International Journal of Economics, Business and Management Research

Vol. 10, No.02; 2026

ISSN: 2456-7760

A New Dynamic Framework for Exchange Rate Determination: The Currency Four-force Push–Pull Model

Name: Lie Chun Pong

doi.org/10.51505/IJEBMR.2026.1106 URL: https://doi.org/10.51505/IJEBMR.2026.1106

Received: Jan 19, 2026 Accepted: Jan 30, 2026 Online Published: Feb 05, 2026

Abstract

Nowadays, most advanced economies use managed float system, such regimes, are neither fully floating nor strictly fixed. This paper will examine why this hybrid systems remain susceptible to recurrent currency crises, in addition, we propose a new conceptual framework to better explain currency dynamics. Specifically, this research pursues two main objectives. First, it analyses contemporary currency systems from the perspectives of G7, central banks, hedge funds, and ordinary citizens, with a focus on their strategies and decision-making processes. Second, we purpose an innovative "Currency Four Force" model, where these Four domain market force will primarily determine currency values. Third, this research paper will make use to capture selected aspects of currency behaviour and to support our innovative "Currency Four Force" theory.

Keywords: Quadruple Forces in Currency Valuation, Push-Pull Exchange Framework, Currency Four-Force Theory, Strategic Currency Dynamics, Four-Force Rate Determination.

Research Design & Methods:

In our research design and methodology, we employ our advanced Four Force Currency Framework integrated with the Push–Pull Model to conduct a comprehensive valuation of each nation's monetary position and potential future value. This approach provides a systematic and analytically rigorous method for examining currency dynamics within the broader macroeconomic environment. It supports the development of a precise and predictive currency model while informing evidence-based economic policy formulation. Maintaining systemic stability within this framework requires adherence to four foundational principles that assess each country's monetary environment. The analysis encompasses currency strength, exchange rate policy, capital flow behaviour, and the effectiveness of expectation. Through this integrated approach, we can accurately evaluate current currency conditions and forecast their potential trajectories, thereby enhancing macroeconomic management and policy precision. In addition, the literature review will help identify past instances and possible causes of currency crises. Combined with the case study, this analysis will contribute to the development and validation of our proposed model.

Vol. 10, No.02; 2026

ISSN: 2456-7760

Literature Review:

Recent studies [1][2][3][4] examine how the monetary policies of systemically important economies particularly the G7 effect global financial conditions and generate significant exchange rate spillovers. Unconventional monetary actions and shifts in policy rate expectations transmit through interest rate differentials, risk premia, and cross-border portfolio flows, which influencing bilateral exchange rates and amplifying cycles of risk-on and risk-off behaviours. Complementary research [5][6][7] finds that global foreign exchange (FX) turnover is increasingly shaped by hedging and speculative strategies, with hedge funds and other leveraged investors playing a nontrivial role during episodes of sharp currency movements. Another stream of literature [6][7] emphasizes the role of regime credibility and private-sector expectations in shaping exchange rate dynamics. At the micro level [8][9][10], survey and behavioural evidence indicates that households' and firms' expectations regarding future inflation, economic growth, and policy stability feed back into their demand for currency and precautionary savings. These behavioural responses, in turn, can either reinforce or undermine confidence in the currency's future value. Together, these strands of research motivate an integrative framework that synthesizes positioning dynamics in foreign exchange markets with strategic perspectives on currency behaviour which will support our model assumption.

Introduction:

This research paper identifies that currency valuation is primarily shaped by the interaction of four major forces: (1) the G7 and their international trade strategies, (2) central banks' monetary policies, (3) hedge fund investment behaviour, and (4) local citizens' expectations and actions. Our study introduces an innovative Four-Force Strategy Framework, grounded in the dynamics of push-and-pull effects, to explain how these forces collectively influence the value of local currencies. Within this framework, the determinants of exchange rates are examined through an integrated analysis of G7 trade and policy influences, comparative central bank open market operation, hedge fund decision-making, and domestic sentiment dynamics, providing a comprehensive assessment of their impact on currency rate.

