

MUNDELL-FLEMING MODEL IN MODERN OPEN ECONOMY: A SYSTEMATIC REVIEW

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Abstract

This systematic review aims to map the evolution and relevance of the Mundell-Fleming Model (MFM) amidst the complex dynamics of the modern global economy. Adapting the PRISMA protocol, this study extracted and synthesized 25 primary articles (2015–2026) from Scopus, Google Scholar, and Sinta databases. The review results show that the MFM is not obsolete, but rather undergoing a metamorphosis. Rigid assumptions such as the Policy Trilemma are now proving to be more flexible, significantly influenced by domestic political forces, innovations in banking digitalization, and the paradigm of global currency dominance. The novelty of this article lies in the integration of classical macroeconomic debates with previously marginalized contemporary dimensions, such as the green energy transition and political economy. Consequently, this research not only guides policymakers in developing countries to formulate robust fiscal-monetary instruments to withstand crisis shocks but also contributes fundamentally to the development of economic science and education. In the educational realm, these findings urge educators to transition from teaching static macroeconomic models to adaptive multidimensional analytical frameworks, so that students are equipped with a conscience and critical reasoning sensitivity to the empirical realities of real-world financial markets.

Keywords: Mundell-Fleming Model; Open Economy; Policy Trilemma; Macroeconomic Dynamics; Systematic Review



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INTRODUCTION

The global economy is not a static machine operating in a vacuum, but rather a living, pulsating, interconnected organism that is highly vulnerable to shocks. Over the past decade, we have witnessed dramatic events from the global supply chain crisis caused by the COVID-19 pandemic to soaring

inflation to aggressive interest rate tightening by central banks in developed countries, which have sent shockwaves across the globe. Amid this storm of uncertainty, policymakers continue to struggle to devise a mix of fiscal and monetary policies that can rescue their economies from the brink of recession.

For more than half a century, the Mundell-Fleming Model (MFM), which laid the foundation for extending IS-LM analysis to open economies, has stood as a golden compass for macroeconomics. This framework, which popularized the concept of the "Policy Trilemma," teaches one undeniable adage: that a country can never have a fixed exchange rate, free capital movement, and monetary autonomy simultaneously. However, over time, the face of the world economy has changed radically. The digitalization of finance, shifting political power, and the demands of a green economy transition have created a much more complex financial ecosystem. This is where MFM's relevance is tested: is this "old compass" still accurate enough to navigate the seas of the 21st-century global economy?.

The academic justification for revisiting this model stems from the intense theoretical debate and empirical contradictions among researchers in recent years. On the one hand, the basic foundations of MFM remain intact because they have proven applicable in numerous real-world cases. ([Tenderere & Mishi, 2025](#)), for example, demonstrated that in emerging markets, a decline in domestic interest rates below world interest rates consistently triggers foreign capital flight. This phenomenon was reinforced by ([Islam & Faisal, 2024](#)) in Uruguay, who found that rising US lending rates, as the dominant external factor, directly drove the depreciation of the real effective exchange rate.

However, on the other hand, strong challenges continue to be raised against the basic assumptions of traditional MFM. ([Serrano & Summa, 2015](#)) strongly criticized the classical assumptions of the perfection of international capital markets and an exogenous money supply, asserting that central banks actually have full power to determine interest rates exogenously, regardless of free capital mobility. ([Mendoza Bellido, 2017](#)) Even proposed that this traditional model be abandoned in teaching because the economy does not automatically return to equilibrium, and modern central banks focus more on targeting inflation than the price level. ([Kodera & Van Quang, 2017](#)) highlighted the inability of classical models to capture non-linear investment dynamics, while ([Hashimoto & Ono, 2020](#)) found that under conditions of demand stagnation, current account improvements actually exert appreciation pressures that exacerbate deflation, a dynamic that contradicts the MFM assumption of full employment.

