



The Impact of Economic, Political, Institutional Factors on Exchange Rate Regime Choice in SRI LANKA

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Abstract

This study investigates the impact of economic, political, and institutional factors on the choice of an exchange rate regime in Sri Lanka from 1972 to 2020. Since the exchange rate regime in Sri Lanka has recently been vulnerable due to the late 2021 and early 2022 economic and currency crises followed by economic, political, and institutional volatility, it is important to investigate the impact of such factors on the exchange rate regime. This study aimed to fill specific empirical and practice gaps, and it addresses the empirical gap by examining Sri Lanka and identifying certain contradictory results in the literature. There are conflicting results for the same variable in the literature because of the different economies being tested, which is obvious. This study addresses the practice gap by examining the recent economic and currency crisis in Sri Lanka, which led the researchers to conduct the study for Sri Lanka. The study's dependent variable is categorical and comprises three choices: pegged, intermediate, and floating. The thirteen independent variables were categorized under three main determinants: economic, political, and institutional. A multinomial logistic regression predicted the model. According to the study's findings, all the economic variables are statistically significant except international reserves and globalization compared to an intermediate regime. None of the political stability variables are significant in Sri Lanka. Left-wing government (government ideology) is robust among the institutional quality determinants, although the result is ambiguous. According to the results, economic factors lead the way in determining the exchange rate regime in Sri Lanka.

Keywords: Exchange Rate Regime, Economic, Political, Institutional, Sri Lanka optimization.

1. Introduction

Global context

The appropriate exchange rate regime for an economy is dependent on the national characteristics of an economy. Those so-called characteristics might somehow relate to economic factors, political environment, and institutional quality of the country(s). Nobody can argue that one regime is superior to another because these characteristics can differ among countries. Setting up an exchange rate regime involves much consideration as it could impact the monetary policy of an economy. The literature (Maraoui, 2022) (Singer, 2010) researched the choice of exchange rate regime for the MENA region and selected developing countries by considering economic, political, and institutional factors. (Hagen, 2005) and (Levy-Yeyati, 2001) studied the regime choice by analyzing macroeconomic factors for transition and industrial and nonindustrial economies, respectively. (Mundell R. A., 1961) (Chang, 2013) (Berdiev, 2012) reviewed the regime choice considering the Optimum Currency Area (OCA) theory, the government ideology of countries in different groupings, and the political economy of developed and developing countries, respectively. Likewise, authors have researched regime choice by taking such factors into account. This study aims to determine the impact

of so-called economic, political, and institutional factors on the exchange rate regime choice exclusively for Sri Lanka as there had been no studies conducted on the exchange rate regime choice for Sri Lanka. Notably, the regime choice that could likely be adopted by the behaviour of economic, political, and institutional factors can differ depending upon the characteristics of an economy. Hence, the authors of this paper were motivated to ask how such factors could impact regime choice in Sri Lanka.

Evolution of the Sri Lankan exchange rate regime

Following the trade links with the Sterling area during the pre-independence colonial era, Sri Lanka had a fixed exchange rate regime pegged to the Sterling Pound under the Bretton Woods system (Central Bank of Sri Lanka, 2006) (Gunaratne). According to (Hagen, 2005), a country is more likely to adopt a fixed exchange rate regime if its trade is heavily concentrated on a particular currency area. The Sri Lanka rupee became the standard of monetary value after the currency board was replaced by the Central Bank in 1950, and the rupee was directly pegged to a particular value of gold under the gold standard; under this monetary policy, countries agreed to convert paper money into a fixed amount of gold. This was caused by a turnaround in the national (currency board replacement) and international (regime shift to the gold standard) political and regulatory environment. By the mid-1960s, however, the country faced a balance of payments crisis, aggravated by the devaluation of the British pound, forcing Sri Lanka to devalue the rupee to maintain export competitiveness. To ease the pressure on the country's balance of payments, a Foreign Exchange Entitlement Certificate system was introduced, and this involved a dual exchange rate (backed by gold reserves of the country) with one official lower rate applicable to essential imports and non-traditional exports, and another higher official rate applicable to all the other exports and imports. As the Bretton Woods system collapsed, the Sterling Pound was floated, and the rupee was re-linked to the Sterling Pound. This resulted in the U.S. suspending issuing gold to foreign countries, so the gold was no longer a reserve asset. i.e., reserves held by central banks worldwide moved from gold to fiat money (paper currency). Then, the rupee was pegged to a basket of currencies, weighted in terms of their relative importance in trade. In 1977, Sri Lanka shifted from restrictive policies towards a liberal policy regime by moving into a managed floating regime with a crawling band. i.e., change in government ideology. In 2000, the Sri Lankan economy faced a significant challenge of a critical decline in its international reserves following the massive war-related expenditures and higher import bills, and it was hard to manage the exchange rate with this background. Hence, Sri Lanka switched to a freely floating exchange rate in 2001.