Discussion:

The currency valuation dimension of the Four Force Strategy Framework involves a comprehensive macro-financial analysis of exchange rate determination that integrates both fundamental factors and expectations-driven dynamics. It systematically examines: (1) the strategic interdependencies among G7 economies and their effects on current account balances, global capital movements, and trade flows; (2) the relative stance of major central banks' monetary policies, with close attention to interest rate differentials, yield curve configurations, and anticipated policy trajectories; (3) the portfolio allocation and speculative behaviour of hedge funds and other leveraged institutions, focusing on their influence in amplifying risk adverse cycles, liquidity conditions, and market microstructure dynamics; and (4) the exchange rate expectations, inflation perceptions, and monetary confidence of domestic households and firms, all of which affect currency demand, precautionary savings, and trust in the nominal state.

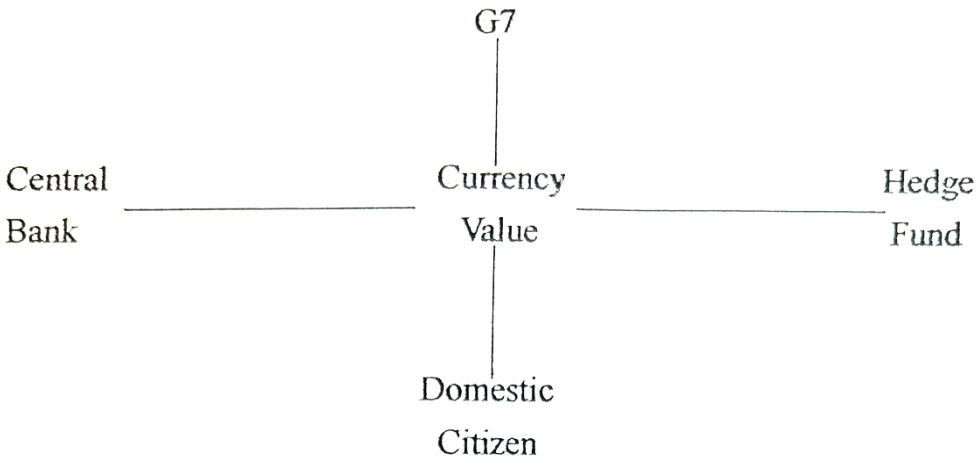
Vol. 10, No.02; 2026

ISSN: 2456-7760

Collectively, these interacting forces shape the equilibrium exchange rate, risk premia, and ultimately the observed path of currency valuation over time.

The subsequent section presents the operational process of our innovative Currency Four Force Framework, detailing its underlying mechanisms and functionality. This framework integrates four interdependent forces that collectively shape currency movement and market dynamics. By examining the interaction among these forces, this model provides a systematic approach to understanding how macroeconomic factors, policy interventions, and market expectations influence exchange rate movements and monetary equilibrium. Through this process, the framework not only enhances analytical precision but also offers policymakers and researchers a structured tool for evaluating currency performance under varying economic conditions.

Innovative Four Force Framework (Tug of War Currency Determination):



In examining the dynamics of currency revaluation and exchange rate behavior, it is essential to analyze the roles of individual economic actors involved. The **G7** nations, for instance, determine which currencies might need revaluation based on international trade imbalances and strategic policy considerations. A classic example occurred in 1985-1986 when the G7 collectively decided to buy the Japanese yen and sell the U.S. dollar after their meeting, aiming to correct trade imbalances by appreciating the yen and depreciating the dollar. The **central bank** plays a crucial role by deciding when and how to intervene in currency markets, guided by factors such as trade surpluses or deficits, inflation and employment targets, and interest rate policies. **Hedge funds**, on the other hand, approach currency movements from a speculative standpoint, basing their decisions on rational expectations, risk hedging strategies, and perceptions of financial risk. Finally, **domestic citizens** influence currency dynamics through their confidence in the government, assessments of political stability, and rational expectations about future economic conditions. Together, these actors contribute to the complex interplay that determines currency valuation and exchange rate movements in global markets.

Vol. 10, No.02; 2026

ISSN: 2456-7760

For instance, when citizens lose confidence in their local government due to factors such as excessive public debt, they may exert downward pressure on the domestic currency. This typically manifests through the selling off of local currency in the foreign exchange market, further weakening the domestic currency and potentially triggering economic instability. Building on this perspective, my research paper introduces an innovative four-force strategic framework that identifies the key push and pull factors influencing currency valuation. Our model examines the complex interplay among market dynamics, speculative activities, and macroeconomic policies enacted by central banks, offering a more comprehensive and nuanced explanation of currency fluctuations (see Appendix 1).

