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Investigating Effective Factors in the Probability of Selecting a Floating Exchange Regime in Selected Developing Countries

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Abstract:

The exchange rate is one of the crucial and effective variables in the economy of countries and contributes to the current and future economic conditions of every country significantly and undeniably by impacting many economic variables. Thus, selecting an optimal exchange system is imperative for countries. This study has investigated effective economic and political factors in selecting exchange regimes in three groups of developing countries, i.e., low-income countries, lower-middle-income countries, and upper-middle-income countries in the 2000-2018 period using the logit panel method. The results showed that for the lower-middle-income countries, the escalation of the trade balance increased the likelihood of selecting a floating exchange rate regime, and the uptrend of the Human Development Index (HDI) decreased the probability of choosing a floating exchange rate regime. Concerning the lower-middle-income countries, the upsurge of civil liberties and HDI diminished the likelihood of selecting a floating exchange regime, and the rise of the inflation rate increased the possibility of choosing a floating exchange regime. Finally, considering the third group, i.e., upper-middle-income countries, the increase in the Gross Domestic Product (GDP) made the selection of a floating exchange regime more likely, and the HDI elevation enhanced the probability of selecting a fixed exchange rate.

Introduction

The exchange rate can be defined as the currency value of a country according to that of another country. The exchange rate regime refers to some exchange system factors based on which this rate is determined. The exchange rate regime is reckoned as one of the most significant political tools of governments, and its

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selection considerably impacts the trade of goods and services, capital flow, inflation, balance of payments, and other economic variables. For this reason, the selection of an exchange rate regime is a fundamental economic component for growth and stability preservation. The selection of an exchange rate regime has brought up serious debates in the international economy literature. Even theoretical frameworks and empirical works have failed to establish a clear association between selecting an exchange rate regime and macroeconomic performance (Santana-Gallego & Pérez-Rodríguez, 2018). Political and economic factors are determinant factors in selecting the exchange regime of every country, and the particular characteristics of countries, experiences of policymakers, and credibility of institutions and policymakers can impact the selection of an exchange regime. Furthermore, economic decisions, the size and openness of countries for trades and financial flows, financial and economic development ranks, trade and production structures, recorded inflation, and kinds of shocks countries face are among the paramount factors influencing the selection of an exchange regime. Thus, an ideal and common exchange regime is unacceptable for all countries since it changes over time according to the alterations in their economic and political conditions.

Different exchange systems can impact economic performance through fluctuations in the exchange rate. During recent decades, the selection of an inefficient exchange regime and adoption of inappropriate currency policies have negatively paved the way for the economic growth of many countries. According to studies, the more floating is the exchange regime, the further will be the exchange rate fluctuations. By developing insecure conditions for the international exchange profits and withdrawing investments in foreign activities, recurrent fluctuations in the exchange rate can lead to trade recession, immobility of capital flows, and disruption of financial asset portfolios. The uptrend of fluctuations in the real exchange rate heightens the price of exchangeable goods, along with the risk of covering unpredicted exchange rate changes (Guerin & Revil, 2004).

International trade can pave the way for a condition where the exchange rate regime may bring about sensible outcomes. Besides, it is noteworthy that although the effect of financial crises on the real economy may be reinforced and transferred through the decline of bilateral trade flows, the exchange rate regime can still be the primary factor in their recession by stimulating trade. This inference is accentuated in designing the exchange rate policies. The traditional theory of trade believes that the exchange rate fluctuations decrease international trade since risk-averse exporters perceive them as the insecurity rise of product prices in international transactions. In contrast, some authors, such as De Grauwe (2000), provide theoretical evidence that an insecure exchange rate may be for the benefit of trade. If the exportation response to the exchange rate is positive (e.g., the depreciation of domestic currency increases exportation), these results

can be explained, and thus further variations in the exchange rate increase the expected profit. As a result, risk-neutral enterprises react to this issue by increasing their exportation. This positive relationship may still be established for risk-taker companies, provided that the increase in the enterprise utility due to the rise of the mean profit exceeds the offset of the utility recession rooted in insecure profits. Hence, the effect of the exchange rate fluctuations on trade is theoretically unspecified.

