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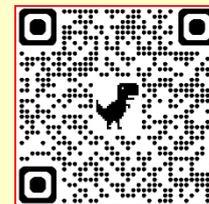
The Four Forces of Currency Theory: A New Dynamic Model in the Innovative Four-Force Strategy of Pull and Push Effects in Exchange Rate Determination, Occasions, and Repercussions

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ABSTRACT

Nowadays, industrialized countries employ a hybrid system of managed floating exchange rates, neither freely floating nor rigidly fixed. After the financial crises in the UK in 1992, Southeast Asia in 97-98, and Latin America in 2001, which reflect that currencies are unexpectedly speculative and volatile [1]. The primary causes of the issue stem predominantly from governmental mismanagement, compounded by substantial outstanding debts, including significant short-term liabilities owed to local firms. This debt accumulation reflects a strained fiscal policy and liquidity management, potentially exacerbating economic instability. However, to what extent is the currency crisis expanding into a regional and global economic problem? What causes the currency crisis, and how can we redefine the new currency system and its value? Is speculative money, driven by hedge funds, responsible for destabilizing the currency system? What forces will push and pull the currency? This research paper aims to provide answers through in-depth analysis and tools to understand the root causes of the currency system. This research paper has two main objectives. First, it will examine the currency systems from the perspective of the G7, Central Bank, Hegde fund and citizen, strategy and decision making. Then, it will reinterpret the J-curve effect not as a tool for analyzing trade conditions, surpluses, or deficits, but as a means to address some aspects of currency dynamics. We will use the J-curve effect and to analyze them together. To support our innovative Four Force Currency theory.

KEY WORDS: The Four Forces of Currency Theory, Four Forces Strategy, Pull and Push Effect, Exchange Rate Determination.

Research Design & Methods:

In the four-force currency framework, we employ our advanced four-force Pull and Push effect to conduct a comprehensive assessment of each nation's monetary significance and evaluate potential future value. This method facilitates a systematic and analytically rigorous approach to understanding currency dynamics within the macroeconomic environment, ensuring precise currency model that can become a predictive indicator and fostering a more informed economic policy formulation.

Within the four-force framework of currency dynamics, maintaining systemic stability requires applying four foundational principles to evaluate each country's monetary environment. This involves a comprehensive analysis of currency strength, exchange rate policies, capital flow behaviors, and monetary policy effectiveness. By doing so, we can accurately assess the current currency status and forecast its potential evolution, enabling more precise macroeconomic management and policy formulation.

Literature Review:

Recent studies [1]-[5][9][10], review on how the monetary policies of systemically important economies, especially the G7, propagate through global financial conditions and induce powerful exchange rate spillovers. Unconventional monetary policy and shifts in policy rate expectations transmit via interest rate differentials, risk premia, and cross-border portfolio flows, thereby influencing bilateral exchange rates and amplifying cycles in risk-on and risk-off behavior. Parallel research documents [1]-[4] that global FX turnover is increasingly driven by hedging and speculative strategies, with hedge funds and other leveraged investors playing a

non-trivial role in episodes of sharp currency adjustments. A further strand of literature underlines the importance of regime credibility and private-sector expectations in determining currency dynamics. Studies on pegged and heavily managed regimes show that anchoring to a credible foreign currency can lower inflation, dampen volatility, and alter the term structure of interest rates via a "credibility channel." At the micro level, survey and behavioral evidence suggests that households' and firms' beliefs about future inflation, growth, and policy stability feed back into currency demand, precautionary saving, and balance-sheet management, reinforcing or undermining the stability of the nominal anchor. Taken together, these strands motivate a perspective that synthesizes positioning in FX markets [6]-[10].

Introduction:

In this research paper, we discover that the Four Forces of Group mainly influence the competition in determining the value of the local currency: 1. G7, 2. The Central Bank, 3. The hedge fund, and 4. Local citizens. This paper aims to develop an innovative four-force strategy, based on pull and push effects, to explain currency state determination.