In the example of the G7 association (Appendix 2), when the G7 perceive that Country A's persistent trade surplus with other economies poses potential jeopardy to other nations' economic stability, they become concerned that an oversized surplus in Country A could negatively affect global economies. Consequently, G7 policymakers decide to buy Country A's currency and sell off other major currencies to stabilize trade balances. Domestically, Country A's central bank believes that its currency is overvalued, weakening the competitiveness of its exports. To stimulate export growth, it opts to devalue the currency by selling the local currency and purchasing foreign currencies. Meanwhile, domestic citizens express growing anxiety over the government's large public debt, fearing that these imbalances may further erode the currency's value. Responding to similar concerns, hedge funds assess that speculative pressures have driven the currency beyond its fundamental value and anticipate a depreciation. Consequently, they tend to shift toward more risk-averse portfolios, selling the local currency in exchange for assets denominated in relatively stable currencies. However, the overall impact ultimately depends on the relative magnitude of these opposing forces.

Each Dynamic Cycle comprises four distinct stages:

Each dynamic cycle comprises four interrelated stages, governed by the fundamental market forces of buying and selling. In each stage, participants' collective expectations, risk appetites, and behavioural responses interact to generate momentum and reversal patterns in currency prices. These stages illustrate the push and pull effect, self-reinforcing and corrective mechanisms inherent in market systems, capturing the rhythmic nature of expansion and contraction in currency price movements. By highlighting critical decision points where investors reassess value and risk, the dynamic cycle framework provides insight into how short-term trading behaviour evolves into broader market trends (Appendix 3).

Progression Toward the Infinity

So, when progression toward infinity represents a dynamic continuum in which the valuation of a currency evolves across successive stages of economic synthesis. Within this progression, each phase—whether Stage 1, Stage 2, Stage 3, or Stage 4—reflects an adaptive process wherein the currency's value experiences either amplification or attenuation effect. These directional shifts denote underlying variations in market perception, monetary policy response, or structural

Vol. 10, No.02; 2026

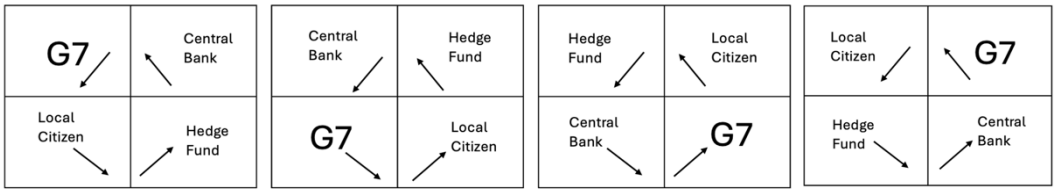
ISSN: 2456-7760

economic adjustments that collectively shape the flow of valuation dynamics over time. (Appendix 3).

At each stage, the currency's worth results from the interplay of independent yet interrelated forces. Each phase encompasses four distinct rotational forces, representing the multidimensional drivers of economic transformation such as equilibrium shifts, policy interventions, speculative momentum, and external shocks. The rotation of these forces generates cyclical feedback that both defines and redefines the stability threshold of the currency's equilibrium position.

The combined rotational forces contribute to the quantitative assessment of value within each stage, forming a recursive linkage between the micro-dynamics of individual influence and the macro-dynamics of systemic performance. Through continuous interaction, these forces establish a self-perpetuating mechanism of valuation that synthesizes into higher orders of economic progression. As the sequence extends conceptually toward infinity, the process captures the asymptotic behaviour of currency valuation within an ever-expanding analytical horizon, with advanced economic modelling conventions that accommodate recursive system behaviours.