Nilsson and Nilsson (2000) believe that there are two main approaches to exchange rate management in the literature. The real objectives approach demands a flexible exchange rate since the nominal exchange rate should be allowed to change or, if necessary, moderated to prevent the real exchange rate misalignment, which impacts international competition. On the contrary, the nominal anchor approach suggests employing the nominal exchange rate to align the domestic exchange rate with the inflation of business partners. Thus, these types of regimes defend the low flexibility of the exchange rate; however, it is worth noting that although countries with fixed exchange rate regimes are expected to have higher misalignments, they eliminate the exchange rate fluctuations against export currency when they connect their national currency to an international reference exchange. Therefore, exportation is expected to increase through this mechanism since countries are conventionally pegged against the currency of their main business partners.

According to Fritz-Krockow and Jurzyk (2004), countries dependent on the exportation of one or more goods may benefit from a flexible regime since they will be capable of accepting the exogenous conditions of trade shocks. In contrast, countries that depend on exporting to a certain business partner may take advantage of a fixed exchange rate system when they connect their currencies to the main trade partner since it would lead to transaction uncertainty and costs. As a result, it is unclear which exchange rate regime is more advocated in trade since it relies on the trading specialization or vulnerability of countries against the exchange rate misalignment.

Before the collapse of the Bretton Woods system in 1970, the USA dollar was the formal reference currency setting the global exchange rate. After the collapse of this system, many developing countries selected the dollar as their reference unit to reduce and stabilize inflation and strengthen regional integration (Bracke & Bunda, 2011). However, for different reasons, including former colonies (e.g., the former colonies of France were connected to French Franc) or commitment to German Mark as the exchange rate mechanism, other currencies have been used as an anchor for penalizing the exchange rate regimes against the euro. Hence, the fundamental question interrogates what the basis of selecting a currency system in countries is. A country should possess a judgment and evaluation framework to be able to select from several alternatives. Numerous goals such as

external balance supply, internal balance and stability, the rise of efficiency, rise of domestic production, fall of economic shocks and impacts, and minimization of exchange rate fluctuations are taken into consideration. To reach this objective, we can employ the protective property framework in selecting currency systems. Within this framework, any exchange regime that well protects a country's economy from imported shocks becomes the most appropriate system for that country. Empirically, countries with pegged exchange regimes need a nominal anchor (nominal exchange rate or inflation) for stabilization in the macroeconomy, and thus the necessity for the development of financial and political institutions fades. Furthermore, if a country is extensively exposed to real shocks, it adopts a floating exchange regime, wherein financial and political institutions play key roles. Hence, the present study investigates the effective factors in selecting exchange rate regimes in developing countries.

Research Literature

Considering the research topic, different studies have been carried out in Iran and in the world; some of these cases are addressed below.

Cao et al. (2019) investigated the national culture and its impact on selecting an exchange regime in 78 countries in the 1976-2014 period. The results showed that the possibility of implementing a floating regime was considerably higher than a fixed system in individualistic countries. Likewise, other cultural dimensions (uncertainty avoidance, power distance, and masculinity) could impact the selection of an exchange rate regime, while their effects were weaker than individualism. Santana-Gallego and Pérez-Rodríguez (2018) examined international trade, exchange rate regimes, and financial crises in the 1970-2016 period in 191 countries of the world. Their findings revealed that other middle exchange rate regimes, i.e., between completely fixed and completely floating systems, promoted the flow of goods among countries. The outcomes depended on the anchor currency, and indirect arrangements did not noticeably impact international trade. Systemic banking crises negatively influenced the trade process of countries, and the effect of exchange rate regimes on trade depended on the anchor currency during a crisis and whether the crisis emerged in the exporter or importer country. Buffi et al. (2018) probed the targeting of inflation and currency policies in less-developed countries and concluded that the hard exchange rate management and commitment to the fixed exchange rate remarkably enhanced the efficiency of the inflation targeting policy. Oke and Adetan (2018) employed the cointegration and error correction technique for the 1986-2016 period and concluded that the gross domestic product and inflation rate positively impacted the exchange rate in Nigeria. Rodriguez (2016) investigated the roles of economic and political factors in selecting the currency systems of Latin American countries. By analyzing the data of the 1985-2010 period and applying the panel probit method, he found that the choice of a fixed

