

Exchange Rate Dynamics and Economic Growth in Developing and Emerging Countries: A Theoretical and Empirical Perspective

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Abstract :

This article provides a comprehensive review of both theoretical and empirical research on the selection and evaluation of exchange rate regimes. The literature on this subject can be broadly classified into two main strands. The first consists of classical studies that primarily focus on the differences between fixed and floating exchange rate systems, analyzing their respective advantages and limitations. These studies assess how each system affects macroeconomic stability, inflation control, and external imbalances.

The second strand includes more recent research that highlights the trade-offs between credibility and flexibility in exchange rate policies, with a particular emphasis on their impact on economic performance. These modern studies explore intermediate exchange rate arrangements, such as managed floats and crawling pegs, to determine their effectiveness in maintaining stability while allowing for necessary adjustments in response to economic shocks.

Beyond this general classification, the review pays special attention to the literature addressing the choice of exchange rate regimes in developing and emerging economies. These countries face unique structural and macroeconomic challenges, including external vulnerability, limited financial market development, and susceptibility to speculative attacks. As a result, the choice of an appropriate exchange rate policy requires a careful assessment of trade-offs between monetary independence, price stability, and external competitiveness.

By synthesizing the key findings from various studies, this review aims to contribute to a better understanding of the determinants and consequences of exchange rate regime selection in different economic contexts, particularly in developing nations.

Keywords: Exchange rate, exchange rate regimes, developing countries, economic performance, monetary policy.

JEL Classification : E52, O47, F31, C22

Paper type:., Theoretical Research

Résumé :

Cet article propose une revue approfondie des recherches théoriques et empiriques sur la sélection et l'évaluation des régimes de change. La littérature sur ce sujet peut être classée en deux principaux courants. Le premier regroupe les études classiques qui se concentrent sur les différences entre les régimes de change fixes et flottants, en analysant leurs avantages et limites respectifs. Ces travaux évaluent l'impact de chaque système sur la stabilité macroéconomique, le contrôle de l'inflation et les déséquilibres extérieurs.

Le second courant comprend des recherches plus récentes mettant en avant les arbitrages entre crédibilité et flexibilité des politiques de change, en mettant particulièrement l'accent sur leurs effets sur la performance économique. Ces études modernes examinent les régimes de change intermédiaires, tels que les flottements administrés et les parités glissantes, afin de déterminer leur efficacité pour assurer la stabilité tout en permettant des ajustements face aux chocs économiques.

Au-delà de cette classification générale, cette revue accorde une attention particulière à la littérature portant sur le choix des régimes de change dans les économies en développement et émergentes. Ces pays sont confrontés à des défis structurels et macroéconomiques spécifiques, tels que la vulnérabilité externe, le sous-développement des marchés financiers et la sensibilité aux attaques spéculatives. Ainsi, le choix d'une politique de change appropriée nécessite une évaluation rigoureuse des arbitrages entre indépendance monétaire, stabilité des prix et compétitivité externe.

En synthétisant les principaux résultats des différentes études, cette revue vise à mieux comprendre les déterminants et les conséquences du choix des régimes de change dans divers contextes économiques, en particulier dans les pays en développement.

Mots-clés : Taux de change, régimes de change, pays en développement, performance économique, politique monétaire.

JEL Classification : E52, O47, F31, C22

Type de l'article : article théorique

1. Introduction

Over the past fifty years, the choice of an exchange rate regime has been a determining factor in shaping economic policy decisions. Since the collapse of the fixed exchange rate model under the Bretton Woods system in the early 1970s, through the wave of financial crises of the 1990s, and the introduction of the euro, the debate on exchange rate regimes has intensified, focusing on selecting the most suitable regimes for specific countries or groups of countries.

The exchange rate regime describes the arrangement governing how exchange rates are determined. A nominal exchange rate is the ratio at which one currency can be exchanged for another. The immediate impact of this rate on several economic indicators is evident, notably on international trade, capital flows, and, consequently, on a country's economic performance.

Therefore, the choice of a desirable or appropriate exchange rate regime is a normative issue, and the response depends on multiple factors, which may or may not be interrelated. These factors include the objectives set by monetary authorities, specifically central banks, the constraints imposed by the functioning or structure of the economy, and the shocks or disruptions affecting it. Indeed, this choice involves several key economic policy decisions that have a direct impact on economic performance but may also constrain actions in other policy areas. This decision is crucial and poses a challenge for all national authorities and policymakers, as it will have repercussions on economic well-being in both the short and long term.

Consequently, exchange rate fluctuations remain a major concern for countries operating within the global economy. Given the fragility of the financial system and its high vulnerability to external shocks, this issue is particularly significant for developing economies (Aghion et al., 2009; Tumusiime-Mutebile, 2012).

To better understand the relationship between exchange rate regimes and economic fundamentals, it is essential to revisit the experience of emerging and developing countries in the 1970s, marked by the collapse of the Bretton Woods system. Most of these countries had adopted a fixed exchange rate regime or pegged their currency to major international currencies, such as the U.S. dollar, the French franc (FF), and Special Drawing Rights (SDRs). This experience demonstrated that, from the 1980s onward, these countries gradually shifted towards more flexible exchange rate regimes, leading to a complete reshaping of the distribution of exchange rate arrangements.

Eichengreen (1999) shows that since the 1970s, the share of developing countries operating under a fixed exchange rate regime has steadily declined, from 90% in 1975 to 45% in 1997. Conversely, the proportion of countries with flexible exchange rate regimes increased from 10% in 1975 to 55% in 1997. Fischer (2001) also observed a decline in the number of intermediate exchange rate regimes in favor of more extreme arrangements, namely rigidly fixed or fully floating exchange rates.