Each individual force rotates (Quadruple Forces)



And each stage have four individual force rotating
The mixed rotation force will therefore decided the value of each individual stage

Moreover, each stage in the Four Force Currency Framework features four distinct rotating forces—representing key actors such as G7 policies, central bank interventions, hedge fund speculations, and domestic citizen expectations—that interact dynamically to shape currency valuation. The cumulative rotational effect of these forces determines the precise value outcome for that individual stage, integrating **push and pull** (like a **tug of war**) influences on exchange rates. Across different stages, these interactions generate varying dynamic effects, from stabilization in early phases to intensified volatility or asymptotic progression toward equilibrium in later ones, providing a comprehensive model for analyzing non-linear currency behaviors in real-world economic cycles.

Dynamic Interaction Stage of the Four Forces

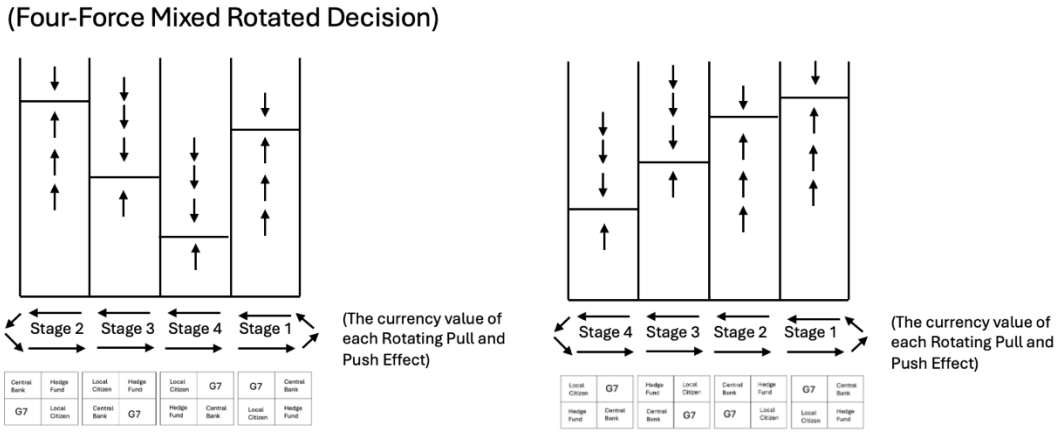
In each stage of variation, distinct dynamic effects emerge, reflecting the intricate interplay of underlying economic state forces. The Four-Force Dynamic Stage (comprising Stage 1 through Stage 4), also referred to as the Four-Force Mixed Rotated Decision Phase, embodies a

Vol. 10, No.02; 2026

ISSN: 2456-7760

comprehensive analytical framework that illustrates how multiple vectors interact within a dynamic equilibrium system. Through the continuous rotation and integration of these forces such as, monetary impulses, market expectations, institutional adjustments, and external shocks, the model captures the cyclical and often adaptive nature of market evolution. This rotational interaction not only determines short-term fluctuations but also shapes long-term structural adjustments, thereby providing a multidimensional perspective on the mechanisms governing market behavior across different phases of economic variation.

Dynamic Interaction Stage of the Four Forces (Quadruple Forces)



Four-Force Mixed Rotated Decision

In the Four-Force Mixed Rotated Decision framework, the combined outcome of the four stages (Stage 1 + Stage 2 + Stage 3 + Stage 4) expressed as their averaged interaction ($\sum$ Stage 1 + Stage 2 + Stage 3 + Stage 4)/4 serves as the determinant of currency value in each economic cycle. This synthesis reflects the aggregate balance of the system's rotational and mixed forces, thereby capturing the dynamic equilibrium that defines cyclical currency valuation.

Four Force Framework Analysis:

Our model can be illustrated through a simplified bilateral duopoly that incorporates a four-force inter-collateral strategic interaction, characterized by push-and-pull dynamics represented in a 2×2 or 3-to-1 force matrix. Each originating force corresponds to a distinct national currency, forming the foundation for analyzing cross-currency interactions and competitive adjustments. This illustrative framework can be further extended to interpret the dynamics embedded within the Four-Force framework analysis, applying analogous economic logic and consistent theoretical terminology to explain systemic behaviour and equilibrium outcomes.

The Four-Forces framework can be illustrated through a simplified example involving four distinct forces, each originating from a unique state or condition. These forces interact

Vol. 10, No.02; 2026

ISSN: 2456-7760

dynamically, generating a system of interdependent effects that collectively shape equilibrium outcomes and cyclical movements within the broader economic environment. This conceptual illustration provides a foundational basis for understanding how variations in each state contribute to the overall balance and transformation of the system.