exchange system was more probable if the economy of a country was smaller and more open. Furthermore, democracy as a political index was effective in determining the currency system. By employing the panel data of 145 countries in the 1975-2004 period and the nominal multivariate logit method, Aliyev (2015) discovered that richer countries were more adapted with a fixed exchange system than less privileged countries in terms of natural resources. Moreover, the findings of this research showed that the rise of democracy diminished the likelihood of selecting a fixed currency system. Tamgac (2013) investigated the permanence of the fixed exchange rate regime in emerging economies using the survival analysis method and concluded that nonlinear time dependence existed in the time pattern of the fixed exchange rate of these countries, and time was reckoned as a significant factor in the survival of the fixed exchange rate. Furthermore, factors such as economic openness, shifts in foreign reserves, and economic growth significantly impacted the choice of a currency system in these countries. Aziz Berdiev et al. (2011) investigated the selection of an exchange system in 180 developing and developed countries in the 1974-2004 period from a political economy perspective. The results showed that governments' ideologies, political institutions, and globalization were significant variables in selecting an exchange system. Leftist governments, democratic political structures, independent central banks, and developed financial institutions raise the probability of adopting a floating exchange regime. Sfia (2010) investigated the currency system selection and its impacting variables in 17 countries of the Middle East and North Africa using the probit panel model. The results showed that the trade openness and the export capacity of oil impacted the selection of a currency system. By studying 25 emerging economies in the 1970-2006 period and using the probit method, Güçlü (2009) investigated the effect of several variables, including GDP, inflation, currency reserves, money growth, trade shares, trade deficits, and other political variables (the years of the president's stability, the conditions of the ruling party, and nationalism), on the flexibility of the exchange rate regime. The results showed that the selection of the exchange rate regime depended on economic development, differences in the inflation of countries, and political components while being independent of the trade balance deficit and surplus and capital account openness. Calderón and Schmidt-Hebbel (2008) examined 110 countries in the 1975-2005 period to figure out the effective factors in selecting an exchange system. According to the outcomes of this study, factors based on the optimal currency area approach are oriented to a fixed exchange regime. Countries that are small-size and have strong business relationships make their exchange system fixed more probably. Factors associated with the financial approach lie in the impossible trinity direction, countries with higher openness and further financial development tend to adopt a floating regime, and countries with high inflation, along with external and

financial imbalances, orient to a pegged exchange system. By employing a hybrid multinomial logit panel and three fixed, middle, and floating currency systems, Pedro Alvarez et al. (2008) investigated three salient theories in the selection of a currency system, i.e., optimal currency area, types of the economy-imported shocks, and vulnerability to currency crises, in 24 countries of Latin Americal in the 1980-2004 period. Their results displayed that countries with larger areas, further per capita incomes, and higher openness were more oriented to a floating exchange system. Likewise, deficits in current accounts raise the likelihood of adopting a floating system. Setzer (2005) examined the roles of political, institutional, and economic factors in the constancy of the exchange rate regime in 37 developing countries in the 1974-2000 period using the survival analysis method and Cox's regression model. The results revealed that selecting an exchange rate regime was not just an absolute theoretical problem; rather, it relied on the strength of nationalistic and institutional motives and the degree of the central bank's independence. Bloomberg et al. (2005) utilized the political and economic data of 25 countries in the 1960-1999 period and a panel data model to analyze the sustainability of the fixed exchange rate regime in Latin American and Caribbean countries. Their research variables included shifts in governments, elections, the number of influential parties, the percentage of governments' votes, political instability, and the independence of the central banks. Among the results of this research were the significant roles of political and economic variables in the permanence of the fixed exchange rate system.

The originality of the current study lies in addressing the factors that impact the likelihood of selecting a floating exchange regime in three groups of selected developing countries using the logit panel method. Furthermore, HDI, inflation, GDP, trade openness, democracy, and civil liberty constituted the variables of this research.