Problem statement

Empirical significance

The empirical and practical significance identified led us to conduct this study. Under the empirical values, contextual gaps and contradictory results can be identified. This is supposed to be the first study on the exchange rate regime choice considering economic, political, and institutional quality variables for Sri Lanka to fulfill the contextual gap. There are studies conducted, including Sri Lanka, yet not addressing the impact of economic, political, and institutional factors on the exchange rate regime (Paranavithana, 2021) (Thevakumar, 2022) (AL Soos, 2016) (Senanayake, 2010) (Rajan, 2011) (Cavoli, 2013) (Maltra, 2010) (M, 2021). In the literature, there are contradictory results for the same variable because of the different economies being tested, which is evident. For example, a fixed regime was suggested by (Maraoui, 2022). However, (Javoer, 2006) (Rizzo, 1998) indicated that a more flexible regime is appropriate for a country with higher trade openness. (Hagen, 2005) Studies on some developed, developing, and Eurozone countries

suggest that CIS countries prefer flexible exchange rate regimes more strongly than the Central and Eastern European countries. This may reflect the desire of the Central and Eastern European countries to tie themselves more strongly to the European Union, to whose currency they peg in practice. Further, empirical results (Utazi, 2017) suggest that Nigeria is a mono-economy because oil accounts for most of its export earnings. Therefore, greater exchange rate flexibility is required during economic slowdowns. (Chowdhury, 2015) demonstrates that exchange rate regime choice in middle-income countries is more dependent on macroeconomic circumstances such as capital account openness and financial development than in high-income and low-income countries. (Rizzo, 1998) stated that economic size and degree of transparency are significant in explaining the developing countries' regime choices, while (Chowdhury, 2015) implied the opposite. Likewise, the regime choice differs depending on the economy(s) tested in a study.

Practical significance

Under the practical significance, the economic and currency crisis, political instability, and exchange rate volatility that prevailed in Sri Lanka can be identified. The financial and currency crisis in Sri Lanka (2019-2022) led us to study the economic factors that determine the choice of an exchange rate regime in Sri Lanka. Until September 2021, the US Dollar (USD) Sri Lanka Rupee (LKR) exchange rate was determined based on a "managed float." This meant that the demand and supply of USD in the market were the primary determinants of the exchange rate. Official (Central Bank) market intervention, by selling or purchasing USD in limited quantities, smoothed out any significant fluctuations in the exchange rate when needed. In September 2021, the Central Bank set an upper limit of LKR 203 per USD (Figure 3) that authorized dealers in foreign exchange, including banks, must adhere to for all foreign exchange transactions.

When the demand for a foreign currency exceeds its supply in any country, the fixed official exchange rate does not allow market adjustment to reflect that difference. The natural consequence is the emergence of an alternative market for the currency in shortage, commonly termed a "black market." Such a black market has recently developed in Sri Lanka, with USDs selling more than LKR 240 per USD compared to the official rate of LKR 203. This restriction, which was in effect for five months, had severe adverse impacts on the functioning of the Sri Lankan economy (Figure 1).