Each force, when acting independently, may generate profits by triggering a consistent buy or sell decision, thereby leveraging its individual influence on the market. However, when these forces conflict, each seeking to drive the market in opposite directions, both may incur losses as opposing pressures offset each other's impact. The ultimate profitability of a given force depends on its relative strength, market dominance, and dynamic interaction with competing forces. The resulting outcome is shaped by power asymmetries and the nature of their collision, often mediated through market momentum, and strategic trading behaviour. Nevertheless, under each stationary state, these interactions continue to operate within a dynamic push-and-pull equilibrium that defines the currency system's balance.

Our Currency Four-Force Model conceptualizes currency dynamics as the outcome of interactions among four dominant forces, offering a strategic framework for decision-making and policy design. By examining the push-and-pull relationships between these forces, the model improves the accuracy of economic forecasting and strengthens currency valuation and determination. This framework thus provides a systematic and accessible approach to analysing complex market conditions and identifying effective strategic responses.

The analysis of exchange rate policy, particularly the buy and sell decisions concerning the currency of Country A, can be systematically examined through the Four-Force Model illustrated below. In reality, currency valuation is not determined solely by market forces but rather by the complex interplay among four major strategic actors: the G7, the central bank, hedge funds with other speculative institutions, and the citizenry. Each of these forces exerts influence through distinct yet interconnected mechanisms, shaping currency movements and policy outcomes in dynamic and sometimes competing ways.

That is the correlation of G7, Central Bank, Hegde Fund (Speculators), and Citizen.

Our Innovative Model (Quadruple Forces in Currency Valuation):

$$1/4\ \sqrt{W_A O_A + W_B O_B + W_C O_C + W_D O_D + 4\ W_A W_B W_C W_D\ X\ O_A}$$

$$O_B\ O_C\ O_D\ \text{Corr ABCD}$$

Let:
A = G7 (Group of 7 nation's exchange index)
B = Local Central Bank (monetary policy authority associated financial instrument)
C = Hedge Fund (institutional investor with speculative capital)

Vol. 10, No.02; 2026

ISSN: 2456-7760

D = Local Citizen (domestic household)
Define:
Wa, Wb = Portfolio weights of currency-possessions A and B respectively
Corr AB = Correlation coefficient between currency-possessions A and B
$\dot{O}_A\dot{O}_B$ = Currency-possessions specific squared error (variance of residuals)
$\sigma\ AB$ = Force correlation between Currency-possessions A & B (representing systemic dynamic interaction strength)

We have derived a mathematical framework for determining the "state" of a currency system. This model captures and explains the interactive dynamics among four primary forces—global economic influences (e.g., G7 economies), the domestic central bank's policy actions, speculative movements by hedge funds, and behavioral responses of local citizens. By integrating these factors into a unified formulation, the model allows for quantitative analysis of how these forces collectively shape currency determination, exchange rate fluctuations, and systemic resilience under varying market conditions.

The mathematical model offers a precise formulation that balances assumptions with appropriate approximations, serving as a robust framework for elucidating the intricate interactions and synergistic effects among the four fundamental forces shaping currency dynamics. These forces—represented by the G7 economies, the local central bank, speculative actors, and domestic citizens—exhibit inherently complex behaviours that into an easy way to understand scaffold. Our novel model provides an integrated perspective on how these entities collectively influence both micro-level decision dynamics and macroeconomic outcomes. By employing advanced computational weight average methods and rigorous theoretical constructs, the framework approximates the combined actions of these forces within a unified formalism, enabling predictive assessment across diverse scenarios. This integration is instrumental in enhancing decision-making strategies where the interplay among these key forces with push and pull or pull-and-push effect determines currency movement. Furthermore, the model supports quantitative analysis of force coupling, transactional mechanisms, and symmetry in currency decisions, thereby contributing to the refinement of the proposed Currency Four-Force Model and its extensions. Ultimately, this new model's ability to coherently articulate cross-scale effects, linking individual and institutional behaviours with aggregate currency valuation, highlights its significance in advancing both theoretical inquiry and practical applications in modern monetary economics.