Theoretical explanations for the choice of exchange rate regime have extended the vulnerability-to-shocks framework to include additional elements such as: the Optimal Currency Area (OCA) theory, the "impossible trinity" constraint under conditions of high capital mobility, time inconsistency problems associated with regime choices, influences on economic performance, balance sheet effects for financially dollarized economies, and the role of currency crises. Empirically, the range of methods has similarly expanded. While some consensus appears to have emerged in theoretical debates on the determinants of exchange rate regime choice, empirical evidence presents somewhat mixed results.

This article aims to review the main theories and empirical methods used to select an appropriate exchange rate regime. Our research question is: What key determinants should a developing or emerging economy consider when selecting an optimal exchange rate regime? To address this question, this article aims to examine the key theories and empirical approaches used in selecting an appropriate exchange rate regime through a comprehensive literature review. The paper is structured as follows: Section 2 explores the various classifications of exchange rate regimes, distinguishing between official classifications and those observed in practice, while also presenting the theoretical frameworks that guide the determination of an optimal exchange rate regime. Section 3 reviews the empirical methodologies, with a particular focus on their relevance to developing economies in selecting an optimal exchange rate regime. Finally, Section 4 concludes with key findings and insights.

2. exchange rate regime choice: classification and theoretical evolution

The question of choosing an exchange rate regime has long been a recurring and continuous subject of debate in international macroeconomics. In this section, we first examine the distinct classifications of exchange rate regimes, both *de jure* and *de facto*. Subsequently, we review the theoretical and empirical literature on exchange rate regime choices.

2.1 Classification of Exchange Rate Regimes: *De jure* vs. *De facto*

To study the choice of an exchange rate regime, it is essential to analyze the appropriate classifications of these regimes. Until the late 1990s, most studies on exchange rate regime choices focused on official regimes. Recently, numerous empirical studies have demonstrated that assessments of central parity adjustments and foreign exchange market interventions can reveal substantial differences between officially declared arrangements and the *de facto* regime a country adopts (see Ghosh et al., 1997; Ghosh et al., 2002; Calvo & Reinhart, 2002; Levy-Yeyati & Sturzenegger, 2005).

A broad body of empirical literature classifies exchange rate regimes as either *de jure* or *de facto*. The former (*de jure*) categorizes regimes based on the official exchange rate arrangements declared by governments, which are typically collected and published by the International Monetary Fund (IMF). In other words, countries are classified according to the regime they claim to have adopted. According to the IMF's classification, exchange rate regimes evolved from a simplistic dichotomy of "pegged or not" in the 1970s and early 1980s to a four-category classification in the 1980s and 1990s, and ultimately to an eight-category framework introduced in 1998.

Since the late 1990s, the IMF has published data on both *de jure* and *de facto* exchange rate arrangements for its member countries in its annual report on Exchange Arrangements and Exchange Restrictions (IMF, 2014). The starting point for *de facto* classification is the declared *de jure* arrangement, but adjustments are made if changes in the nominal exchange rate or other variables over the previous year suggest a different *de facto* arrangement. The *de facto* classification is primarily retrospective and descriptive, and it may not fully reflect a country's policy intentions (Genberg & Swoboda, 2005).

The first column of Table 1 presents a list of the eight exchange rate regime categories commonly used in *de jure* classifications and widely referenced in the literature (Frankel, 1999; Edwards & Savastano, 1999; IMF, 1999; Ghosh et al., 1997; Ghosh et al., 2002). These categories range from monetary unions to pegged and crawling pegs, with varying degrees of intervention, and are organized hierarchically based on the relative stability they provide to the nominal exchange rate or, conversely, the degree of flexibility they offer the economy. However, several attempts have been made to adjust this classification or propose entirely

new ones based on observed exchange rate behavior, resulting in *de facto* classifications of exchange rate regimes.

De facto Exchange Rate Regimes

De facto exchange rate regimes classify countries based on the regimes they actually implement in practice. This classification aims to ensure that official declarations align with current practices. A country may experience minimal fluctuations in its exchange rate but exhibit significant variability in reserves and interest rates, even if monetary authorities have no formal commitment to maintaining a fixed parity. This behavior is often referred to as the "fear of floating" phenomenon (Calvo & Reinhart, 2002).

In many cases, central banks attempt to stabilize the exchange rate because they view devaluations or depreciations as likely causes of adverse balance sheet effects, particularly in countries with high levels of foreign-currency-denominated debt (Calvo & Reinhart, 2000). Alesina and Wagner (2006) provide a potential explanation for the fear of floating. They suggest that countries with relatively poor institutional quality are less capable of adhering to announced exchange rate fixes and are thus more likely to abandon them. Conversely, countries with better institutional frameworks may fear floating to signal their distinction from those unable to uphold monetary stability promises.

Barajas et al. (2008) offer another perspective, proposing that international capital markets may reward countries classified as flexible. Once this "flexibility" is announced, there appears to be no penalty for maintaining a fear of floating.

frequently adjusting its parity. This behavior is known as the "fear of pegging" phenomenon (Levy-Yeyati & Sturzenegger, 2005). Genberg and Swoboda (2005) argue that countries actively using monetary policy instruments to stabilize their exchange rate may rationally avoid announcing or committing to a fixed exchange rate out of fear of speculative attacks.

Table 1: De jure and De facto classification

<i>De Jure</i>	<i>De Facto</i> by Reinhart and Rogoff ¹	<i>De Facto</i> by Levy-Yeyati and Sturzenegger
(1) Currency Union (2) Dollarization (3) Currency Board (4) Conventional Peg (5) Crawling Peg (6) Bands (7) Managed Float (8) Pure Float	(1) No separate legal tender (2) Pre announced per or currency board arrangement (3) Pre-announced horizontal band that is narrower than or equal to $\pm 2\%$ (4) <i>De facto</i> peg (5) Pre-announced crawling peg (6) Pre-announced crawling band that is narrower than or equal to $\pm 2\%$ (7) <i>De facto</i> crawling peg (8) <i>De facto</i> crawling band that is narrower than or equal to $\pm 2\%$ (9) Pre-announced crawling band that is wide than or equal to $\pm 2\%$ (10) <i>De facto</i> crawling band that is narrower than or equal to $\pm 5\%$ (11) Moving band that is narrower than or equal to $\pm 2\%$ (12) Managed floating (13) Freely floating (14) Freely falling (15) Hyperfloating	(1) Fixed (2) Crawling Peg (3) Dirty Floats (4) Flexible

Sources: Levy-Yeyati and Sturzenegger (2005¹); Reinhart and Rogoff (2004²).