Theoretical foundations

Since the early 1960s, the economic literature on determining an optimal currency system has noticeably extended. In that period, the currency systems of countries fell into two regimes, including the fixed exchange rate (FIER) and flexible exchange rate (FLER) regimes. Until 1973, the currency regimes of countries were determined on the basis of Bretton Woods agreement, which was, in fact, a gold/dollar-based system. In this system, the dollar was defined based on gold, and other national currencies were defined according to the dollar. America set the value of a dollar at 1/35 of the gold ounce and could unlimitedly change any amount of dollars into gold at the determined rate. Then, other countries defined the values of their national currencies based on the dollar. In this exchange system, the conversion of foreign currencies in transactions was made according to the fixed exchange rates. Of course, a currency adjustment capacity in exigent conditions had been predicted for countries. After the collapse

of the Breton Woods system, many large industrial countries abandoned fixed exchange systems and turned to floating regimes (Farzinvash, 2014).

- Optimal Currency Area (OCA) Theory

Several researchers, including Mundell (1961), McKinnon (1963), and Kenen (1969), played significant roles in developing the optimal currency area theory. According to this theory, the advantages and disadvantages of every currency system differ based on the characteristics of countries and their degree of economic integration. The more (less) are the countries integrated, the higher (lower) will be the advantages of a fixed exchange system compared to a floating one since the transaction costs among countries diminish in a fixed currency system by establishing strong foreign relationships (McKinnon, 1963). Within the framework of this theory, countries' selection of currency regimes should be commensurate with their structural characteristics and economic criteria (that are relatively fixed). However, some empirical studies provide evidence concerning the reliability of this theory in selecting an exchange system (Poirson, 2001; Juhn & Mauro, 2002).

Political Economy Theory

According to this theory, policymakers' creditability and political factors play determinant roles in countries' selection of exchange systems. Based on the time consistency literature, to acquire credibility, policymakers should follow a political rule that is temporally consistent. One of the approaches to creditability acquisition for policymakers is to stabilize the exchange rate against the currency of foreign countries. It is a desirable mechanism for reducing inflationary expectations and possesses high anti-inflationary credit. Hence, the selection of an optimal exchange rate system depends on countries' flexibility and creditability exchanges. A flexible exchange system enables a country to have an independent monetary policy and supports the national economy by absorbing internal and external shocks. However, this flexibility will accompany credit loss expense and high inflation. A fixed exchange regime reduces the flexibility of the system while compelling policymakers to preserve their creditability. In highly democratic countries, decisions are more transparent, and thus willingness toward speculation activities, stemming from incomplete information, declines (Kydland & Prescott, 1977).

- The exchange rate regime and economic growth

The literature on the relationship between the flexibility of the exchange rate regime and economic growth supports a positive mid-term linkage. The effect of the adopted exchange rate regime on economic growth can be directly observed through the adjustment of shocks or indirectly through its impacts on investment, trade, and financial development. Furthermore, the selection of an exchange rate regime cannot impact the long-run economic growth while basically influencing the shock adjustment process. Aizenmann (1994) claims that the effect of the

exchange rate regime on the adjustment speed manifests through random shocks and turbulences distorting the domestic economy. However, later studies showed that a flexible exchange rate regime positively influenced economic growth (Sokolov et al., (2011), while a fixed one incurred economic recession (Levy-Yeyati & Sturzenegger, 2003). In contrast, a middle exchange rate positively correlates with economic growth (McCauely, 2012). In this regard, some authors have analyzed the effects of the exchange rate on economic growth by examining its impacts on general price or wage levels. Boyer (1978) showed that the effect of the exchange rate shock transferred to the real economy, and the selected exchange rate regime was a determinant factor. He explained that the fixed regime was more suitable in the case of merely monetary shocks, while the flexible regime was applied in the case of real shocks. Furthermore, he mentioned that the managed float became fitter if two simultaneous (monetary and real) shocks emerged. In this respect, Boyer (1978) and Aizenman (1994) analyzed the effects of shocks on consumption disregarding their impacts on production and showed that the fixed exchange rate regime was preferred in the case of real shocks. In other words, the higher is the effect of a real shock on supply, the larger number of consumers prefer the fixed regime in order to preserve their consumption levels. Therefore, the payment balance downgrades the shock's effect and minimizes the risks threatening the consumer portfolio. However, the willingness toward a floating regime rises in conditions where a real shock impacts the supply, money demand, and purchasing power parity.