The empirical contradictions also become more pronounced when considering the unique characteristics of each country. ([Leightner, 2024](#)), In his study of Australia and South Korea, he found that monetary effectiveness is non-zero under fixed exchange rates, while fiscal policy is very strong under flexible exchange rates, a finding that directly undermines the MFM's assumption of perfect capital mobility. This structural problem is even more pronounced in developing countries. ([Cornia, 2020](#)) states that standard MFM-style devaluation instruments are often ineffective and even contractionary in poor countries that lack diversification and have large dollar debt burdens. This aligns with the arguments of ([Dvoskin et al., 2024](#)) found that the economic growth of peripheral countries like Argentina has consistently been hampered by structural balance of payments constraints. In fact, ([Casas et al., 2017](#)) demonstrated that export-import prices in small countries are purely dictated by fluctuations in the dominant currency (the US dollar), not the local currency.

However, these structural gaps can actually be mitigated. ([Betancourt & Piasecki, 2023](#)) demonstrated that the implementation of countercyclical fiscal rules in Chile and Colombia successfully reduced country risk and suppressed foreign borrowing rates. In Indonesia, historical analyses using VAR models by ([Rusiadi et al., 2016](#)) and ([Nababan, 2019](#)) confirmed the dynamic and complex interaction between fiscal and monetary instruments on goods and money markets.

Beyond purely macroeconomic issues, non-economic factors and new dimensions are also beginning to penetrate the MFM framework. ([Unlusoy, 2016](#)) found that the ruling political party's allegiance can maintain a country's monetary autonomy even under a fixed exchange rate regime. Meanwhile, ([Sevcik et al., 2020](#)) illustrate how having an independent currency provides significantly better crisis resilience for the Czech Republic than Slovakia, which adopted the euro during the COVID-19 pandemic. In the modern era, the expansion of MFM has even penetrated the realm of banking digitalization as a tool to soften the rigid constraints of policy trilemmas, even to the ecological sector, where ([Yahya et al., 2026](#)) produced the counterintuitive finding that a monetary union (fixed exchange rate) is actually the best instrument to encourage the renewable energy transition.

These theoretical innovations, empirical deviations, and expansions of the MFM's dimensions are unfortunately still scattered sporadically and fragmented across the literature. Therefore, this systematic review article was written with the primary objective of mapping, synthesizing, and critically evaluating the evolution of the Mundell-Fleming Model in modern macroeconomic literature.

The added value offered by this article is its boldness in extending the MFM framework beyond the confines of traditional IS-LM curve analysis. We weave together this purely macroeconomic debate and juxtapose it with contemporary variables such as digitalization, ecology (energy transition), and political economy. By unraveling contradictions among researchers and identifying remaining methodological gaps, this review is expected to provide a comprehensive theoretical roadmap for future academics, while simultaneously formulating pragmatic guidance for policymakers in designing resilient economic strategies in the era of modern globalization.

REVIEW METHOD

To maintain objectivity and transparency in mapping the development of the Mundell-Fleming Model (MFM), this literature review was compiled using a structured systematic review approach. The search steps leading up to the selection of final articles are detailed below.

2.1 Search Strategy

A comprehensive literature search was conducted across three highly reputable databases: Scopus, Google Scholar, and Sinta (to capture the local research context in Indonesia). To filter articles that were truly relevant to the study's focus, we used a combination of specific keywords combined with logical operators (Boolean operators AND and OR).

The search string entered into the search engine was as follows:

("Mundell-Fleming" OR "M-F Model" OR "IS-LM-BP") AND ("open economy" OR "monetary policy" OR "fiscal policy" OR "exchange rate") AND ("emerging markets" OR "digital economy" OR "trilemma").

This initial search was intentionally broad to ensure no important studies were missed amidst the torrent of scientific publications.

2.2 Selection Criteria

Recognizing that not all articles captured in the initial search are eligible for review, we established strict inclusion and exclusion criteria to guide objective screening. For inclusion criteria, selected literature must be primary research articles or systematic reviews published between 2015 and 2026, a timeframe designed to capture macroeconomic dynamics from the last decade to current projections. Furthermore, the articles must be written in English or Indonesian and published in reputable, peer-reviewed scientific journals. Substantively, the primary focus of the research must explore variables within the Mundell-Fleming Model (MFM) framework, such as the effectiveness of fiscal and monetary policies, exchange rate regimes, the policy trilemma phenomenon, and the adaptation of the MFM to new sectors such as digitalization, energy transition, and political dynamics. Conversely, through exclusion criteria, we explicitly excluded literature in the form of pure textbooks, non-scientific opinion articles, and popular essays. We also excluded articles that focused solely on discussing closed economy models (standard IS-LM) without extending the analysis to open economy macroeconomics, in order to keep this review focused on the relevance and evolution of MFM in the global realm.