Foreign remittances: The significant price difference between the official and black-market rates for the USD provided a ready alternate avenue for Sri Lankan workers. As more of these workers became aware of the alternate option, remittances through the banking system declined precipitously (Figure 1).

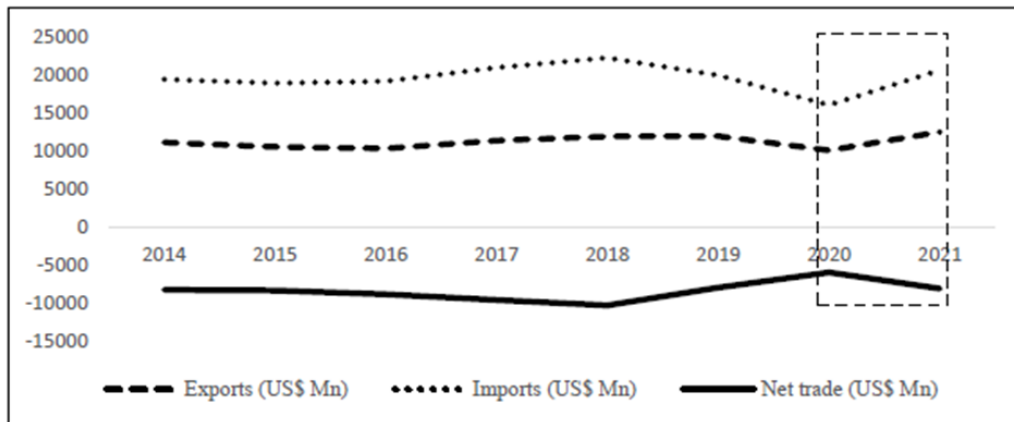
Export Earnings: With the fixing of exchange rates, exporters have been delaying the repatriation of their export earnings (Figure 1).

Tourists' earnings: Tourists officially received less LKR for their currencies than with a realistic exchange rate; this discouraged some fraction of tourists from visiting Sri Lanka, which, in turn, reduced tourist foreign currency inflows. (Figure 1).

The Sri Lanka rupee, which remained around Rs. 202-203 per US dollar until early March 2022, was devalued after that (Figure 3). CBSL set an exchange rate limit of 230 rupees per dollar compared to 200-203, which had prevailed since October 2021. A currency is eventually floated to end forex shortages and balance of payments deficits. Following the excessive depreciation, inflation accelerated (Figure 4) significantly through imported prices. Against this backdrop, limiting the extent of depreciation and extreme volatility became necessary. The CBSL introduced a middle rate of USD/ LKR spot exchange rate and a

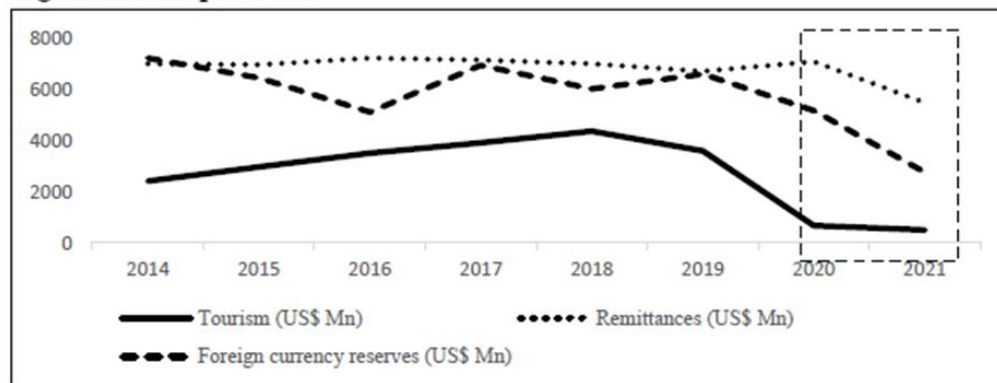
variation margin/daily permissible band from mid-May 2022 (Figure 3) till today to manage the intraday volatility of the exchange rate.