The currency valuation within the Four Force strategy Framework involves an in-depth analysis of exchange rate determinants, incorporating (1) G7 strategy plays in the international trade balance, (2) Comparative central bank interest rate adjustments, (3) hedge fund decision-making, and (4) domestic citizen expectations (confidence) to accurately assess their impact on currency price.

Discussion:

The currency valuation component within the Four Force Strategy Framework entails a rigorous macro-financial assessment of exchange rate determination, integrating both fundamental and expectations-driven factors. It systematically evaluates: (1) the strategic interactions of G7 economies and their influence on current account positions, global capital flows, and the international trade balance; (2) the relative monetary policy stance of major central banks, with particular attention to interest rate differentials, yield curve dynamics, and expectations of future policy paths; (3) the portfolio allocation and speculative positioning of hedge funds and other leveraged investors, including their role in amplifying risk-on/risk-off cycles, liquidity conditions, and market microstructure effects; and (4) domestic households' and firms' exchange rate expectations, inflation sentiments, and confidence in the monetary regime, all of which shape currency demand, precautionary savings behavior, and the perceived credibility of the anchor. Together, these forces jointly determine the equilibrium exchange rate, risk premia, and ultimately the observed trajectory of currency prices and values.

Here, are the following processes of our Innovative Four Force Currency Framework. The subsequent section details the operational process of our innovative Four Force Currency Framework and how it works.

Currency Value of the Innovative Four Force Framework:
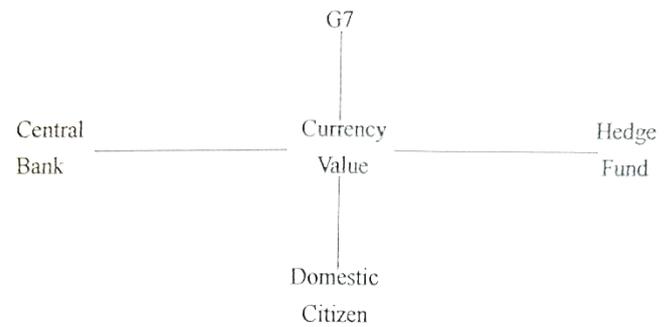
We will analyze each individual of one particular force:

G7:

Determine which individual country to revalue the currency based on the international trade balance.

    (i)   International trade balance
    (ii)   Strategy Decision

For example, in 1986, the G7 bought the Yen and sold USD after the G7 meeting, aiming to improve the trade balance and cause the Yen to appreciate while depreciating the USD.

Central Bank:

Determine the currency whose value to interfere (intervene)

    (i)   Based on trade surplus, deficit
    (ii)   Inflation Target
    (iii) Employment target
    (iv) Interest rate determination

Hedge Fund:

    (i)   Speculative demand for money
    (ii)   Based on the rational expectation, gain and hedge of risk
   (iii) Risk determination

Domestic Citizen:

    (i)   Based on the Government's confidence
   (ii)   Political Risk
    (iii) Rational Expectation

For instance, if citizens lose confidence in the local Government due to official fraud, substantial government debt, and political instability, they are more likely to exert pressure for currency depreciation. This entails selling local currency and purchasing USD, further weakening the local currency within the foreign-exchange-market and potentially leading to increased inflation and economic instability.

Secondly, the confident loss will lead to a decrease in the expectation value or devaluation of the currency when the citizen loses confidence. These pull-and-push dynamics will determine the currency's value.

So, my research paper proposes an innovative four-force strategic framework that highlights the pull and push factors influencing currency valuation. This model explores the dynamic interplay of market forces, including supply and demand stimuli, speculative pressures, and macroeconomic policy by the central bank, to provide a more nuanced understanding of currency fluctuations.