¹Classifying exchange rate regimes: Deeds vs. words. *Europeaneconomicreview*, 49(6), 1603-1635.

²La relecture de l'histoire moderne des régimes de change : une réinterprétation, le *Quarterly Journal of Economics*, 2004 - academic.oup.com

On the other hand, a country may present itself as having a pegged exchange rate while Furthermore, Levy-Yeyati et al. (2013) updated their dataset to cover the period 1974–2004 and examined the relationship between exchange rate depreciations, growth, and productivity in developing countries. Their findings reveal that, in most cases (increasingly so during the 2000s), interventions were aimed at limiting appreciations rather than depreciations. These interventions were often motivated by a neo-mercantilist view that a depreciated real exchange rate protects domestic industries. The authors labeled this behavior as the "fear of appreciation."

De Facto Classifications: Relevance and Key Contributions

Over time, *de facto* classifications have gained increasing importance in empirical research on exchange rate regimes. This shift has led to a reevaluation of many hypotheses previously tested using *de jure* classifications, with numerous findings overturned. Among the most significant contributions are the classifications proposed by Reinhart and Rogoff (2004) and Levy-Yeyati and Sturzenegger (2005).

Reinhart and Rogoff's Classification System

Reinhart and Rogoff (2004) developed a new classification system that re-evaluates exchange rate regimes by focusing on dual and parallel market-determined exchange rates, complemented by a statistical analysis of observed exchange rate behavior across 153 countries from 1946 to 2001.

For countries with a parallel foreign exchange market, their classification relies on statistical measures, including the percentage of absolute changes in the nominal exchange rate and the likelihood of remaining within a specified fluctuation band. If only a single foreign exchange market exists, they compare the officially announced regime with the *de facto* statistical classification.

By combining official declarations with inflation performance and exchange rate volatility, they identified 15 distinct *de facto* exchange rate regimes (see Table 1). Notably, they differentiate between floating regimes in high-inflation countries ("freely falling") and other types of floating. The "freely falling" category applies to cases where annual inflation equals or exceeds 40% and no official exchange rate regime is announced. A special subcategory, "hyperfloats," is reserved for scenarios meeting Cagan's (1956) classical definition of hyperinflation (monthly inflation of 50% or higher). These periods of severe macroeconomic instability often result in frequent and substantial exchange rate depreciations.

Reinhart and Rogoff's findings suggest that since the 1980s, over 50% of countries that *de jure* declared floating regimes were classified as *de facto* pegged, and approximately half of those *de jure* pegged were operating under floating regimes. Additionally, they identified numerous cases where the announced *de jure* fluctuation band was significantly wider than the observed *de facto* band.

Levy-Yeyati and Sturzenegger's Classification System

Levy-Yeyati and Sturzenegger (2005) developed a *de facto* classification system based on data reflecting the behavior of three variables: nominal exchange rate changes, the volatility of these changes, and the volatility of international reserves. Their dataset covered all IMF-reporting countries from 1974 to 2000.

Countries were classified into four main groups:

1. **Intermediate Regimes** (*Crawling pegs* and *dirty floats*): Characterized by moderate exchange rate volatility, low variability in exchange rate changes, and medium-to-high reserve volatility.
2. **Flexible Regimes**: Defined by high volatility in exchange rates and their changes, but low reserve volatility, as exchange rates fluctuate freely with minimal intervention.

3. **Pegged Regimes:** Exhibiting low exchange rate and change volatility but high reserve volatility, as reserves are used actively to stabilize the exchange rate.
4. **Non-Conclusive Regimes:** Where policy intentions are difficult to infer due to stable foreign exchange markets.

Their results revealed that 26% of the countries studied followed an exchange rate regime different from their *de jure* classification. The intermediate regimes, in particular, demonstrated varying degrees of government intervention aimed at stabilizing exchange rates, further underscoring the complexities of deducing policy intentions solely from observed behavior.

These findings highlight the significant divergence between declared and actual exchange rate policies and underscore the importance of *de facto* classifications in understanding real-world monetary policy frameworks.

Other authors have proposed alternative methods for classifying exchange rate regimes (Bailliu et al., 2001; Poirson, 2002; Shambaugh, 2004; Dubas et al., 2005; Bérnassy-Quére et al., 2006; Frankel and Wei, 2008). Bailliu et al. (2001) developed a classification based on the observed volatility of nominal exchange rates. These authors consider external shocks and revaluations, noting substantial differences in how exchange rate regimes are classified depending on the methodology used. They also find that more than 50% of countries identifying as floaters actually follow stricter arrangements.

Similarly, Poirson (2002), adopting the "fear of floating" approach, uses an alternative flexibility index based on exchange rate movements and international reserves. Dubas et al. (2005) propose an econometric approach to derive an "effective" *de facto* classification of exchange rate regimes. These authors use *de facto* classifications as outcomes of a multinomial logit choice problem conditioned on measures of the volatility of a country's effective exchange rate, bilateral exchange rate, and foreign reserves.

To investigate how a fixed exchange rate affects monetary policy, Shambaugh (2004) developed a *de facto* coding system that focuses exclusively on exchange rate volatility, categorizing regimes as pegged or non-pegged. In contrast, Bérnassy-Quére et al. (2006) present an empirical method for identifying *de facto* exchange rates. They define a basket peg as any stable linear combination of variations in bilateral exchange rates against the dollar, euro, and yen. Similarly, Frankel and Wei (2008) propose a new approach to estimate countries' *de facto* exchange rate regimes.