Figure 1: Tourism, Remittances, Foreign Currency Reserves



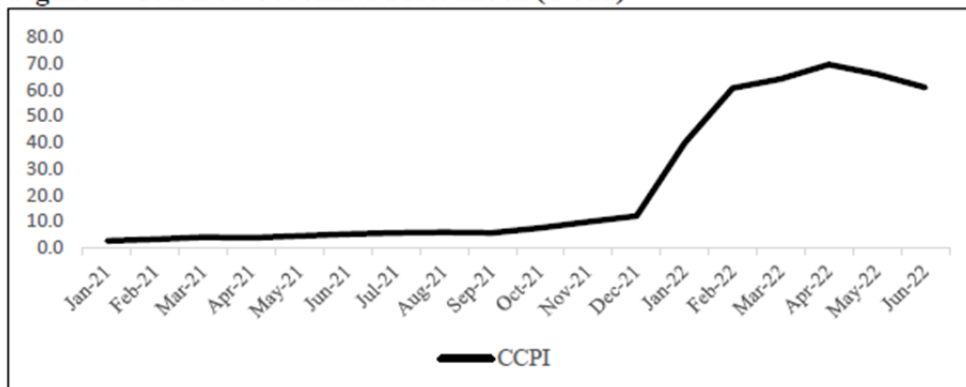
Source: Central Bank of Sri Lanka

Figure 3: USD per LKR



Source: Central Bank of Sri Lanka

Figure 4: Colombo Consumer Price Index (CCPI)



Source: Central Bank of Sri Lanka

Therefore, this research tries to fill these empirical and practice gaps. Accordingly, the study's problem statement can be stated as: How do economic, political, and institutional factors influence the choice of an exchange rate regime in Sri Lanka?

Based on the above problem statement, the following research questions and objectives can be derived. Research questions of the study are;

1. What is the impact of economic factors on the choice of an exchange rate regime in Sri Lanka?
2. What is the impact of political stability factors on the choice of an exchange rate regime in Sri Lanka?
3. What is the impact of institutional quality factors on the choice of an exchange rate regime in Sri Lanka?

Research objectives of the study are;

1. To investigate economic factors influencing the choice of an exchange rate regime in Sri Lanka.
2. To investigate political stability factors influencing the choice of an exchange rate regime in Sri Lanka.
3. To investigate institutional quality factors influencing the choice of an exchange rate regime in Sri Lanka.

2. Literature Review

Theoretical review

The main theories of exchange rate regime choice proposed in the literature are the Optimum Currency Area Theory (OCA) and the Capital Account Openness theory.

Optimum currency area theory (OCA)

The traditional criteria for choosing the exchange rate regime arise mainly from the Optimal Currency Area (OCA) theory, which determines the choice between a fixed or a flexible exchange rate regime. This is the first approach for selecting the exchange rate regime developed in the 1960s and initiated by (Mundell R. A., 1961). Subsequent versions of this theory emphasized the size and nature of economic shocks as potential determinants of exchange rate regime choice. OCA theory posits that implementing currencies by geographic and geopolitical region, instead of by country leads to greater economic efficiency. The theory assumes mobility of production factors between the OCA areas and limited price and wage flexibility.

Capital account openness theory

A capital account liberalization is a decision by a country's government to move from a closed capital account regime, where capital may not move freely in and out of the country, to an open capital account system in which capital can enter and leave at will. (Mundell R. A., 1963) emphasized the character of capital mobility as a determining criterion for choosing the optimal exchange rate regime. Mundell's impossible trinity suggested that a country can't achieve the following three goals simultaneously: a fixed exchange rate, independence of monetary policy, and integration of financial markets. By using this triangle, three cases can be distinguished. The first scenario states that a country with a fixed exchange rate regime and an independent monetary policy could not have perfect mobility of capital. The second scenario is a fixed exchange rate regime with capital account liberalization prohibiting monetary policy independence. The third scenario is that a country with perfect capital mobility and monetary policy autonomy makes it impossible to adopt a fixed exchange rate (Maraoui, 2022).