- **Selecting an optimal exchange rate**

Several studies have investigated the effectiveness of the exchange rate regime on macroeconomic policies. The International Monetary Fund revealed that the fixed exchange rate regime accompanied lower inflation and higher investment rates. Likewise, such a regime bestows enhanced productivity and improves economic growth. A fully floating exchange rate regime is undoubtedly a system with the least utilization due to escalating the inflation rate and giving rise to implausible economic growth. It seems that the middle mode of the exchange rate has guaranteed the best economic performance (Haj Faraj et al., 2018).

Anchoring and high capital mobility persuade many countries to adopt strict monetary policies to minimize the effects of inflation. This matter imposes high nominal interest rates and raises the likelihood of currency crises (Eichengreen & Hausmann, 1999). The further international mobility of capital is a valid justification for using a floating exchange rate, as well as the autonomy of the monetary policy. Dornbusch (1992) has explained this reasoning in two ways: a flexible exchange rate regime allows a country to select its long-term inflation rate while enabling monetary policies to pursue economic stability. In addition, the exchange rate fluctuation makes the economic policy flexible, facilitates its reaction to external shocks, and enables the automatic adjustment of the domestic economy with respect to the fluctuations of the payment balance.

On the other hand, the monetary policy tends to guarantee the foreign balance completely or partially in the fixed exchange rate regime. Obstfeld (1994) observed that the monetary policy was fully responsible for defending the equality of the national currency in the case of high capital mobility and its embeddedness between domestic and foreign assets. The nominal rate of a currency is determined by a reliable method. In fact, any rise of the money volume through currency excesses diminishes the domestic rate of interest.

When the exchange rate regime is fixed, and the capital is highly mobile, the monetary policy is incapable of stabilizing the economy. With empirical experiences, Shambaugh (2004) has displayed that the monetary policy in the fixed exchange rate regime is less independent than a flexible system. In addition, Dornbusch (1992) has revealed that the real effects of monetary policies firstly emerge through the strictness of the nominal exchange rate and international capital mobility.

- Effective factors in selecting a proper exchange system

Typically, the selection of an exchange system depends on the structural characteristics of the economy, as well as the nature of the economy-imported shocks. Production stability, the supply of trade balance, inflation, and efficiency of micro-economy constitute the most paramount objectives directly pursuable by currency policies (Komijani & Nadali, 2005). It is worth noting that these factors, briefly described below, also hold true in developing countries like Iran.

a) **Production and export diversity:** The diversity of the exported and imported goods, along with the manifoldness of domestic products, can abate the exchange rate fluctuations derived from evolutions in the external economy and strengthen the justifications for a floating exchange rate.
b) **Workforce mobility and nominal flexibility:** The higher mobility of the workforce inside the country (also among industries) and between partner countries makes less inflexible the costs of currency organization for a definite level of sticky prices or wages. If wages and prices are flexible, the flexible exchange rate does supply any excess political tool.
c) **Inflation rates different from global inflation:** The presence of these economic conditions makes a fixed parity value probable during a relatively long and difficult period.
d) **Level of reserves and mobility of capital:** It is difficult to preserve a fixed exchange system in the absence of adequate international reserves. Alternately, in the case of capital abandonment, flexible systems may fade the role of the exchange rate as a price-guarding anchor.
e) **Openness:** Determining the effect of economic openness and selecting a currency system are not clear though some studies evaluate this effect against the floating mode of the exchange rate.

f) **Integration with the global financial markets**: Countries whose financial markets are integrated with global markets can expect the stability of the floating exchange rate in the short run.
g) **Focus on foreign trade:** This factor can justify a country's stabilization of the exchange rate with its main trade party. The economy-imported shocks are also effective factors in selecting the currency system and can be internal, external, real, monetary, transient, predicted, unpredicted, symmetrical, and asymmetrical.