Furthermore, critics have consistently moved away from the official classification of the International Monetary Fund (IMF) to construct a *de facto* classification system introduced in 1998. The IMF's new classification combines available information on exchange rates, monetary policy frameworks, and formal or informal policy intentions of authorities, with data on real exchange rates and reserve movements to assess the actual exchange rate regime. However, it can be argued that the IMF's new classification system still falls under the *de jure* category, as it continues to rely heavily on official information and primarily examines the behavior of official exchange rates (Reinhart and Rogoff, 2004).

Despite the evolution of exchange rate regime classifications, the relationship between these regimes and economic performance appears to differ significantly when analyzed from the perspective of *de facto* regimes. This does not imply that official regimes are irrelevant, even if they do not always align with *de facto* regimes. Official regimes should guide financial markets' expectations regarding exchange rate trends and influence decisions in international financial policy.

Moreover, the use of interest rates and changes in gross international reserves as measures for intervening in foreign exchange markets presents significant limitations. In some countries, movements in central bank foreign reserves may be linked to reserve management strategies, external debt servicing, or payments for large-scale purchases such as oil imports, and are not

necessarily used for exchange rate stabilization purposes. In many countries, interest rates are administratively set. Consequently, statistics on foreign reserve data may diverge from actual conditions (Bubula and Otker-Rober, 2002; Ghosh et al., 2002).

In summary, *de facto* measures vary significantly depending on the methodology used to assess the regimes. However, all these methodologies converge on the same conclusion: *de facto* exchange rate regimes differ from *de jure* regimes, and discrepancies between the two are not uncommon. The most comprehensive *de facto* exchange rate classifications were produced by Reinhart and Rogoff (2004).

A subsequent study by Reinhart and Rogoff (2012) examined the reliability of *de facto* classifications. After analyzing and comparing three *de facto* classification frameworks, they found a reasonable degree of concordance between the classifications. These convergences are neither rare nor random. They noted that convergences are most frequent in middle-income (emerging market) and low-income (developing) countries. They also emphasized that the incidence and correlations of these convergences call for particular caution when using these classifications to analyze exchange rate regimes in emerging markets and developing countries.

2.2. Exchange Rate Regime Choice and Economic Growth: A Theoretical Analysis

From an economic theory perspective, the type of exchange rate regime should not impact the long-term equilibrium values of real variables. However, it may influence the adjustment process. Additionally, the effect of the exchange rate regime on growth can arise from its influence on the speed of adjustment to random disturbances affecting the domestic economy (Aizenman, 1994). As a complex and significant macroeconomic indicator, economic growth depends on various factors, including social, economic, political, and cultural variables. Nevertheless, the literature examining the relationship between exchange rate regimes and economic growth has provided evidence supporting the hypothesis of a link between these regimes and growth.

In this context, the work of Friedman (1953) and Mundell (1960, 1963) highlighted the critical role of exchange rate regimes in economic policy. Friedman (1953) advocated for a flexible exchange rate regime, emphasizing its insulating effects against foreign shocks. Indeed, floating exchange rate regimes can directly affect medium-term growth by absorbing and/or limiting shocks to which the economy is exposed. Later, Mundell (1960, 1963) demonstrated that these insulating properties tend to diminish with increasing capital mobility. Consequently, distinguishing between monetary and real shocks becomes essential, as do the mobility of factors and the size of the economy. These are the direct effects of exchange rate regimes on economic growth.

Other authors, such as Boyer (1978), Henderson (1979), and McKinnon (1981), analyzed the choice of an optimal exchange rate regime under the assumption of nominal price or wage rigidities. They found that the variance and covariance of various shocks to the economy determine the choice of the exchange rate regime. For a small open economy subject to three types of shocks—internal, real or monetary, and external—the monetary or real nature of the shocks determines the choice of the exchange rate regime. Specifically, if the shocks are purely monetary, a fixed exchange rate regime is optimal through intervention in the foreign exchange market. Conversely, if the shocks are real, a flexible exchange rate regime is recommended. Recent evidence supporting this idea comes from Broda (2004) and Ramcharan (2007). In the presence of both types of shocks, a managed or controlled float is preferable.

Following a similar rationale, Aizenman and Frenkel (1982) analyzed shocks and their impact on economic activity with a focus on stabilizing consumption rather than output. They demonstrated that, from the consumer's perspective, a fixed exchange rate regime is

recommended in the presence of real shocks. The higher the variance of real shocks affecting supply, the more desirable fixed exchange rates become. The balance of payments absorbs these shocks, thereby mitigating their effects on consumption. However, the desire for exchange rate flexibility increases with the variance of shocks affecting money demand, money supply, foreign prices, and purchasing power parity.

In addition to its effects on the adjustment process to shocks, theory suggests that exchange rate regimes can influence economic growth. By acting on the fluctuations in economic growth, exchange rate regimes can indirectly affect growth through key determinants such as investment, international trade, financial sector development, and capital flows.

This perspective recalls the debate on the dichotomy between the real and monetary spheres. According to Keynesians and New Classical economists, these spheres are isolated in the long run, and exchange rate policy, like monetary policy, is neutral. To achieve long-term equilibrium, the economy cannot be influenced by exchange rate movements because shocks are absorbed. In this context, an economic policy that fosters convergence towards equilibrium by eliminating obstacles to this dynamic is considered viable, and a floating regime is often recommended.

However, in the short term, the two schools of thought diverge. New Classical economists argue that exchange rate manipulation policies are ineffective or even counterproductive, based on assumptions such as rational expectations, perfectly competitive markets, and the absence of rigidities or adjustment delays.

In contrast, heterodox schools (Post-Keynesians, New Structuralists) reject the neutrality of money in both the short and long term. They emphasize the significant role of exchange rate policy in the macroeconomic management of an economy, particularly in developing countries (Guzman, M., J.A. Ocampo, and J.E. Stiglitz, 2017). Exchange rate policy is seen as a crucial lever for industrial policy in overcoming underdevelopment thresholds (Szirmai, 2009).