Empirical review

Dependent variable

The International Monetary Fund exchange rate classification categorized members' exchange rate regimes based on official announcements. The initial IMF classification did not reflect the actual exchange rate regime of a specific country; de facto as exchange rate regimes often differed from what the authorities officially declared them to be; de jure (Reinhart, 2002) (Shambaugh, 2004) (Levy-Yeyati, 2001). Starting from 1997, the IMF classification system is based on members' actual, de facto arrangements identified by IMF staff, which may differ from their officially announced arrangements. The dependent variable of this study is based on the IMF exchange rate classification and is categorized as pegged, intermediate, and floating. The literature has used the IMF exchange rate classification as the basis for the categorization of the regime choice (Hagen, 2005) (Ondina, 2011) (Papaioannou, 2003).

Monetary policy frameworks differ across countries depending on country-specific circumstances, such as economic size, inflation, trade openness, international reserves, political stability, institutional quality, etc. For example, monetary policy in some countries is based on currency board arrangements where the value of the domestic currency is pegged to a foreign currency. In pegged exchange rate regimes, domestic inflation is directly linked to inflation in the country where its currency is pegged. In such countries, the business cycle would be fully synced with other countries' business cycles and is exchange rate targeting with soft pegs with some leeway to use policy tools to stabilize growth and inflation in the domestic economy. On the other end of the extreme, monetary policy frameworks are based on inflation-targeting regimes where the inflation is anchored through inflation targets and interest

rate policy while maintaining a floating exchange rate regime. Such countries have more ability to use policy tools to strengthen their credibility. One cannot argue that one regime is superior to the other; it all depends on the circumstances of the given country. Monetary policy in Sri Lanka initially targeted the exchange rate with a fixed or pegged exchange rate regime. Now, it is an inflation-targeting monetary policy, so it is vital to understand the factors impacting choosing an exchange rate regime in Sri Lanka.

Table 1: Categorization of the dependent variable (regime choice)

Sri Lankan exchange rate regimes	IMF classification of regimes	Categorization
1. Fixed exchange rate regime 2. Gold standard 3. Dual exchange rate regime 4. Basket peg exchange rate regime 5. Crawling peg exchange rate regime	1. Exchange arrangements with no separate legal tender (dollarization)	Pegged
6. Managed floating with a crawling band exchange rate regime 7. Independently floating regime	2. Currency board arrangements 3. Conventional fixed peg arrangements 4. Pegged exchange rates within horizontal bands	Intermediate
8. Independently floating	5. Crawling pegs 6. Exchange rates within crawling bands 7. Managed floating with no predetermined path	Floating

Source: Developed by author

Independent variables

1. Economic determinants

Economic determinants could impact highly on the choice of exchange rate regime of any country. Most empirical studies analyzing explanatory variables' impact on exchange rate regime choice have considered many of the optimum currency area variables. The study conducted by (Maraoui, 2022) has tested the size of the economy, inflation, trade openness, international reserves, and globalization as determinants of impact on the choice of an exchange rate regime for the MENA region. Other than (Maraoui, 2022) studies by (Chang, 2013) (Hagen, 2005) also tested the size of the economy, inflation, and international reserves as determinants of impact on the choice of an exchange rate regime. Studies on Latin America and CIS countries on the same issue (Ondina, 2011) (Kateryna, 2004) tested for current account balance, while studies by (Singer, 2010) (Marzovilla, 2015) tested earnings from remittances as a determinant to impact on the exchange rate regime. The IMF survey on long-term determinants of exchange rate regimes in 2002 by (Juhn, 2002) also tested for economic size, trade openness, inflation, international reserves, and current account balance.