Empirical comprehensions from the J-curve effect and the Marshall–Lerner condition offer strong support for the validity of our novel Currency Four-Force Assumption Model:

The J-curve phenomenon provides important empirical support for our novel Currency Four-Force assumption model. Specifically, the J-curve captures the temporal dynamics of a country's trade balance following a nominal exchange rate depreciation. In the short run, trade balance typically worsens because import and export demands are relatively inflexible, leading to an initial deterioration in the balance of trade. Over time, when depreciation, the trade balance

Vol. 10, No.02; 2026

ISSN: 2456-7760

gradually improves, eventually offsetting the initial deficit. This theoretical and graphical construct effectively encapsulates the lagged adjustment mechanisms driving terms-of-trade effects. Consequently, the J-curve framework aligns closely with our novel Currency Four-Force model, offering a coherent macroeconomic rationale for the currency adjustments observed in response to **force "state"** situation (Appendix 4).

Accordingly, the J-curve model aligns closely with our four-force framework, offering a coherent macroeconomic rationale for the trade dynamics that emerge following currency depreciation and subsequent trade balance adjustments. Our novel Currency Four-Force model not only integrates seamlessly with the J-curve phenomenon but also remains theoretically consistent with established empirical evidence. Furthermore, it conforms to the Marshall–Lerner condition, reinforcing its internal coherence within the framework of import and export demand. Hence, our model provides a powerful analytical tool for examining currency behaviour, elucidating complex adjustment processes and short-term fluctuations in international macroeconomic with alongside with micro decision contexts. Most importantly, which we believed our novel model can bride the gap in-between the macroeconomics theory with microeconomics decision.

Our four-force currency model demonstrates predictive potential for assessing future movements in currency values based on trade dynamics. When a country seeks to mitigate a trade deficit, currency devaluation is often employed as a corrective measure. The exchange rate ultimately reflects the relative strength between external and domestic economic forces. Specifically, when external pressure from a dominant trading bloc or coalition—such as the G7—surpasses a nation's internal economic capacity, that nation may be compelled to pursue currency devaluation or revaluation strategies. For example, in 2025, persistent trade tensions prompted Japan to devalue its currency as the collective external force outweighed its domestic strength. Conversely, in 1986, Japan's strong economic position, make G7 influence than eventually precipitated a revaluation. Our model highlights the magnitude of international power forces, particularly from major economic coalitions like the G7, Central bank and Hedge fund etc., exerts a decisive and long-term influence on exchange rate trajectories.

Therefore, with our Currency Four-Force model, which provides a comprehensive analysis of currency dynamics, our strategic framework moves beyond traditional paradigms by offering a nuanced approach grounded in advanced economic theory. It also aligns conceptually with the J-curve effect and the Marshall–Lerner condition.

Our Four-Force Currency Model demonstrates strong explanatory capacity and predictive potential:

Example 1 (Japan Currency determination 1986):
In 1986, the appreciation of the Japanese yen was largely driven by the coordinated efforts of the G7 countries, particularly the United States. The G7 aimed to strengthen the yen to address global trade imbalances, reduce Japan's export competitiveness, and encourage greater imports

Vol. 10, No.02; 2026

ISSN: 2456-7760

of foreign goods into Japan. As part of this strategy, the dominant market intervention involved selling U.S. dollars and buying yen, which exerted upward pressure on the yen's value (Appendix 5).

Example 2 (Indonesia Currency crisis 1998):
In 1998, Indonesia's currency experienced a sharp depreciation, largely triggered by the country's substantial short-term external debt and the prior overvaluation of the rupiah. These vulnerabilities made the currency highly susceptible to speculative attacks during the Asian financial crisis. Hedge funds, foreign speculators, and even local residents reacted by selling Indonesian rupiah and buying U.S. dollars, accelerating the downward pressure on the currency and deepening the financial turmoil (Appendix 6).

Our newly proposed Currency Four-Force Theory, consistent with the J-curve model, we introduce an innovative framework driven by the interactive push-and-pull dynamics among four dominant forces that collectively determine currency value. Our novel theoretical perspective extends beyond conventional determinants such as trade balances and elasticities by incorporating the roles of market confidence and the interrelationships among the individual forces within the Four-Force strategic framework. In essential, the dominant force or the synergy among multiple forces determines the direction of the currency's movement.