Pull and Push Effect in the Four Force model
Total amount of money transaction
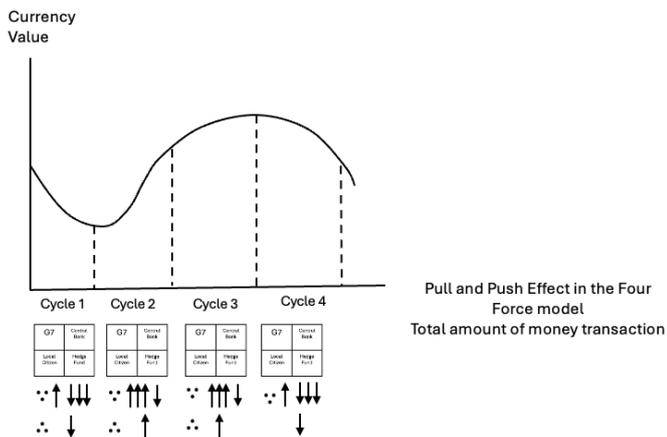
The operation of each cycle by the Four Force Strategy:
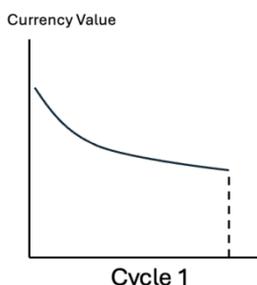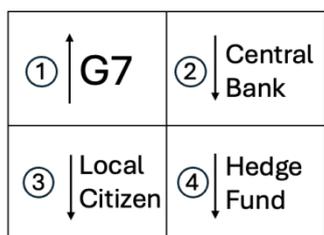
1. G7 considers that country A exhibits a trade imbalance with other nations. So, the G7 believes that a significant trade imbalance in country A will harm its economy.

DECISION

Buy currency of country A, sell USD, EURO, etc.

2. (Domestic) The central Bank of country A believes the currency is too strong for exporting goods, so it aims to devalue the currency.
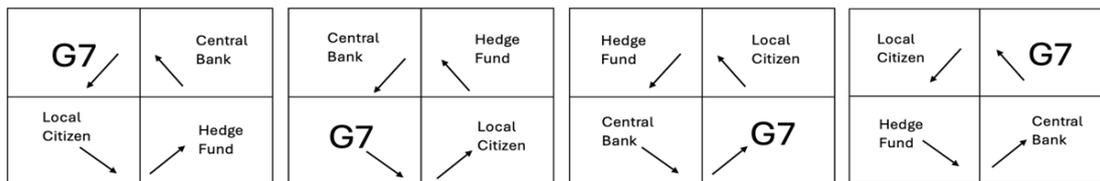
DECISION

Sell local (domestic) currency, Buy USD, EURO, etc.

3. Home domestic citizens fear that the government's large trade deficit or national debt will weaken the currency.

DECISION

Sell local (domestic) currency, Buy USD, EURO, etc.

4. A hedge fund believes there is a mismatch between a country's actual value and speculative money, which will lead to adopting a risk-averse portfolio and reallocating assets to avoid depreciation.

They expect depreciation in country A's currency.

DECISION

Sell local (domestic) currency, Buy USD, EURO, etc.
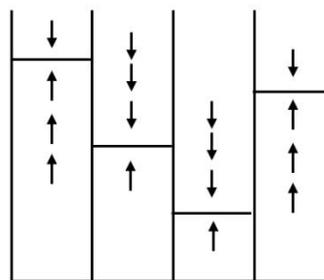
The individual force rotates:

Each Dynamic Cycle has four stages:

Each Dynamic Cycle consists of four distinct stages, driven by four fundamental force decisions: buying and selling. These stages capture the cyclical nature of market dynamics of pull and push effects, and highlight the strategic decision points that shape price movements and market trends.

Four Force Decision:

Buy, Sell

(Progression toward infinity)

The dynamic valuation influences whether attenuation (pull) or amplification (push) of the currency's worth across each sequential phase of the economic synthesis. (Stage1--Stage2--Stage3--Stage4)

Stage 1   Stage 2   Stage 3   Stage 4

 (Stage……infinity)

The currency value (Pull or Push) of each Combine Stage

The individual forces undergo rotation, with each stage characterized by four distinct rotating forces. The combined rotational forces subsequently determine the quantitative values for each stage, thereby influencing the overall system dynamics in a manner consistent with currency modeling and analysis.