Studies conducted for transition economies and MENA Region (Hagen, 2005; Maraoui, 2022) suggested that a larger economic size lowers the chances of choosing a flexible exchange rate regime. According to the studies on Chile and some of the developing, developed, and Eurozone countries (Heller, 1978; Chang, 2013) the larger the economic size, the higher the probability of choosing a more flexible regime. An ambiguous regime is more suitable for a larger economic size, as suggested by (Papaioannou, 2003) in the study of six Central American Countries. According to Chang & Lee, 2013 countries with a large volume of trading (trade openness) are closely linked to a fixed exchange rate regime, whereas small countries do not have a floating regime, and a fixed regime is also suggested by (Maraoui, 2022). However, (Javoer, 2006; Rizzo, 1998) indicated that a more flexible regime is appropriate for a country with higher trade openness. This has been actively debated in literature, mostly on theoretical grounds. For example, while some authors argue that transparency may incentivize maintaining fixed rates (Edwards, 1996), others point out that foreign shocks are more important in more open countries, increasing the appeal of floating rates as a shock absorber. The study by Papaioannou (2003) suggested an ambiguous regime. In general, a fixed regime is more supportive of maintaining lower inflation levels, which is proven in the literature by Hagen (2005) and Maraoui (2022).

However, studies by Javoer (2006) and Papaioannou (2003), suggested that the choice of the regime is ambiguous when there is a higher level of inflation. Obviously, to maintain a fixed exchange rate, the country must have a significant level of international reserves. This argument is supported by the studies of Hagen (2005) and Chang (2013). Meanwhile, an ambiguous and flexible regime was suggested by Ondina, 2011; Maraoui, 2022, respectively. Hausmann (2001) meant that G-3 countries float with shallow reserves, and emerging countries are at the opposite extreme, while other industrial countries are in an intermediate position. Chang (2013) suggested that the more globalized the country is, the higher the chances of choosing a flexible regime. A government could choose between a fixed or a flexible regime when the current account deficit is more elevated. The government might choose a fixed regime if the country wants to lower the import bills in value. At the same time, if the government wanted to increase export receipts, then the country might choose a flexible regime to encourage exports. This argument was supported by the studies of (Javoer, 2006; Kateryna, 2004; Juhn, 2002). A country with a strong inflow from remittances was more likely to adopt a fixed regime, which is supported by Singer (2010) while a flexible regime was suggested by Lartey (2016).

2. Political stability determinants

Since political parties have systematically different preferences about macroeconomic objectives, significant literature provided evidence about political determinants. In the political stability literature Berger (2000)

and Blomberg (1997) argued that the political environment of a country impacted the choice of exchange rate regime. Strong governments favored a flexible regime, whereas unstable governments promoted a fixed regime (Kimakova, 2008). However, Frieden et al., (2001) suggested that an unstable government cannot opt to maintain a fixed exchange rate regime. Muslija (2018) used political stability and absence of violence/terrorism: percentile rank as a proxy to measure the political stability in a study on 'The relationship between tourism and political stability and absence of violence.' Quibria, 2014, Government effectiveness as an indicator for the structure of bureaucracy in an ADB economics working paper series studying governance and developing Asia. Maraoui (2022) suggested that the more stabilized the country is, the more likely it is to adopt a flexible regime. Politicians may influence the exchange rate before elections to realize short-term macroeconomic objectives (Chang, 2013). Chang (2013) suggested that if there is an election in the given year, it is likely to adopt a flexible or an ambiguous regime given two different regime classifications.

3. Institutional quality determinants

Institutional quality also significantly influences the choice of exchange rate regime. Maraoui (2022) suggested that the higher the corruption, the lesser the likelihood of adopting a flexible regime. The same author indicated, that the higher the regulatory quality as a measure of law and order, it is less likely to adopt a fixed regime. In the literature, the regulatory quality: percentile rank was taken as a proxy for an analysis of Russian governance (Smirnov, 2021). Chang (2013) suggested that left-wing parties were more likely to use an expansionary macroeconomic policy, so they were more likely to adopt a flexible exchange rate regime. Under a different regime classification, the same author suggested that a regime choice could also be ambiguous.