Optimal Currency Areas (OCA) Theory

Through his work, Mundell (1960, 1963) demonstrated that it is impossible to simultaneously maintain a fixed exchange rate, perfect capital mobility, and an independent or autonomous monetary policy. Since then, this theory has remained one of the fundamental pillars of international monetary theory.

Mundell highlighted this configuration, in which a state cannot simultaneously uphold a fixed exchange rate, unrestricted capital mobility (i.e., the absence of capital controls), and the freedom to conduct an independent monetary policy (such as setting short-term interest rates according to domestic economic objectives). Consequently, if a country pursues an expansionary monetary policy by lowering interest rates, capital denominated in its currency would immediately shift to other currencies offering higher returns. This would lead to a depreciation in the foreign exchange market and a massive sell-off of the domestic currency, ultimately making it impossible to maintain the exchange rate within the fluctuation band required under a fixed exchange rate regime. However, abandoning one of these three conditions allows the implementation of the other two.

Initially, the "impossible trinity" (or Mundell's trilemma) aimed to demonstrate that industrialized countries cannot simultaneously adopt fixed exchange rate regimes while maintaining monetary policy autonomy. The only viable option for these economies is to make a deliberate choice between a fixed exchange rate and monetary policy independence. Insisting on maintaining all three factors simultaneously would be counterproductive in terms of economic efficiency. A crucial lesson from Mundell's trilemma is that in a context of perfect capital mobility—characteristic of highly integrated economies, such as industrialized

nations—the adoption of a fixed exchange rate necessarily precludes monetary policy autonomy, as monetary policy decisions directly influence exchange rates and interest rates. Moreover, monetarist economists advocate for floating exchange rates, primarily arguing that they do not impose excessive constraints or requirements, unlike fixed exchange rate regimes. Friedman (1953), for instance, explains that a fixed exchange rate encourages currency speculation and can lead to monetary crises, while Mundell (1960) goes further by emphasizing the importance of capital mobility. These scholars highlight that adopting a floating exchange rate allows for the implementation of independent monetary policies. As we will explore later in the discussion of monetary theories on exchange rates, the monetarist perspective asserts that it is possible to separate the domestic interest rate from the foreign interest rate. In the Mundell-Fleming model, however, the domestic interest rate is intrinsically linked to the foreign interest rate, as the interest rate differential determines capital mobility.

Like Friedman and Mundell, monetarists emphasize four key "advantages" of floating exchange rates:

- **Automatic balance of payments adjustment:** External deficits generate an excess demand for foreign currencies, leading to a depreciation of the domestic currency. This depreciation enhances national competitiveness by lowering prices, thereby reducing imports and stimulating exports. Notably, the adjustment is symmetrical in the case of an external surplus.
- **Reduced speculation:** Currency speculation becomes less feasible, as predicting exchange rate movements becomes more complex compared to a fixed exchange rate system.
- **Greater autonomy in economic policy:** Monetary authorities are no longer constrained by the need to maintain exchange rate parity. Under these conditions, monetary policy can be fully effective in influencing economic conditions.
- **Elimination of foreign exchange reserve requirements:** Central banks are no longer obligated to hold foreign exchange reserves to defend the currency's parity.

However, despite the rigor and coherence of the arguments presented above, stylized economic data have revealed realities that often diverge from monetarist predictions. Indeed, despite the adoption of flexible exchange rates, balance of payments deficits have continued to expand, while exchange rates have persistently deviated from their equilibrium levels (i.e., the difference between exchange rate levels). Furthermore, speculation on currency prices has increased significantly, leading to speculative bubbles. Economic policies have also become more accommodative as interest rates rose due to the degree of financial integration.

For example, the restrictive monetary policy implemented by the Federal Reserve in the 1980s, which led to a rise in U.S. interest rates, triggered significant volatility in global exchange rates. The Fed raised its policy rate to counter the stagflation experienced by the United States in the early 1980s, attracting capital inflows due to the relatively higher interest rate differentials. As a result, other countries experienced relatively lower interest rates.

These observations clearly demonstrate that floating exchange rates are not a "miracle solution," even though they help reduce some pressure on monetary authorities. Excessive exchange rate fluctuations appear undesirable, as evidenced by the efforts of many countries to maintain fixed exchange rate regimes. Although the evolving nature of international finance makes it increasingly difficult to uphold fixed exchange rates, many countries continue to adopt them—either in a rigid manner (as seen in cases where countries opt for currency unions), in a more moderate form (as in fixed exchange rate regimes), or through coordinated efforts (such as within monetary unions or monetary cooperation frameworks).

3. An empirical analysis

Let us remain on the question of exchange rate neutrality but, this time, revisit the seminal works of Baxter and Stockman (1989) and Baxter (1991). These authors confirmed, based on their study of 49 countries before and after the collapse of the Bretton Woods system, that no link exists between exchange rate regimes and the dynamics of economic aggregates. Similarly, Ghosh et al. (1997) assert the same conclusion in their study of a panel comprising 136 countries. The same authors (Ghosh, A., Gulde, A-M., and Wolf, H., 2003) reaffirm, based on a larger panel, that no tangible impact of the type of exchange rate regime can be observed on macroeconomic performance.