2.3 Data Extraction Process

Article screening was conducted through a multi-stage process, adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol, to narrow down the hundreds of initial search results to 25 final articles, which are reviewed in the synthesis table.

1. Identification Stage: The initial search using keyword strings yielded a total of 380 articles from the three databases used. After automated and manual duplication checks, 85 duplicate articles were eliminated.

2. Screening Stage: The remaining 295 articles were then quickly screened based on their titles and abstracts. At this stage, 190 articles were immediately rejected because they did not specifically discuss applications or modifications of the Mundell-Fleming Model (e.g., only discussing general monetary policy without an MFM framework).
3. Eligibility Stage: The remaining 105 articles were read in full (full-text reading). We evaluated their methodological depth, clarity of key findings, and theoretical or empirical contributions to the MFM literature. Articles lacking methodological transparency or simply rehashing basic theory without novelty were ultimately excluded.
4. Final Stage: This rigorous screening process resulted in 25 key articles that met all eligibility criteria and were ready for thematic synthesis.

RESULTS AND DISCUSSION

3.1 Thematic Synthesis of the Mundell-Fleming Model (MFM)

A total of 25 studies were included in the final synthesis. The selected literature comprised theoretical analyses, econometric investigations, historical reviews, and empirical studies examining the application of the Mundell-Fleming framework in various economic contexts. The studies were developed using a variety of analytical approaches, including vector autoregression (VAR), two-stage least squares (TSLS), biased least squares (OLS), panel data regression, apparently unrelated regression (SUR), and mathematical modeling.

The synthesis revealed five major themes: (1) Theoretical Critique and the Need for Model Updates, (2) Deviations and Empirical Evidence across Countries, (3) Structural Constraints in Developing Countries, and (4) New Extensions: Shocks, Politics, Digitalization, and the Energy Transition.

Table 1. Thematic Synthesis of the Mundell-Fleming Model (MFM)

Main Theme	Narrative / Synthesis of Key Findings	Author (Year)
1. Theoretical Critique and the Need for Model Updates	The traditional MFM framework is considered to oversimplify reality and ignore market imperfections. There is a strong push to abandon the LM curve and the assumption of an exogenous money supply, as modern central banks can independently control interest rates. Proposed reforms include the use of New Keynesian models for inflation targeting, the addition of nonlinear investment dynamics, and the adoption of a "Dominant Currency Paradigm" in which prices in small countries are dictated by a stronger currency rather than the local currency.	(Basu et al., 2020), (Mendoza Bellido, 2017), (Kodera & Van Quang, 2017), (Serrano & Summa, 2015), (Casas et al., 2017), (Hashimoto & Ono, 2020), (Wang, 2020), (Barbosa, 2018), (Makin, 2019).
2. Deviations and Empirical Evidence in Various Countries	The MFM predictions were confirmed in the case of falling interest rates that triggered capital flight in emerging markets and exchange rate depreciation in Uruguay. However, there are several empirical deviations: in Australia and South Korea, the effectiveness of fiscal and monetary policies contradicted the assumption of perfect capital mobility. In India, exchange rate sterilization policies actually worsened the external balance (twin deficits). In	(Islam & Faisal, 2024), (Tenderere & Mishi, 2025), (Leightner, 2024), (Devi & Sarma, 2023), (Kim Thi Tran & Nguyen, 2024), (Nababan, 2019), (Rusiadi et al., 2016), (Hani, 2024).