Methodological review

The literature used multinomial logit regression to run the model. Chang (2013) tested the study on the effect of government ideology on an exchange rate regime by multinomial logit regression. The study took four sets of categorical dependent variables as the regime choice and modeled each set of categories of dependent variables separately. Likewise, Papaioannou (2003) tested the study on determinants of the intention of exchange rate regimes in six Central American countries by multinomial logit regression as one of the two methodologies, where crawling pegs was the reference category while pegging and floating regimes were the remaining dependent variables. Aliyevy (2014) studied the determinants of the choice of exchange rate regime in resource-rich countries tested by a multinomial logit model, where floating, intermediate, and fixed regimes were the three discrete dependent variables. Javoer (2006) studied the determinants of the exchange rate regime for Chile tested by a multinomial qualitative response model, where fixed, crawling, and flexible regimes were the three discrete dependent variables. Ondina (2011) studied the determinants of the exchange rate regime in Latin America tested by a mixed multinomial logit regression, where fixed, intermediate, and flexible regimes were the three discrete dependent variables. Ondina (2011) modeled three separate models for each set of independent variables: Optimum currency area theory, types of shocks, and vulnerability to crises.

3. Methodology

Operationalization

Secondary data were gathered to identify the determinants of the choice of exchange rate regime in Sri Lanka. In this research, the type and source of data used were quantitative and secondary data for all the independent variables. The economic variables in this study were obtained from existing information and gathered from the World Bank database for the study period from 1972 to 2020 (Chang, 2013) (Maraoui, 2022). The dependent variable of this study was the exchange rate regime choice, which is a categorical variable encoded $Y_t = 1$ Pegged regime - IMF classifications 1-3, $Y_t = 3$ Intermediate regimes - IMF classifications 4-6 and $Y_t = 2$ Floating regimes - IMF classifications 7-8. There are thirteen independent variables under three main determinants: economic, political stability, and institutional quality. The independent variables of this study were economic determinants: economic size, trade openness, inflation, international reserves, personal remittances, current account balance, and globalization; political stability determinants: political stability, government stability, and election; institutional quality determinants: control of corruption, law and order, and left-wing government. The GDP growth rate was a proxy to measure the economy's relative size. Trade openness is measured by trade (% of GDP) and is the same for measuring the current account balance and remittances. Inflation is measured by inflation, consumer prices (annual %). A broad money-to-total reserves ratio measures international reserves. The globalization index was taken as a proxy for globalization. The percentile ranks were taken for political stability, government stability, and control of corruption. For election encoded one if there is an election in the given year, 0 otherwise. The left-wing government also encoded 1 for the left part and 0 in the other case (right or centrist party). The data for variables; GDP growth, trade openness, inflation, broad money to total reserves ratio, personal remittances (% of GDP), and current account balance (% GDP) was obtained from the World Development Indicators (Chang, 2013) (Maraoui, 2022). The data for variables controlling corruption: percentile rank, regulatory quality: percentile rank, and government effectiveness: percentile rank was obtained from the World Governance Indicators (Chang, 2013). The data for variables, elections, and left-wing government was obtained from the Database of Political Institutions (Maraoui, 2022). The KOF Globalization Index obtained the globalization index (Chang, 2013). As this study was conducted only for Sri Lanka, the data was for forty-nine (49) years (1972-2020). The time frame of this study is based on the data availability. The exchange rate regime of Sri Lanka evolved since 1948. However, due to the data unavailability of some political and institutional variables, the sample period was taken from 1972 to 2020.

Research philosophy: The research philosophy of this study is positivism. Because the knowledge is acquired through empirical research, which is based on measurement and observation, the results and suggestions of this study are based on quantitative analysis. The study used research data that is verifiable and collected in a value-free manner.

Research approach: Since this study is quantitative, the analysis started with specific hypotheses developed based on information or patterns observed in the literature, which were then tested, and statistical relationships developed to investigate the theory. Hence, the research approach was deductive.