Research method

The present study investigates the effective factors in selecting an optimal exchange system in selected developing countries. For this purpose, the logit panel model, a regression type with a limited dependent variable, has been applied. The dependent variable is qualitative and depicts the type of the exchange system, which is typically divided into fixed and floating regimes. In this research, numbers 1 and 0 have been chosen for the floating and fixed exchange systems, respectively.

The employed variables in this research have been selected with respect to the past studies and theoretical foundations. The variables of HDI, inflation, GDP, trade openness, democracy, and civil liberty were investigated in the 2000-2018 period in three groups of countries (low-income countries[1], lower-middle-income countries[2], and upper-middle-income countries[3]).

The Human Development Index (HDI) was extracted from the website of the World Bank. The inflation and GDP data were also acquired from the website of the World Bank according to the fixed dollar price of the year 2000. Trade openness measuring the sum of exports and imports divided by GDP was obtained from the World Bank data. The democracy (DM), a qualitative variable ranging from 0 (minimum democracy) to 9 (maximum democracy), was extracted from the Polity IV database. Finally, the civil liberty variable was also attained from the Polity IV database.

The Logit Panel Model

The logit panel model was used in the present study. Instead of predicting the occurrence or non-occurrence of an event, the logit analysis predicts the probability of an event. Thus, the dependent variable can cover a range of values between zero and one. To confine the relationships of dependent and independent variables within the zero and one range, the analysis employs the assumed S-

[1] Burkina Faso, Burundi, Central African Republic, Chad, the Democratic Republic of the Congo, Gambia, Guinea Bissau, Haiti, Madagascar, Malawi, Mali, Mozambique, Niger, Ruanda, Sierra Leone, Sudan, Tajikistan, and Togo fall into this group of countries.
[2] Aljazeera, Bangladesh, Benin, Bolivia, Cameron, Congo Republic, Cote d'Ivoire, Egypt, El Salvador, Ghana, Honduras, India, Kenya, Kyrgyzstan, Mauritania, Mongolia, Morocco, Nepal, Nicaragua, Nigeria, Pakistan, Philippines, Senegal, Sri Lanka, Tanzania, Tunisia, Ukraine, Vietnam, Zambia, and Zimbabwe fall into this group of countries.
[3] Albania, Argentina, Armenia, Azerbaijan, Belarus, Botswana, Brazil, Bulgaria, China, Colombia, Costa Rica, Dominican Republic, Ecuador, Gabon, Guatemala, Indonesia, Iran, Iraq, Jamaica, Jordan, Kazakhstan, Lebanon, Malaysia, Namibia, Paraguay, Peru, Russia, South Africa, Thailand, Turkey, and Turkmenistan fall into this group of countries.

curve interrelationship of these variables. The probability approaches zero at lower levels of the dependent variable, while it approximates to one at any level of the dependent variable after the slope declines and the values of the dependent variable increase. However, it never exceeds one (Abu Nouri et al., 2018). The employed model will be as follow:

$$LnL = \sum_{t=1}^{T}\sum_{i=1}^{n}\left\{P(i,t)\ln[F(\acute{\beta}X(i,t))] + (1-P(i,t))\ln[1-F\left(\acute{\beta}X(i,t)\right)]\right\}$$

Results and Discussion

Table 1 represents the estimation results of the logit panel model for low-income countries. The panel with random effects was accepted firstly considering the Hausman test (1,10) and its significance level (0.9538). In low-income countries, the balance of trade has a positive significant effect on the selection of an optimal exchange system, while HGI impacts negatively. In other words, by assuming the constancy of all other factors, the probability of a floating-to-fixed exchange rate selection increases by 0.000006 unit per unit rise of the balance of trade variable since the cost of the floating exchange rate ascends due to further trade openness. The marginal effect of the HDI variable equals -0.0090 in the low-income countries group. Put differently, considering the constancy of all other factors, the probability of a fixed-to-floating exchange rate selection increases by 0.0090 per unit rise of this variable. It is because these countries are generally developed countries with low incomes and avoid selecting a floating exchange rate regime. Thus, HDI's escalation, which also indicates economic growth, makes these countries orient toward a fixed exchange rate regime.