Main Theme	Narrative / Synthesis of Key Findings	Author (Year)
	Southeast Asia, the level of vulnerability to global interest rate spillovers depends heavily on the exchange rate regime and economic openness, while in Indonesia, tax instruments and interest rates have complex dynamics related to inflation and the exchange rate.	
3. Structural Limitations in Developing Countries	Standard MFMs are less able to capture the realities of poor or undiversified developing countries. Peripheral countries (such as Argentina) struggle to maximize economic policy because their growth is constrained by their balance of payments and dollar-denominated liabilities, so devaluations often fail without structural reforms. In contrast, the application of countercyclical fiscal rules (as in the historical experience of Chile and Colombia) has been shown to reduce sovereign risk and suppress borrowing costs.	(Cornia, 2020), (Dvoskin et al., 2024), (Betancourt & Piasecki, 2023).
4. New Extension: Shocks, Politics, Digitalization, and the Energy Transition	The concept of the "MFM Trilemma" is now expanding into non-traditional dimensions. Having an independent currency has been shown to provide better crisis protection (e.g., the COVID-19 pandemic in the Czech Republic versus Slovakia). Monetary autonomy is determined not only by the market economy but also by the ruling political power. Furthermore, banking digitization is seen as an innovation to soften the constraints of the MFM Trilemma. In the environmental sector, exchange rate stability through a monetary union has been identified as an optimal instrument to encourage the transition to renewable energy diversification.	(Sevcik et al., 2020), (Unlusoy, 2016), (Borzenko & Hlázova, 2022), (Yahya et al., 2026).

3.2 Macroeconomic Dialectics: Challenging and Maintaining the Mundell-Fleming Model

The Mundell-Fleming Model (MFM) has long been revered as a masterpiece in macroeconomic analysis for open economies. Traditionally, as described by ([Gandolfo, 2016](#)) and further elaborated by ([Wang, 2020](#)), this model provides an elegant framework for understanding the interactions between monetary policy, fiscal policy, and capital movements on the global stage. However, this theoretical elegance has begun to be strongly challenged by heterodox thinkers.

([Serrano & Summa, 2015](#)) sharply criticized the MFM's assumptions of an exogenous money supply and a supposedly 'perfect' capital market, arguing that the LM curve should be discarded because central banks in the real world have full power to set interest rates independently. This challenge is reinforced by ([Basu et al., 2020](#)), who highlight that the standard MFM framework too often blinds us to the imperfections of reality, failing to explain the phenomenon where countries are forced to resort to unconventional policies when hit by global crises such as the pandemic. To bridge these extreme views, ([Mendoza Bellido, 2017](#)) offers a compromise: he agrees that the traditional

MFM is wrong in assuming the economy will always return to equilibrium automatically, but rather than discarding the model, he proposes an improved adaptation (IS-MPR-UIP-AD-AS) that is more relevant for inflation targeting in the modern era.

The debate intensifies when the discussion enters the realm of empirical testing of the MFM Trilemma (the impossibility of simultaneously having a fixed exchange rate, free capital mobility, and monetary autonomy). On the one hand, ([Tenderere & Mishi, 2025](#)) emerge as staunch defenders of the MFM. Using data from five emerging markets, their findings prove the MFM predictions correct: widening domestic interest rate differentials relative to the global interest rate significantly trigger a flight or inflow of portfolio investment capital. However, this empirical contention is immediately challenged by ([Leightner, 2024](#)). Through his studies in Australia and South Korea, Leightner discovered a surprising anomaly: fiscal policy was remarkably robust under flexible exchange rates, an empirical condition that radically contradicts the MFM assumption of perfect capital mobility. ([Unlusoy, 2016](#)) even challenged this analysis with a political science perspective, demonstrating that a country can maintain monetary autonomy under a fixed exchange rate regime, something rendered impossible by the MFM trilemma, provided there is strong intervention from the ruling political party.