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

Moreover, each stage has four individual forces rotating.

The combined rotational force will therefore determine the value of each individual stage. In each different stage, there will be different dynamic effects.

Dynamic Four Force Stage

In each stage of variation, distinct dynamic effects will manifest, reflecting the complex interplay of economic state forces. The Four-Force Dynamic Stage (Stage 1 + Stage 2 + Stage 3 + Stage 4), also referred to as the Four-Force Mixed Rotated Decision phase, it

encapsulates a comprehensive model in which multiple economic vectors interact, influencing market behavior through rotational and mixed forces.

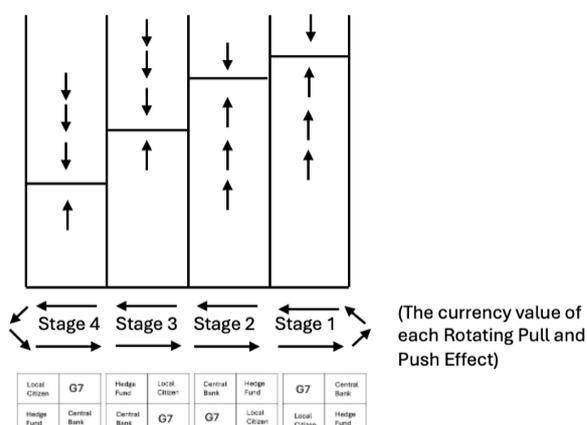## (Four-Force Mixed Rotated Decision)

Stage 2	Stage 3	Stage 4	Stage 1
Central Bank	Local Citizen	Local Citizen	G7
Hedge Fund	Hedge Fund	G7	Central Bank
G7	Central Bank	Hedge Fund	Local Citizen
Local Citizen	G7	Central Bank	Hedge Fund

(The currency value of each Rotating Pull and Push Effect)
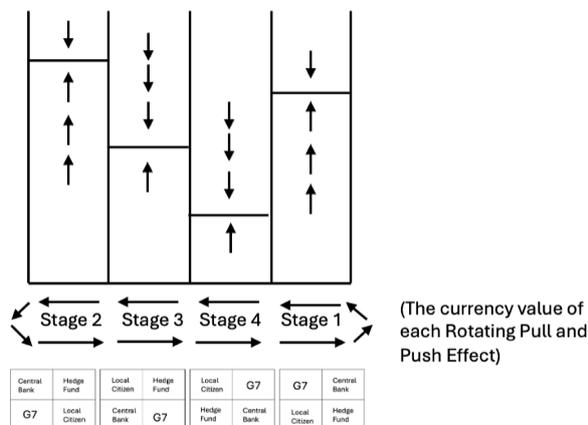
(Four-Force Mixed Rotated Decision)

After combining the Four Stage ($\sum$ Stage 1 + Stage 2 + Stage 3 + Stage 4)

Then it will determine the currency value for each cycle.

The Four Force framework Analysis:

Our model can be illustrated by a bilateral duopoly, involving four

Dynamic Four Force Stage:

Stage 4	Stage 3	Stage 2	Stage 1
Local Citizen	Hedge Fund	Central Bank	G7
G7	Local Citizen	Hedge Fund	Central Bank
Hedge Fund	Central Bank	G7	Local Citizen
Central Bank	G7	Local Citizen	Hedge Fund

(The currency value of each Rotating Pull and Push Effect)

force inter-collateral strategy play (with pull and push effect by matrix 2 by 2 or 3 to 1 force), each originating state in a distinct national currency. This illustrative framework can similarly be extended to elucidate the dynamics within our Four Forces framework analysis, employing comparable economic reasoning and terminology.