In addition, our newly four-force f-curve phenomenon is compatible with the conventional J-curve model. In contrast, our four-force model is fundamentally driven by the 4 dominate Market Force (Four-Force) effect that influences currency valuation. This effect extends beyond conventional theory, with new reflections to encompass broader market confidence metrics and the dynamic interrelations among the four individual forces within the Four-Force framework. Notably, the interplay among these forces is characterized by dynamic dominance, in which one force, often referred to as the power element, becomes the leading determinant in strategic decision-making within this multidimensional model. Our new Currency Four-Force model has predictive power and can explain many currency phenomena in the currency market.

Conclusion:

My proposed Currency Four-Force Model demonstrates predictive potential for analysing currency determination in individual economies. Our framework assesses the valuation of the individual currency relative to Four-Power Dynamic by examining four key forces: (1) G7 currency market decision, (2) central bank macroeconomic policy, (3) speculator sentiment, and (4) domestic citizen confidence. This research seeks to examine which of these forces—G7, Central bank Decision, Speculator sentiment—becomes dominant when multiple factors interact, either synergistically or independently. In such contexts, the net effect on currency determination depends on the relative strength (weight) and influence of each force. For instance, if three forces exert upward pressure on the currency while one applies downward, the prevailing trend will ultimately be shaped by the most dominant force. Through this research study, I hope to contribute valuable insights to the understanding of global currency dynamics and support sound decision-making for the benefit of economies and society at large.

Vol. 10, No.02; 2026

ISSN: 2456-7760

References:

[1] Rogers, J. H., Scotti, C., & Wright, J. H. (2016). *Unconventional monetary policy and international risk premia* (International Finance Discussion Papers No. 1172). Board of Governors of the Federal Reserve.

[2] De Guindos, L. (2019, March 27). *International spillovers of monetary policy and financial stability concerns*. European Central Bank.

[3] International Monetary Fund. (2025, November 9). *Global spillovers amid shifting policies*.

[4] Center for Strategic and International Studies. (2025, June 15). *Why the G7 must tackle hidden systemic threats to global financial stability*. G7 Summit.

[5] Rogers, J. H., Scotti, C., & Wright, J. H. (2016). *Unconventional monetary policy and. international risk premia*(International Finance Discussion Papers No. 1172). Board of Governors of the Federal Reserve.

[6] Carrière-Swallow, Y., Gruss, B., Magud, N. E., & Valencia, F. (2021). Monetary policy credibility and exchange rate pass-through. *International Journal of Central Banking, 17*(3), 81-121.

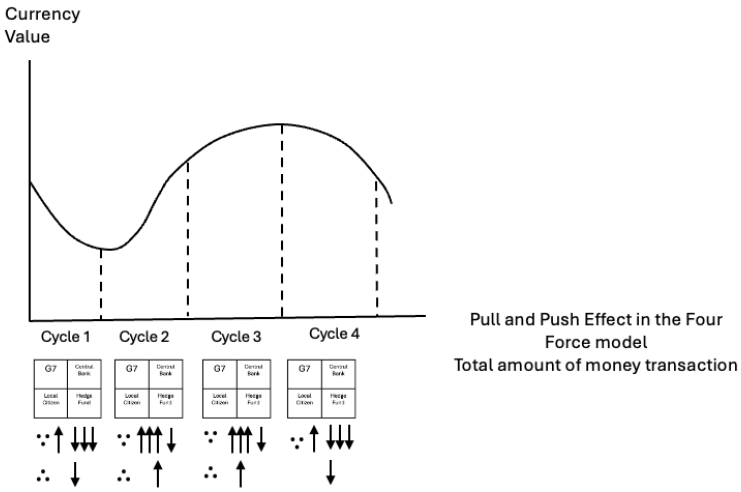
[7] Acunto, F., Kuchler, T., & Strömberg, J. (2024). *Household inflation expectations: An overview of recent research* (NBER Working Paper No. 32480). National Bureau of Economic Research.