All these studies relied on a **de jure classification** based on the official declarations of these countries about the exchange rate regime they claimed to adopt. However, these declarations do not necessarily align with their actual policies. This issue alone (not to mention that some studies do not control for the effects of other classical growth determinants in their regressions on growth and exchange rate regimes, potentially introducing biased estimators) calls their results into question. Consequently, subsequent studies systematically adopted the **de facto classification** (Calvo, G.A., and Reinhart, C.M., 2002; Rogoff, K.S., Husain, A.M., Mody, A., Brooks, R., and Oomes, N., 2003; Levy-Yeyati, E., and Sturzenegger, F., 2003; Husain, A.M., Mody, A., and Rogoff, K.S., 2005; Miles, 2006; Aghion, P., Bacchetta, P., Rancière, R., and Rogoff, K., 2009; Petreski, M., 2009; De Vita, G., and Kyaw, K.S., 2011), or even developed new classifications (Reinhart, C.M., and Rogoff, K.S., 2004; Dubas, J., Lee, B.J., and Mark, N., 2005; Levy-Yeyati, E., and Sturzenegger, F., 2005, 2016).

Taking the example of Petreski (2009) and De Vita and Kyaw (2011), their study merely reaffirmed the initial results supporting the neutrality of exchange rate regimes. However, Husain et al. (2005) confirmed that economic growth is positively influenced by floating regimes. Levy-Yeyati and Sturzenegger (2003), Miles (2006), and Aghion et al. (2009) also demonstrated the existence of a statistically significant relationship between economic growth rates and exchange rate regimes.

3.1. Exchange Rate Regime Choice and Developing Countries

The choice of exchange rate regime for emerging and developing countries has been the subject of numerous empirical studies. Most of these studies confirm a link between exchange rate regimes and economic policy, thereby refuting the hypothesis of exchange rate regime neutrality. The economic and financial contexts of these countries suggest that such a link does exist, as evidenced by Guzman, Ocampo, and Stiglitz (2017).

De Grauwe and Schnabl (2005) analyzed the impact of exchange rate regimes on inflation and output in Southeast and Central Europe for the period 1994–2004. Their findings reveal a significant impact of fixed exchange rates in maintaining low inflation and a strong positive effect of exchange rate stability on real growth. Similarly, Bleaney and Francisco (2007) examined the relationship between exchange rates, inflation, and growth in 91 developing countries over the period 1984–2001. They categorized exchange rate regimes into three groups: floating regimes, soft-peg regimes, and hard-fixed regimes (defined by the use of a shared currency or a currency board system). Their results suggest that floating regimes achieve growth rates comparable to soft pegs but with slightly higher inflation levels.

Klein and Shambaugh (2010) studied the effects of exchange rate regimes on inflation and economic growth. Their results indicate that pegged exchange rates can help discipline economic policy, moderating inflation. They also argue that exchange rate regimes have minimal impact on long-term growth.

As highlighted above, the literature has explored the impact of exchange rate regimes on economic growth and inflation while also examining the mechanisms of transmission.

Research on exchange rate regimes suggests that the type of regime chosen can influence growth through two main channels:

- **Directly**, by its effects on the economy's ability to adjust to shocks.
- **Indirectly**, by influencing other control variables such as investment, trade, and financial sector development.

Levy-Yeyati and Sturzenegger (2001, 2003b) demonstrated that developing countries with pegged regimes experience lower inflation than those adopting floating regimes. However, pegged regimes are also associated with slower growth. Rogoff et al. (2003) explored the link between exchange rate regimes and economic performance. Their findings suggest that for countries at an early stage of financial development and integration, fixed or relatively rigid regimes offer an anti-inflationary credibility gain without compromising growth objectives. Conversely, for developed countries not part of a monetary union, relatively flexible regimes support higher growth without harming credibility.

In contrast, Husain et al. (2005) found that developing countries adopting fixed exchange rates experience lower inflation compared to those with flexible rates. Similarly, De Grauwe and Schnabl (2005) analyzed the impact of exchange rate regimes on inflation and output in Southeast and Central Europe over the period 1994–2004. Their results indicate a significant effect of fixed exchange rates in maintaining low inflation, as well as a very significant positive impact of exchange rate stability on real growth.

Likewise, Bleaney and Francisco (2007) examined the relationship between exchange rates, inflation, and growth in 91 developing countries during the period 1984–2001. They identified three categories of exchange rate regimes: floating regimes, soft-pegged regimes, and hard-fixed regimes (characterized by the use of a shared currency or a currency board system). Their findings suggest that floating regimes have growth rates similar to those of soft pegs, albeit with slightly higher inflation.

Klein and Shambaugh (2010) also studied the effects of exchange rate regimes on inflation and economic growth. Their results show that pegged exchange rates can help discipline economic policy, moderating inflation. Moreover, they support the view that exchange rate regimes have minimal impact on long-term growth.

As outlined above, the literature has examined the impact of exchange rate regimes on economic growth and inflation but has also focused on identifying the transmission channels. Research on exchange rate regimes suggests that the type of regime chosen could influence growth in two main ways:

- **Directly**, through its effects on how the economy adjusts to shocks.
- **Indirectly**, by influencing other control variables such as investment, trade, and financial sector development.

3.2. The Impact of Exchange Rate Regime Choice on Economic Growth in Developing Countries

Studies on the impact of exchange rate regimes on the determinants of economic growth in developing countries (DCs) have yielded several insights. This impact results from the combined effect of the exchange rate regime and other variables, including:

- **The depth and nature of external shocks** (Friedman, 1953; Bailliu, Lafrance, and Perrault, 2003),
- **The rate of physical capital accumulation** (Goldberg, 1993; Campa and Goldberg, 1999; Aizenman, 1994; Bénassy-Quéré, Fontagné, and Lahrière-Révil, 2001),
- **The burden of external debt and foreign direct investment (FDI)** (Tornell and Velasco, 1994; Calvo et al., 2003), and
- **The degree of capital account openness** (Bailliu, Lafrance, and Perrault, 2003).

Exchange rate regimes can influence growth by mitigating or amplifying the effects of and adjustments to economic shocks. A more flexible regime may foster higher growth, as it allows an economy characterized by nominal rigidities to absorb and adapt more easily to economic shocks. Broda (2002), in a study of 75 developing countries from 1973 to 1996, observed that countries with fixed regimes experienced significant declines in real GDP, while those with more flexible regimes tended to experience smaller declines in real GDP alongside significant (and immediate) real depreciations.