Table 1. Estimation results of logit panel for low-income countries

Variable	Coefficient	SE	Z statistic	Prob	Marginal effect
Civil	6.8656	5.2214	1.31	0.189	0.0016
DM	-0.0199	0.1622	-0.12	0.902	-0.00001
Trade	0.0381	0.0151	2.52	0.012	6.96e-0.6
GDP	7.78e-11	5.36e-11	1.45	0.146	1.64e-14
Inflation	-0.0020	0.0024	-0.83	0.405	-4.11e-0.7
HDI	-45.9896	8.9968	-5.11	0.000	-0.0090
C	11.1755	4.0281	2.77	0.006	-

Source: Research findings

Table 2 represents the estimation results of the logit panel model for lower-middle-income countries. Considering the Hausman test (3,33) and its significance level (0.6493), the panel with random effects was accepted. The marginal effect of civil liberties in this group has a negative and significant effect

on the selection of an exchange rate regime. In other words, considering the constancy of all other factors, the probability of a fixed-to-floating exchange rate selection increases by 0.0031 unit per unit rise of civil liberties. The marginal effect of the inflation rate equals 0.0000196 in lower-middle-income countries. In other words, by assuming the constancy of all other factors, the probability of a floating-to-fixed regime selection increases by 0.0000196 unit per unit rise of this variable. In fact, there is a strong relationship between a fixed exchange rate and low inflation stemming from a disciplinary effect (the political costs of abandoning pegged currencies induces stricter policies) and a confidence effect (further confidence and trust increase willingness to preserve the domestic currency value against foreign currencies or goods). To some extent, low inflation comes with a fixed exchange rate since countries with low inflation are capable of preserving a pegged regime; however, there is evidence supporting a causal relationship in other directions. Countries that choose a fixed exchange regime attain lower rates of inflation. Similar to the first group, the HDI variable negatively and significantly impacts the selection of an exchange rate. Put differently, considering the constancy of other factors, the probability of a fixed-to-floating exchange rate selection increases by 0.003741 units per unit rise of this variable.

Table 2. Estimation results of logit panel for lower-middle-income countries

Variable	Coefficient	SE	Z statistic	Prob	Marginal effect
Civil	-5.6035	2.5537	-2.19	0.028	-0.0031
DM	0.0049	0.0987	0.05	0.960	0.000012
Trade	-0.0083	0.0103	-0.80	0.432	-4.27e-06
GDP	2.14e-12	2.44e-12	0.88	0.381	-4.22e-15
Inflation	0.0461	0.0212	2.17	0.030	0.0000196
HDI	-9.977	4.3454	-2.30	0.022	-0.003741
C	8.1439	3.0306	2.69	0.007	-

Source: Research findings

Table 3 represents the estimation results of the logit panel model for upper-middle-income countries. Considering the Hausman test (8,28) and its significance level (0.1416), the panel with random effects was accepted. The GDP variable has a positive and significant effect on the selection of an exchange rate regime. In other words, small economies tend to raise their shares in the flow of international trades and thus orient to a fixed exchange rate system. That is, the probability of a floating exchange rate regime elevates in countries with higher degrees of development. Similar to low-income and lower-middle-income countries, the HDI variable has a significant and negative effect on the selection of an exchange rate regime. Put differently, considering the constancy of all other factors, the probability of a fixed-to-floating exchange rate selection increases by 0.0616 unit per unit rise of this variable.

Table 3. Estimation results of logit panel for upper-middle-income countries

Variable	Coefficient	SE	Z statistic	Prob	Marginal effect
Civil	2.3789	3.5860	0.66	0.507	0.0100028
DM	0.0025	0.1557	0.02	0.987	-0.0007505
Trade	0.0015	0.0106	0.15	0.882	4.89e-06
GDP	9.68e-13	4.06e-13	2.38	0.017	1.20e-14
Inflation	0.0159	0.0123	1.28	0.199	0.0000686
HDI	-8.3190	4.5134	-1.84	0.065	-0.06165446
C	3.7017	4.5377	0.82	0.415	-