[8] Aizenman, J., & Ito, H. (2020). *An inquiry into exchange rate volatility and bilateral trade flows: The role of financial development.* Working Paper, Harvard Kennedy School, Mossavar-Rahmani Center for Business and Government.

[9] Auer, R., Cornelli, G., Frost, J., & others. (2023). *The economics of central bank digital currency.*International Journal of Central Banking, 19(5), 1–54.

[10] Lie, C.P. (2025). Deepening and fine-tuning Hong Kong's Linked Exchange Rate System. *International Journal of Economics, Business and Management Research, 9*(9), 1–20.

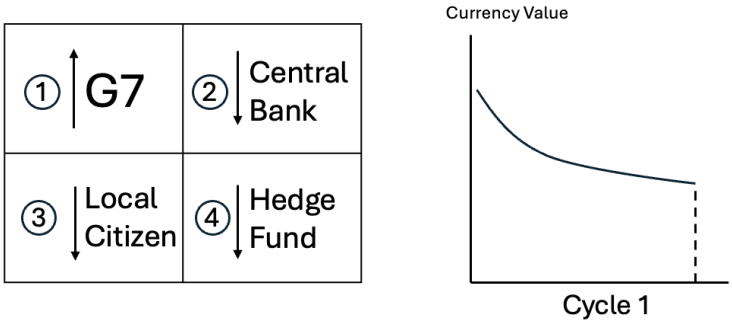
Appendix 1:



Vol. 10, No.02; 2026

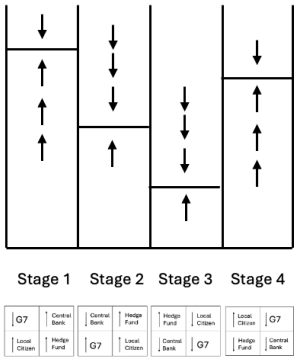
ISSN: 2456-7760

Appendix 2:
The operation of each cycle by the Four Force Strategy



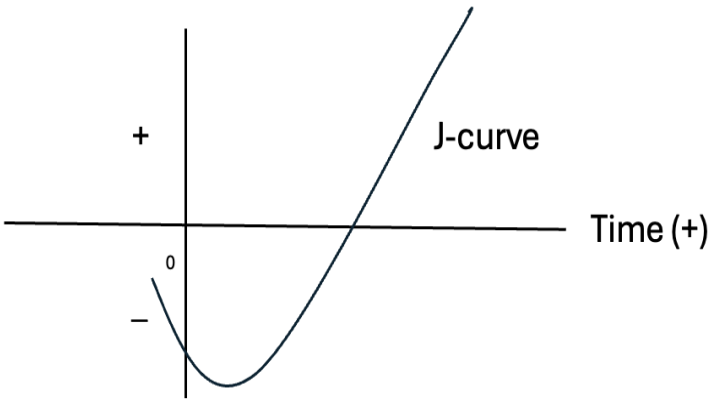
Appendix 3:

Four Force Decision: Buy, Sell



(Stage.....infinity)
The currency value (pull or Push)
Of Each Combine Stage

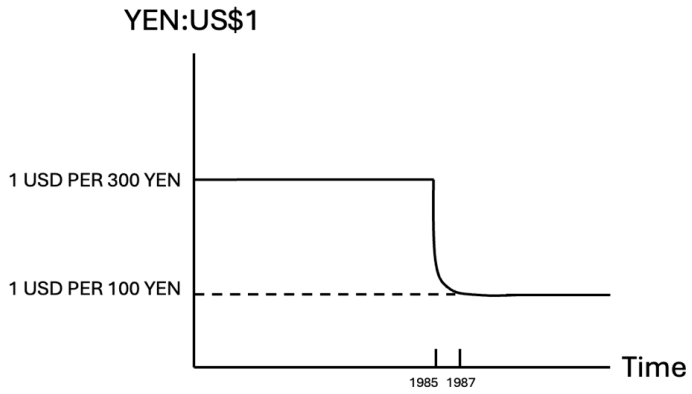
Appendix 4: J-curve



Vol. 10, No.02; 2026

ISSN: 2456-7760

Appendix 5: 1986 Yen Appreciation



Appendix 6: 1998 Indonesia currency crisis