When the research lens is shifted to peripheral and developing countries, the narrative of disillusionment with MFM becomes even more pronounced. ([Dvoskin et al., 2024](#)), using a case study of Argentina, emphasized that the economic growth of peripheral countries is consistently hampered by structural balance-of-payments constraints, a plight overlooked by standard MFM assumptions. ([Cornia, 2020](#)) (2020) reinforced this sentiment by finding that the mainstay of MFM instruments, such as exchange rate devaluation, actually backfires fatally on poor countries with dollar-denominated debt. Responding to the inadequacies of this classical model, ([Casas et al., 2017](#)) proposed the "Dominant Currency Paradigm." Their research in Colombia demonstrated that export and import prices in small countries are solely dictated by the strength of dominant currencies like the US dollar, not by the currencies of local producers, as previously assumed by the MFM. Despite heavy criticism, ([Betancourt & Piasecki, 2023](#)) brought a breath of fresh air; they demonstrated that these structural gaps can be bridged if countries (as in the experience of Chile and Colombia) are willing to discipline themselves to implement countercyclical fiscal rules to mitigate sovereign risk.

This debate culminated in a comparison of the effectiveness of exchange rate regimes in responding to future challenges. ([Sevcik et al., 2020](#)) presented evidence from the COVID-19 crisis, claiming that having an independent and flexible currency (like the Czech Republic) is the best shield against external shocks, far superior to being locked into the eurozone. Ironically, this conclusion was fiercely contested by ([Yahya et al., 2026](#)) in the context of energy sustainability. Their findings across 70 countries indicate that flexible exchange rate regimes hinder green investment, while monetary unions (fixed exchange rates) are the most optimal catalyst for accelerating the renewable energy transition. Amidst this noisy policy debate, ([Borzenko & Hlazona, 2022](#)) offer a futuristic alternative: instead of continuing to argue about interest rates and exchange rates, digital banking innovation has the potential to become the ultimate instrument for escaping the MFM trilemma.

3.3 Assessing Scientific Weight: A Critical Evaluation of Theory and Methodology

Reading these 25 studies is like watching architects try to renovate an old building from the 1960s (the Mundell-Fleming Model) to weather the storms of the 21st century. As objective assessors, we must acknowledge the remarkable intellectual leaps and some concerning methodological pitfalls within this literature.

1. Strengths and Weaknesses of Theoretical Reconstruction

Theorists such as ([Mendoza Bellido, 2017](#)) and ([Serrano & Summa, 2015](#)) have taken bold steps to dismantle the outdated assumptions of the MFM. The main strength of their approach is their alignment of theory with the realities of modern banking, recognizing that central banks set interest rates, not the money supply. Similar boldness is evident in ([Casas et al., 2017](#)) "Dominant Currency Paradigm," which shatters the illusion that small countries are free to price their exports independently of the US dollar.

However, a fundamental weakness of this theoretical reconstruction is its tendency to over-mathematize. The nonlinear model proposed by ([Kodera & Van Quang, 2017](#)), for example, is indeed mathematically beautiful. Unfortunately, the complexity of these dynamic equations makes it too

abstract, difficult for other researchers to test empirically, and nearly impossible to operationalize for policymakers seeking rapid solutions in times of crisis.

2. Empirical Methodology: The Linearity Trap and Data Limitations

When turning to the empirical realm, most studies rely on classical econometric methods such as VAR, BVAR ([Kim Thi Tran & Nguyen, 2024](#)); ([Nababan, 2019](#)), or DOLS/FMOLS ([Tenderere & Mishi, 2025](#)). The strength of these methods lies in their ability to provide a rich historical portrait of how economic variables influence each other over time.

However, as critical appraisers, we must point out their fatal weakness: the assumption of linearity. Open economies are complex systems rife with nonlinear shocks. Using linear VAR to model developing country economies often overlooks structural changes resulting from political crises or global regime changes. Furthermore, the issue of generalizability is a significant weakness. The study by ([Kim Thi Tran & Nguyen, 2024](#)), for example, only used data from six Southeast Asian countries over a relatively short period (2009–2019). Drawing broad macroeconomic policy conclusions from such a narrow sample is inherently risky and susceptible to specification bias.

3. Alternative Methods: Smart vs. Misplaced Solutions

Amidst the saturation of standard methods, several authors offer commendable methodological breakthroughs. ([Leightner, 2024](#)) Reiterative Truncated Projected Least Squares (RTPLS) method is commendable for successfully capturing dynamic parameter changes over time without being trapped by omitted variable bias.