Our Four Forces framework can be illustrated with an example involves four forces, each from a distinct state

Buy, Sell Decision of Country A Currency

Central Bank / G7	Buy	Sell
Buy	-10 / -10	100 / 0
Sell	0 / 100	0 / 0

Local Citizen / Hedge Fund	Buy	Sell
Buy	-5 / -5	100 / 0
Sell	0 / 100	0 / 0

Either force alone can generate profits by prompting the same buy or sell decision (direction), leveraging its individual market impact. However, when these forces conflict, each aiming to induce different market movements, both are likely to incur losses due to opposing pressures. The prevailing force that ultimately yields a profit depends on its relative strength or market influence and how it interacts dynamically with the other forces. The outcome is determined by the relative power asymmetry and the nature of their collision, which may involve multifaceted market mechanisms, market momentum, and traders' strategic behavior. But each state is stationary and follows the pull and push effect dynamic.

The analysis of exchange rate policy involves a comprehensive evaluation of the strategic decisions regarding the buying and selling, for example, Country A's national currency in international financial markets. Central banks and monetary authorities continually monitor various economic indicators, interest rate differentials, balance of payments, and fiscal policies to determine optimal intervention strategies. These strategies aim to stabilize the currency, control inflation, and promote economic growth by influencing the exchange rate through sterilized or unsterilized interventions. The buying and selling decisions are often driven by the need to either appreciate or depreciate the domestic currency,

depending on the prevailing economic circumstances and policy objectives. For instance, a currency re-valuation might be addressed by accumulating foreign exchange reserves through currency purchases, and for instance, the currency depreciation which can help raise exports by making domestically produced goods more competitively priced internationally. Conversely, to curb pressures stemming from an over-appreciation of the local currency, authorities may sell it, thereby offsetting the over-appreciation in the foreign exchange market.

Neighboring economies, global economic conditions, and capital flow dynamics further influence these interventions. Moreover, in a flexible or managed exchange rate regime, these decisions are often complemented by macroprudential measures and monetary policy adjustments to maintain currency stability without causing excessive volatility. The complexities inherent in exchange rate management necessitate a nuanced understanding of International-finance theories such as Purchasing-Power-Parity, Interest-Rate-Parity, and the Balance of Payments framework [2]. Effectively, policymakers must balance multiple, often competing, objectives: supporting export competitiveness, maintaining inflation targets, and preserving financial stability. Consequently, the decision to buy or sell currency is not merely a technical transaction but a strategic tool embedded

within a broader macroeconomic policy framework designed to foster sustainable economic development and resilience against external shocks.

Our innovative *Four Force Currency Model* conceptualizes currency dynamics through the interaction of four main dominate forces, serving as a strategic framework for decision-making and policy formulation. By analyzing the push-and-pull effects among these forces, the model enhances the precision of economic forecasting and supports more robust currency valuation and determination. This approach provides a more systematic and accessible method for analyzing complex market conditions and identifying optimal strategic responses.

Analysis of the Exchange Rate Policy, Buy and Sell Decisions for Country A's Currency (using the four forces model shown below):

The reality of currency determination was not solely decided by market forces; each market force would have a four-pronged strategic decision. That is the correlation of G7, Central Bank, Hegde Fund (Speculators), and Citizen.

Our Innovative Model:

Decision Correlations = $1/4\ \sigma \sum [D_C W_A + D_C W_B + D_C W_C + D_D W_D]$

Value Correlations = $1/4\ \sigma \sum [V_C W_A + V_C W_B + V_C W_C + V_D W_D]$

Our Innovative Model:

$1/4\ \sqrt{W_A \mho_A} + W_B \mho_B + W_C \mho_C + W_D \mho_D + 4\ W_A W_B W_C W_D\ X\ \mho_A$

$\mho_B\ \mho_C\ \mho_D\ Corr\ ABCD$

A = G7

B = Local Central Bank

C = Hedge Fund

D = Local Citizen

Wa, Wb = Weight of Asset

Corr AB…..= Correlation of A, B Asset

$\mho_A \mho_B$ …...= Asset Square Error

σ = Asset Force Correlation

So, we derived a Mathematical currency 'state' determination solution.