Source: Research findings

Conclusion

The selection of an exchange regime is influenced by numerous economic and political factors such as inflation rate, GDP, civil liberties, democracy, trade, HDI, etc. The crucial point is that every one of these factors cannot determine the type of countries' exchange regimes by itself; rather, the weight of every factor and, finally, their result can steer countries toward selecting a specific exchange rate regime. To this end, the present study investigated the effective factors in the selection of an exchange regime in three groups of developing countries, i.e., low-income, lower-middle-income, and upper-middle-income. The results showed that HDI had a negative and significant effect on the selection of an optimal exchange system in low-income countries (the first group). Similarly, the balance of trade positively and significantly impacted the selection of an optimal exchange regime in this group of countries. These results are in agreement with the findings of the studies carried out by Poirson (2001), Bloomberg et al. (2005), Tamgac (2013), and Sfia (2010). In lower-middle-income countries (the second group), HDI and civil liberties had negative and significant effects on the selection of an optimal system, while the inflation rate positively and significantly impacted this selection. These results are in line with the findings of the research conducted by Güçlü (2009) and Oke and Adetan (2018). Ultimately, in upper-middle-income countries, HDI had a negative and significant effect on the selection of an optimal exchange regime, while GDP has a positive and significant impact. Likewise, considering the coefficients of the marginal effect, we can assert that the HDI variable has the maximum effect on the selection of a fixed exchange rate in all three groups. Lastly, countries with floating exchange regimes are suggested to pave the way for the reinforcement of credit systems and the development of financial markets in order to benefit from the advantages of a floating exchange rate regime. Furthermore, to preserve the floating exchange rate regime, countries need some prerequisites and imperatives like inflation targeting and further independence of the monetary authority, while it would be unattainable in the absence of single-unit inflation targeting and non-observance of its obligations. Countries with fixed exchange rate regimes should seriously accentuate currency policies in parallel with other macro policies in order to achieve macroeconomic goals, like enhanced production and employment.

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بررسی عوامل مؤثر بر احتمال انتخاب نظام ارزی شناور در کشورهای در حال توسعه منتخب

چکیده:
نرخ ارز یکی از متغیرهای مهم و تاثیرگذار در اقتصاد کشورها است. این متغیر از طریق تاثیرگذاری بر بسیاری از متغیرهای اقتصادی نقش مهمی و غیر قابل انکاری در شرایط موجود و آینده اقتصاد هر کشور ایفا می‌نماید. بنابراین انتخاب نظام ارزی بهینه برای کشورها حائز اهمیت است. در این مطالعه به بررسی عوامل اقتصادی و سیاسی موثر بر انتخاب رژیم‌های ارزی در سه دسته از کشورهای در حال توسعه شامل کشورهای با درآمد پایین، و کشورهای پایین‌تر از میانگین و کشورهای بالاتر از میانگین در بازه زمانی 2018-2000 با استفاده از روش پنل لاجیت پرداخته شده است. نتایج نشان داد برای کشورهای با درآمد پایین‌تر از میانگین، افزایش تراز تجاری احتمال انتخاب رژیم نرخ ارز شناور را افزایش و بالا بودن شاخص توسعه منابع انسانی (HDI) احتمال انتخاب رژیم نرخ ارز شناور را کاهش می‌دهد. برای کشورهای با درآمد پایین‌تر از میانگین، افزایش آزادی‌های مدنی و شاخص توسعه منابع انسانی احتمال انتخاب رژیم نرخ ارز شناور را کاهش و افزایش نرخ تورم احتمال انتخاب رژیم نرخ ارز شناور را افزایش می‌دهد. در نهایت در گروه سوم که کشورهای با درآمد بالاتر از میانگین می‌باشند، افزایش تولید ناخالص داخلی احتمال انتخاب رژیم نرخ ارز شناور را افزایش و افزایش شاخص توسعه منابع انسانی احتمال انتخاب رژیم نرخ ارز ثابت را افزایش می‌دهد.

واژگان کلیدی: رژیم نرخ ارز، کشورهای در حال توسعه، شاخص توسعه منابع انسانی، مدل پنل لاجیت.