Conversely, ([Hani, 2024](#)) application of the TOPSIS methodology to evaluate open macroeconomics raises significant questions. While TOPSIS is powerful for multi-criteria decision-making in operational management, its use in structural macroeconomics seems misplaced. This method is highly sensitive to the subjective weighting of criteria by researchers, thus obscuring real-economic causal relationships that should be objectively tested.

Overall, this literature is rich in perspectives but often fragmented. The biggest weakness of this collection of journals is the wide gap between "pure theorists" who are reluctant to touch the messy data of the real world, and "pure empiricists" who are busy turning data into econometric software without questioning whether the underlying assumptions of their models are still relevant.

3.4 Identifying Research Gaps

1. Theoretical Reconstruction of the Model Amidst Modern Financial Complexity

The academic journey of the Mundell-Fleming Model (MFM) has been filled with attempts to reconstruct it to maintain its relevance in the modern era. ([Mendoza Bellido, 2017](#)) strongly criticized the automatic equilibrium assumption in the traditional MFM as outdated, proposing the IS-MPR-UIP-AD-AS adaptive model focused on inflation targeting. Similarly, ([Serrano & Summa, 2015](#)) went further by proposing the complete elimination of the LM curve, given that modern central banks in the real world use an exogenous interest rate approach to control the economy. Meanwhile, ([Kodera & Van Quang, 2017](#)) attempted to inject realism into the MFM by introducing a nonlinear investment function. Meanwhile, ([Casas et al., 2017](#)) challenged the pricing assumptions of the MFM through the "Dominant Currency Paradigm," proving that exchange rate fluctuations in developing countries are highly dependent on the US dollar as the anchor currency, rather than the currencies of local producers.

Identifying Research Gaps (What's Not Known): While the theoretical reconstruction above offers model sophistication, there is a significant research gap in integrating these various fractional models into a single operational framework. To date, no research has examined how nonlinear models (such as those proposed by Kodera & Van Quang) interact with the "Dominant Currency Paradigm" (proposed by Casas et al.) under an exogenous interest rate regime. Future researchers are challenged to formulate comprehensive open macroeconomic models that can empirically integrate the dynamics of nonlinear investment with dominant currency dependence.

2. The Trilemma Dilemma and Structural Limitations in Developing Countries

Empirically, the application of MFM often encounters structural barriers in developing countries. Classical theory predicts a loss of monetary effectiveness under fixed exchange rates. However, ([Leightner, 2024](#)) findings in Australia and South Korea show that monetary effectiveness is never zero under fixed exchange rates, and fiscal policy remains robust under flexible exchange rates. This deviation suggests the presence of hidden variables. ([Unlusoy, 2016](#)) argues that political factors and the ruling party's partisanship are capable of maintaining monetary autonomy, theoretically deemed impossible by the MFM Trilemma. However, for peripheral countries like Argentina, this political latitude is constrained by harsh realities. ([Dvoskin et al., 2024](#)) and ([Cornia, 2020](#)) agree that developing countries are consistently constrained by structural balance-of-payments constraints and large foreign currency liabilities (dollarization), which often leads to MFM-style devaluation policies failing without structural reforms.

Identifying the Research Gap (What's Not Yet Known): An area of limited research concerns the dynamic interaction between political-institutional stability and structural balance-of-payments (BOP) constraints. Previous studies have tended to separate political variables, as in ([Unlusoy, 2016](#)), from BOP constraints in peripheral countries, as in ([Dvoskin et al., 2024](#)). We still don't know how the electoral cycle in developing countries influences the long-term vulnerability of the balance of payments under the pressure of dollar-denominated external debt. This presents a fertile ground for future researchers to develop a model of "Open Economy Macro-Financial Politics."

3. Integrating New Dimensions: Digitalization and Energy Sustainability

The challenges of the 21st century are forcing the MFM Trilemma to migrate into non-traditional areas never envisioned by its formulators. ([Borzenko & Hlazova, 2022](#)) attempt to offer a way out of the rigidity of the impossible trinity by proposing banking digitalization as an innovative instrument to facilitate capital flows without sacrificing policy autonomy. On the other hand, ([Yahya et al., 2026](#)) apply this trilemma to the green energy transition. Their findings demonstrate a counterintuitive finding: monetary union (exchange rate stability) is actually the best catalyst for renewable energy diversification, while flexible exchange rates in a closed financial system act as a barrier.