A flexible exchange rate also enables a country to maintain an independent monetary policy, providing an additional tool to address domestic and external shocks. When adjustments to shocks are less constrained, higher growth rates can be expected. Indeed, it has been shown that mitigating economic cycles positively impacts an economy's long-term growth rate. For example, Barlevy (2001) developed a model demonstrating that reducing cyclical fluctuations boosts growth by increasing the average level of investment and reducing its volatility.

However, some argue that a flexible regime is more prone to exchange rate shocks, exacerbating economic cycles and slowing growth compared to fixed regimes. This issue could be especially pronounced for countries with underdeveloped or weak financial systems, which may struggle to adapt to significant exchange rate movements under flexible regimes. Regarding the use of an independent monetary policy to facilitate shock adjustments, critics argue that this is valid only for countries with credible monetary policies. For some, pegging the exchange rate to a strong currency can result in smoother economic cycles than attempting to implement an independent monetary policy.

For example, Hausmann et al. (1999) argue that flexible exchange rate regimes in Latin America have not enabled a more stabilizing monetary policy; instead, they tend to be more procyclical.

The Relationship Between Exchange Rate Regimes and Economic Growth: A literature review focused on Indirect Channels

The relationship between exchange rate regimes and economic growth remains a central topic in economic research. While direct effects of exchange rate regimes on growth can be observed, the indirect effects—mediated through macroeconomic variables—are often captured by the coefficients of explanatory variables rather than the exchange rate regime itself. This methodological challenge complicates the isolation of the regime's specific impact on growth.

To address this, Granger (2020) applied the Dumitrescu and Hurlin non-causality test to examine the potential indirect influence of exchange rate volatility on economic growth via its determinants. The findings indicate that exchange rate volatility imposes direct and indirect costs on emerging economies in terms of growth. However, the magnitude of these effects is mitigated in economies with intermediate exchange rate regimes, which offer a balance between rigidity and flexibility, thereby stabilizing macroeconomic fluctuations.

Exchange Rate Regimes and Physical Capital Accumulation

Exchange rate regimes can influence economic growth through their impact on physical capital accumulation. Aizenman (1994) argued that fixed exchange rate regimes enhance investment by reducing uncertainty related to economic policies, real interest rates, and exchange rate volatility. However, they can also create protectionist pressures and distort efficient capital allocation. Böhm and Funke (2001) suggested that currency volatility, irrespective of the regime, exerts only a modest influence on investment levels. This aligns with empirical findings showing mixed relationships between exchange rate regimes and investment (Goldberg, 1993; Huizinga, 1994; Bordo & Schwartz, 1999; Lafrance & Tessier, 2001).

Empirical evidence from Turkey (Ozata, 2020) supports this argument. Using the ARDL model to analyze data from 1989 to 2019, Ozata found that real effective exchange rate volatility had a statistically significant negative impact on economic growth. In the long run, exports and investment positively influenced real GDP, while exchange rate volatility and import fluctuations had significant negative effects.

Exchange Rate Regimes and Fiscal Policy Sustainability

The choice of exchange rate regime is also linked to fiscal policy sustainability. Several studies highlight its role in determining external debt levels and debt service sustainability (Tornell & Velasco, 1994; Calvo et al., 2003). In developing economies, where external debt is often denominated in foreign currency, an inappropriate exchange rate policy can exacerbate fiscal vulnerabilities by increasing debt burdens and reducing competitiveness.

Exchange Rate Regimes and Foreign Direct Investment (FDI)

The relationship between FDI and exchange rate volatility is contingent upon the nature of economic shocks. Aizenman (1992) suggested that under a flexible exchange rate regime, high volatility in nominal shocks leads to a negative correlation between FDI and volatility, whereas real productivity-related shocks result in a positive correlation. Empirical findings by Wang and Swain (1995) on China indicate that FDI inflows are more favorable when the domestic currency is relatively weak compared to foreign investors' currencies.

Khan (2021) examined the impact of inflation, nominal exchange rates, FDI, and external shocks on Bangladesh's economic growth between 1990 and 2020. The results indicate that exchange rate movements and FDI significantly influenced growth, with inflation and exchange rates having positive effects, whereas shocks like COVID-19 and natural disasters negatively impacted economic development. These findings underscore the need for policymakers to formulate policies that stabilize the exchange rate and attract FDI.

Exchange Rate Regimes and International Trade

Fixed exchange rate regimes are often associated with increased trade volumes due to reduced exchange rate volatility, lower transaction costs, and enhanced predictability (De Grauwe, 2014). This stability can also attract cross-border investments and lower real interest rates. However, the empirical impact of exchange rate volatility on trade remains ambiguous, as firms can hedge risks through diversified supply chains and financial instruments (Côté, 1994).

For emerging economies, fixed exchange rate regimes provide stability, reducing transaction costs and facilitating trade. However, the structural characteristics of an economy—such as its absorptive capacity and export diversification—determine the optimal exchange rate policy. In highly open economies, fixed regimes can help stabilize trade flows, while flexible regimes may mitigate persistent misalignments (Nilsson & Nilsson, 2000).

Capital Flows, Financial Stability, and Exchange Rate Regimes

Capital flows are another mechanism through which exchange rate regimes influence growth. International capital mobility can enhance investment and financial intermediation, contributing to economic expansion (Bailliu, 2000). However, fixed or quasi-fixed regimes, coupled with lax financial regulation, may lead to speculative capital inflows, increasing the risk of financial instability (Dooley, 1994). Krugman (1998) and Corsetti et al. (1998) highlighted that misaligned exchange rate policies can incentivize excessive risky lending, reducing the efficiency of capital allocation.

Empirical findings on the export-led growth hypothesis also present mixed conclusions. Rodrik (2009) demonstrated that an undervalued exchange rate supports faster growth, particularly in developing economies. Similarly, Giles and Williams (2000) provided

evidence on the effectiveness of export-led strategies, although the direction of causality remains debated.