(The mathematical model can explain the combined four force action)

The mathematical model is precise and incorporates assumptions and approximations; it is a robust framework for elucidating the intricate interactions and synergistic effects among the four fundamental forces. These forces G7, Central Bank, Speculator, and Citizen are complex in their behavior and have historically posed significant challenges to comprehensive theoretical understanding. Our model, provides valuable insights into the collective influence of these dynamics phenomena. It employs advanced computational techniques and sophisticated theoretical constructs, to approximate the combined actions of the forces within a unified formalism. This integration is crucial for developing predictive capabilities in related decision strategies, where understanding the interplay among these fundamental interactions underpins many contemporary endeavors.

Moreover, our Four Forces Currency model facilitates quantitative analysis of force coupling with four forces, the mechanisms of currency transaction, and considerations of currency decision symmetry, thereby contributing to the refinement of the strategy-force Model and beyond. Overall, our model's capacity to cohesively explain the cross-scale effects of the fundamental currency value on the decision of the four forces (pull and push) highlights its indispensable role in advancing both theoretical insights and practical applications within modern currency theory and economics-driven research.

J-curve & Marshall-Lerner condition offers crucial empirical support for our novel four-force assumption model:

Trade Balance
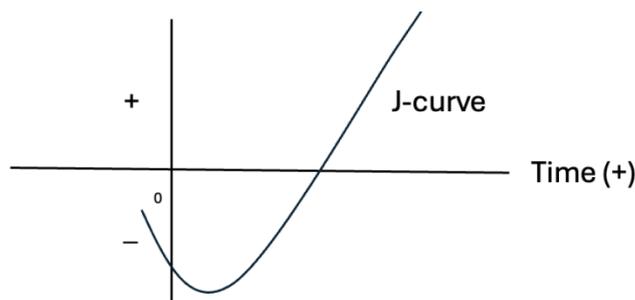
The J-curve phenomenon offers crucial empirical support for our novel four-force assumption model. To elaborate, the J-curve describes the temporal dynamic in which a country's trade balance initially deteriorates following a nominal exchange rate depreciation, due to the inelastic nature of import and export demand in the short run. Over time, as price elasticities respond and realign, the trade balance subsequently improves, eventually correcting the initial decline in the trade deficit. This graphical and theoretical construct effectively captures the lagged adjustment processes underlying trade elasticities and terms-of-trade effects. Accordingly, the J-curve model aligns well with our four-force framework, providing a robust macroeconomic explanation for trade dynamics observed in real-world scenarios involving currency depreciation and trade balance adjustments.

Our novel four-force model integrates seamlessly with the J-Curve phenomenon and is theoretically consistent with established empirical patterns. Moreover, our model satisfies the Marshall-Lerner condition, ensuring its robustness within the framework of elasticities of import and export demand. Consequently, it is highly applicable for analyzing currency dynamics, providing a comprehensive analytical tool that can elucidate complex real-world currency adjustments and transient phenomena in international macroeconomic contexts.

Our four-force mechanism is akin to the Marshall-Lerner condition, a fundamental principle in international economics that concerns exchange rate adjustments and balance-of-payments equilibrium. This implies that the responsiveness of quantity demanded to price changes for both exports and imports must be collectively significant. Consequently, the efficacy of currency depreciation or devaluation as a policy tool to rectify a persistent balance of payments disequilibrium hinges critically on the significance within the domestic economy.

Our four-force currency model possesses predictive capabilities that can be utilized to evaluate future currency price movements in relation to trade dynamics. When a country aims to address a trade deficit, it often resorts to currency devaluation, while as the relative strength of opposing forces determines the currency's value.

Specifically, if the external power force pressure exerted by a dominant trading partner or coalition—such as the G7—exceeds the country's domestic economic influence, the affected country may need to implement currency devaluation or revaluation strategies. For instance, in 2025, amidst persistent trade tensions, Japan was compelled to devalue its currency because the collective power force of the state exceeded its own. Similarly, in 1986, Japan appreciated its currency during a period when its economic influence was substantial; however, sustained G7 dominance over Japan's economy eventually led to Japanese currency revaluation. Our model illustrates that the magnitude of international power forces, such as the G7, significantly influences exchange rate trends over time, with a larger power force exerting a corresponding impact on currency valuation.