Identifying the Research Gap (What's Not Yet Known): This is the frontier of the MFM, which remains a "no man's land." No research yet has combined economic digitalization (such as CBDCs or digital payment systems) with energy transition financing within the framework of the MFM Trilemma. Future researchers have a valuable opportunity to answer this question: Can the adoption of Central Bank Digital Currencies (CBDCs) in developing countries mitigate the Mundell-Fleming Trilemma, enabling them to maintain exchange rate stability while attracting green capital flows for energy diversification? Filling this gap would be a valuable academic contribution.

CONCLUSION

Based on a comprehensive synthesis of 25 scientific articles, the common thread that ties together this literature suggests that the Mundell-Fleming Model (MFM) is not dead; it is, in fact, undergoing a profound metamorphosis.

After reading this entire literature, the big picture emerges: the MFM has transformed from a rigid, linear, and static teaching tool of the past into a highly adaptive, multidimensional, and dynamic analytical framework of the modern era. The "Policy Trilemma" (impossible trinity) theory, once considered an absolute law of economic physics, is now understood as a flexible constraint. This flexibility is influenced by domestic political forces, innovations in banking digitalization, institutional compliance with fiscal rules, and the dominance of global currencies like the US dollar. The MFM is no longer solely about conventional goods and money markets; it has evolved into an instrument for navigating global crises, mitigating pandemic shocks, and even guiding the green energy transition.

Theoretical and Practical Implications

- **Theoretical Implications:** Academics and researchers can no longer teach or analyze open economies using classical MFM assumptions (such as a static LM curve, exogenous money supply, and perfect capital mobility). Theoretically, modern macroeconomic modeling must

integrate the exogenous interest rate (MPR) approach, nonlinear investment dynamics, and the Dominant Currency Paradigm to ensure precise analysis and reflect the realities of today's global financial markets.

- **Practical Implications (Policy):** For policymakers, especially in emerging markets and peripheral countries, these findings confirm that a single monetary policy will never be sufficient to mitigate external shocks. Central banks and governments must formulate an Integrated Policy Framework that harmoniously combines foreign exchange intervention, countercyclical fiscal rules, and macroprudential policies to mitigate sovereign risk and maintain exchange rate stability without sacrificing economic growth.

Future Research Recommendations (Concrete Research Agenda)

Although the MFM literature is already very rich, its evolution leaves crucial research gaps awaiting further exploration. Three concrete research agendas are recommended:

1. **Nonlinear Theoretical Integration and Currency Dominance:** There is still very little research developing mathematical economic models to integrate the nonlinear dynamics of investment with the Dominant Currency Paradigm. Future researchers are challenged to examine how shocks to anchor currencies (such as the US dollar) affect the stability of nonlinear systems in third-world countries.
2. **Macro-Political Interactions and Balance of Payments (BOP) Constraints:** Quantitative empirical research examining the impact of election cycles and political party ideology on balance of payments vulnerabilities in countries experiencing dollarization or high external debt is recommended.
3. **Monetary Digitalization and the Green Energy Transition:** This represents the greatest opportunity for future research. Future researchers are advised to examine how the adoption of Central Bank Digital Currencies (CBDCs) can be used as a tool to soften the constraints of the MFM Trilemma, allowing developing countries to maintain monetary autonomy while attracting international green capital flows to fund renewable energy diversification projects.

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Conceptualization, A.P. and S.N.; Methodology, S.N.; Software, A.S.; Validation, S.N., A.S. and M.I.J.; Formal analysis, A.P.; Investigation, M.I.J.; Resources, A.S.; Data curation, M.I.J.; Writing – Original draft, A.P.; Writing – Review & editing, S.N. and A.S.; Visualization, M.I.J.; Supervision, S.N.; Project administration, A.P.; Funding acquisition, A.P.

CONFLICTS OF INTEREST

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