.

In contrast, emerging markets typically face structural volatility, data constraints, and rapidly shifting economic conditions. These factors necessitate the use of more flexible empirical methodologies such as Vector Autoregression (VAR), Structural Vector Autoregression (SVAR), Vector Error Correction Models (VECM), Autoregressive Distributed Lag (ARDL), and Tobin's model. These methodologies are adept at handling incomplete datasets and can swiftly adapt to changing economic environments. Particularly, VAR and SVAR models offer crucial advantages by enabling policymakers to swiftly analyze and respond to structural shocks without heavily relying on restrictive theoretical assumptions.

A key finding from this systematic review is that methodological preferences significantly reflect underlying economic structural conditions. Advanced economies, with their institutional robustness and relatively stable policy environments, benefit substantially from the predictive and analytical strengths of DSGE models. Conversely, emerging economies, often subject to frequent economic disruptions and political instability, find greater utility in flexible econometric approaches capable of addressing immediate and practical policy challenges.

The empirical findings presented highlight a nuanced understanding of monetary policy challenges associated with managing exchange rate volatility, capital mobility, and monetary independence within the new monetary trinity framework. Crucially, the results illustrate the practical limitations of traditional trilemma theory, suggesting that conventional policy prescriptions may be insufficient under conditions of heightened volatility and structural uncertainty. For example, central banks may need to employ alternative instruments, such as central bank securities, to effectively manage exchange rate pressures and capital flows. This finding emphasizes the necessity of innovative and adaptive monetary tools in modern economic management.

Additionally, research underscores that achieving the new monetary trinity is complicated when foreign exchange reserves exceed certain thresholds, potentially causing adverse effects on economic output and inflation control. Thus, maintaining optimal reserve levels and strategic monetary interventions become essential for sustaining macroeconomic stability. Furthermore, the role of financial innovation and central bank interventions in mitigating financial stress and enhancing liquidity is critical, underscoring the importance of contextually tailored policies in emerging economies.

Moreover, the political dimensions of globalization significantly influence policy effectiveness. The empirical evidence points to an inherent tension between global integration and national monetary sovereignty. This tension frequently manifests during crises, within small open economies, transforming the trilemma into even more complex policy dilemmas or quadrilemmas. Such transformations highlight the necessity for comprehensive, context-sensitive approaches to policymaking, which must balance the trade-offs inherent in pursuing multiple economic objectives simultaneously.

Finally, this review emphasizes the critical importance of aligning methodological choices with specific economic contexts. Policymakers and researchers in both advanced and emerging economies must carefully select analytical frameworks that align with their distinct economic conditions and structural characteristics. By doing so, they can generate highly relevant and actionable insights that enhance the efficacy and resilience of monetary policies amidst an increasingly volatile and interconnected global economic landscape. Ultimately, a clear understanding of these methodological preferences and their implications provides vital

guidance for managing economic stability, effectively navigating complex policy environments, and successfully transitioning toward achieving the objectives encapsulated by the new monetary trinity.

5. CONCLUSION

This systematic review provides a comprehensive understanding of the methodological and contextual dynamics underlying the shift from the “impossible trinity” to the “new monetary trinity.” The findings reveal that the selection of empirical methods is not merely a technical decision but deeply rooted in the structural realities and institutional maturity of each country.

Advanced economies, with their stable macroeconomic environments and robust data infrastructures, consistently employ DSGE models to simulate complex policy interactions and forecast long-term outcomes. These models align well with their need for theoretical rigor and strategic clarity in monetary governance. In contrast, emerging markets operate under more volatile and uncertain conditions, making empirical, data-driven models such as VAR, SVAR, VECM, and ARDL, more applicable due to their flexibility, responsiveness, and minimal data requirements.

Beyond methodological preferences, this study underscores critical policy implications. The practical application of the trilemma is often constrained by real-world complexities—such as exchange rate regimes, capital flow volatility, and foreign reserve thresholds—that limit the feasibility of achieving monetary independence, exchange rate stability, and financial openness, simultaneously. A transformation into the new trinity demands adaptive strategies, including the use of non-traditional instruments such as central bank securities, strategic reserve management, and context-specific interventions tailored to local financial stress and liquidity dynamics.

Furthermore, the intersection of globalization and national sovereignty complicates policy choices, particularly for small open economies. As these countries navigate external shocks and internal constraints, the trilemma can evolve into a dilemma or even a quadrilemma, demanding innovative thinking and a rebalancing of policy priorities. The role of central banks, therefore extends beyond conventional stabilization; it requires foresight, flexibility, and the capacity to operate effectively within shifting global-economic currents.

In summary, this study reaffirms the necessity of methodological-contextual alignment in monetary policy research and practice. A nuanced understanding of how different economies experience and respond to shocks enhances the capacity to design policies that are not only theoretically sound but practically effective. As the global financial landscape grows increasingly complex, the successful realization of the new monetary trinity hinges on each nation’s ability to adaptively integrate empirical insights, institutional capacities, and strategic foresight into its policy framework.

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