It is clear that the larger the distance power force, the more likely it is that depreciation/ devaluation will improve a country's balance of payments.

So, according to our four-force model, which incorporates a comprehensive analysis of currency dynamics, our strategic framework extends beyond traditional paradigms, offering a nuanced approach grounded in advanced economic theory. It is compatible with the J-curve & Marshall-Lerner condition.

### Our four-force currency model have the explainable and predictive power:

Example 1 (Japan Currency determination 1986):

YEN:US$1
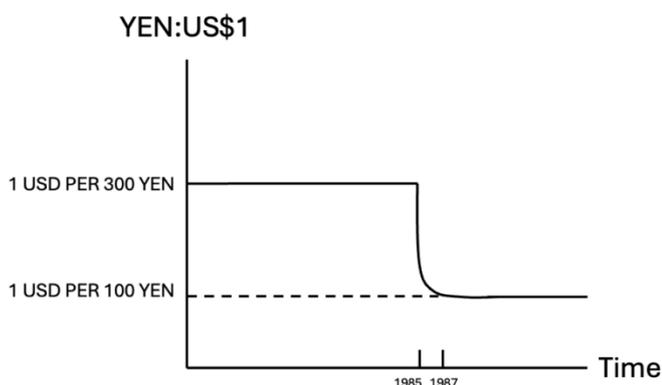
1986: Yen appreciation due to G7, especially the US, hopes a strong yen will improve trade balance among G7 countries, decrease Japanese exports, and increase Japanese imports of foreign goods.

Dominate force G7: Sell USD, Buy YEN.

Example 2 (Indonesia Currency crisis 1998):
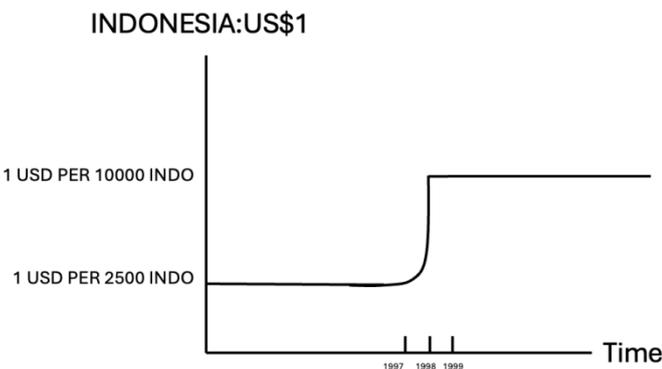
INDONESIA:US$1

1998: Indonesia's currency depreciated because of a large short-term debt and overvaluation of its local currency.

Dominate force Hedge Fund/ Speculators, Local Citizen: Sell Indo, Buy USD.

The new four-force effect, compatible with the J-curve theory, is driven by the Four dominate Force (Four-Force) pull and push effect, which determines currency value. This influence is not based solely on trade balances and elasticities, but also on market confidence and the correlation among individual forces within the Four-Force strategic decision. That mean which power force is greater (collude), or its weight is dominant, that power force will vin.

The newly identified 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 trade balance and elasticity considerations 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 hierarchical 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 four-force model has predictive power and can explain many currency phenomena in the currency market.

Conclusion:

My innovative Four-Force Currency Model possesses predictive capabilities for individual countries currency determination, including the United States. This framework allows for the assessment of the US dollar's valuation relative to G7 economies by analyzing four key forces: G7 (currency market dynamics), Central bank (macroeconomic policy), and Speculator (investor sentiment), Citizen (domestic confidence), this research paper aim to explore which of these forces would dominate when all three force G7 (currency market dynamics), Speculator (investor sentiment), and Central bank move synergistically in the same direction. In such a scenario, the impact of each force would depend on its relative strength (weight); for instance, if three forces exert upward pressure on the USD while one force exerts downward pressure, only the most dominant force (weight) would ultimately influence the currency's trajectory. Hope my research paper can contribute to society and mankind.

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