Bailliu, Lafrance, and Perrault (2001) found that floating regimes facilitate growth in economies with high capital mobility and well-developed financial markets. However, emerging economies with limited financial depth may benefit more from managed exchange rate policies.

Adeniyi and Olasunkanmi (2016) investigated the impact of exchange rate volatility on economic growth in Nigeria using the ARDL cointegration approach and an error correction model. Their findings indicate that: (i) There is a long-run cointegration relationship between exchange rate volatility and economic growth, (ii) Exports significantly impact GDP, whereas imports do not exhibit a significant effect and (iii) The relationship between exchange rate volatility and economic growth is weakly positive but statistically insignificant.

Based on these results, the authors recommend economic diversification to enhance exports and reduce Nigeria's reliance on the oil and gas sector. Additionally, monetary authorities should prioritize exchange rate stability to support sustainable economic growth.

The choice of exchange rate regime has profound implications for economic growth, influencing investment, fiscal sustainability, trade, and capital flows. While fixed regimes provide stability and enhance trade, they may constrain monetary policy flexibility. Conversely, flexible regimes offer adaptability but can pose competitiveness challenges. The empirical literature presents mixed findings, highlighting the need for country-specific assessments. Future research should focus on the dynamic interactions between exchange rate regimes and structural economic factors to provide clearer policy recommendations.

Therefore, two contrasting theoretical perspectives emerge regarding the relationship between exchange rate regimes and economic growth:

- **Flexible Regimes and FDI-Driven Growth:** Floating exchange rates may lead to currency appreciation, controlling imported inflation and fostering domestic consumption, which can stimulate economic growth.
- **Flexible Regimes and Competitiveness Constraints:** Currency appreciation may reduce output by undermining cost competitiveness, as predicted by the Marshall-Lerner condition. Conversely, fixed exchange rate regimes may promote investment by lowering interest rates, but at the cost of reduced monetary policy flexibility.

Trade openness is another key determinant of growth, with empirical evidence suggesting a positive correlation between international trade and economic performance (Edwards, 1993; Barro & Sala-i-Martin, 1995). However, the impact of exchange rate regimes on trade remains inconclusive.

4. Conclusions and comments

This paper has examined the classification of exchange rate regimes and their impact on economic growth through a detailed review of theoretical and empirical literature. The first section provided an overview of exchange rate regimes, highlighting their classification into fixed, floating, and intermediate categories, and analyzed their respective advantages and drawbacks. The second section explored the theoretical foundations underlying the choice of exchange rate regimes, drawing insights from classical and modern economic theories, including the theory of optimal currency areas and the trilemma of international finance. The third section reviewed empirical studies assessing the relationship between exchange rate regimes and economic growth, demonstrating that findings remain mixed due to variations in methodology, sample selection, and country-specific factors. Finally, the paper assessed the channels through which exchange rate regimes influence macroeconomic variables such as investment, trade, foreign direct investment (FDI), and fiscal policy sustainability.

While theoretical models suggest that exchange rate regimes play a crucial role in macroeconomic stability, empirical evidence does not provide a definitive answer regarding the superiority of one regime over another. Fixed exchange rate regimes are associated with reduced exchange rate volatility, which can enhance trade and investment; however, they may also limit monetary policy flexibility and increase vulnerability to external shocks. Conversely, floating regimes allow for greater policy autonomy but expose economies to potential instability due to excessive exchange rate fluctuations. Intermediate regimes, which combine elements of both fixed and flexible systems, have emerged as a viable option for mitigating the adverse effects of volatility while maintaining some degree of monetary independence.

Empirical studies further indicate that the impact of exchange rate regimes on economic growth is conditional on factors such as trade openness, financial market development, and the structure of the economy. For instance, in emerging economies, where financial markets are less developed, excessive exchange rate volatility can discourage investment and slow economic growth. At the same time, trade-dependent economies benefit from stable exchange rates that facilitate cross-border transactions and investment planning.

We tried to contribute to the literature by synthesizing theoretical perspectives on exchange rate regimes and economic growth while integrating empirical findings across various contexts. It highlights the nuanced role of exchange rate regimes in shaping macroeconomic stability and underscores the importance of considering country-specific characteristics when formulating exchange rate policies. By bridging classical and modern economic theories, this research provides a more comprehensive understanding of the factors that influence regime selection and their broader economic implications.

Given the inconclusive empirical evidence on the relationship between exchange rate regimes and economic growth, future research should adopt more granular approaches that consider country heterogeneity, institutional quality, and policy frameworks. Further studies should explore the role of financial development and capital mobility in moderating the effects of exchange rate regimes. Additionally, more research is needed on the effectiveness of intermediate exchange rate regimes, particularly in the context of emerging economies facing increasing global financial integration.

Despite its comprehensive scope, this study has some limitations. First, the empirical studies reviewed rely on different methodologies and datasets, making direct comparisons challenging. Second, while the theoretical discussion provides valuable insights, it does not fully capture the complexities of real-world exchange rate policies, which are often influenced by political and institutional factors. Third, this study does not include quantitative modeling to test the theoretical hypotheses presented, which could provide more robust conclusions on the causal relationship between exchange rate regimes and economic growth.

Based on the findings of this study, policymakers should adopt exchange rate policies that are tailored to the structural characteristics of their economies. For countries with high trade openness, exchange rate stability should be prioritized to facilitate trade and investment flows. In contrast, economies with well-developed financial markets may benefit from greater exchange rate flexibility, allowing for more effective monetary policy implementation. Furthermore, emerging economies should consider hybrid exchange rate regimes that provide stability while allowing for necessary adjustments in response to economic shocks. Finally, given the importance of institutional quality in maintaining exchange rate stability, governments should strengthen regulatory frameworks and enhance monetary policy credibility to ensure sustainable economic growth.

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