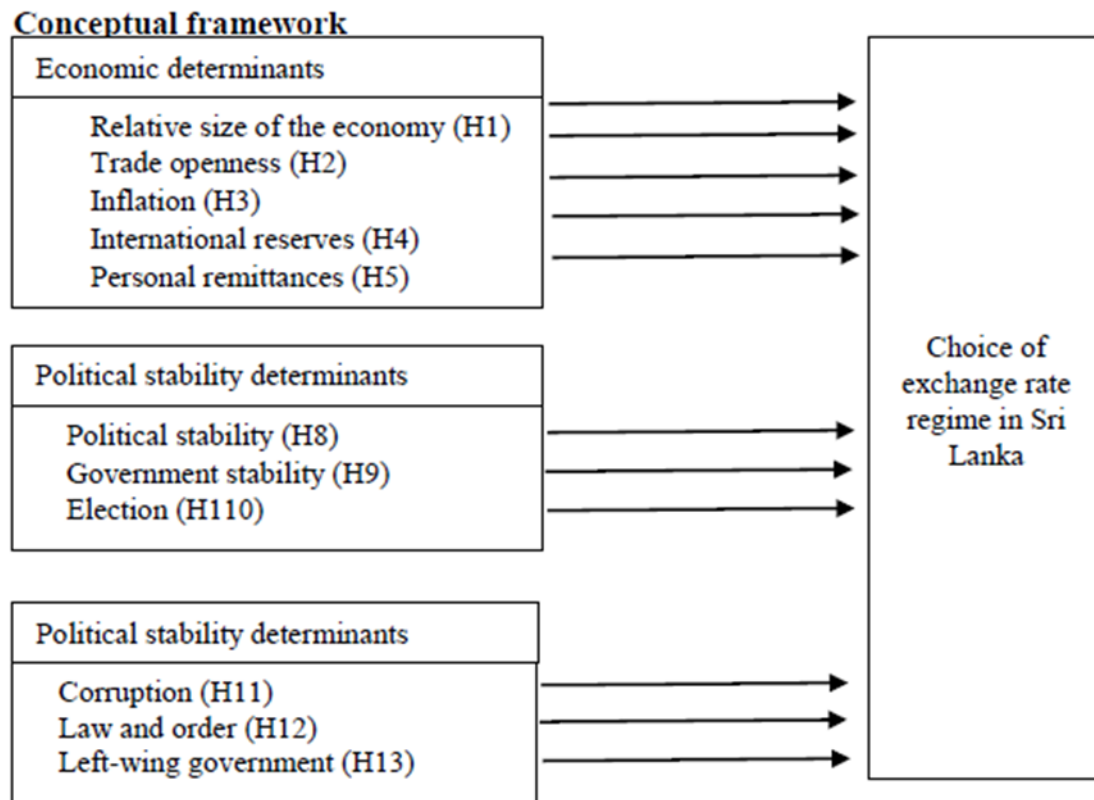
Research design: This research involves manipulating the independent variables to observe a change in the dependent variable, in other words, to assess the relationship between variables. The purpose of quantitative research is to investigate research hypotheses.

Choices: This study used a mono method of collecting data, quantitative methodology.

Time horizon: Since the exchange rate regime of an economy is evolving due to inevitable fluctuations or economic shocks, data for both dependent and independent variables is collected over 49 years from 1972 to

2020, termed a longitudinal time horizon. That is to investigate the impact of economic, political, and institutional factors on the evolution of exchange rate regimes over 49 years.

According to the variables of the study, the following conceptual framework was constructed for this research.



Methods of analysis

In this study, the method of data analysis is Multinomial Logistic Regression and is appealing for the discrete choice situation. The dependent variable is in categorical form with more than two categories, and with more than one explanatory variable, the Multinomial Logistic Regression would better capture this. The model was tested on R studio. Three functions were built for each set of independent variables (economic, political stability, and institutional quality). They were modeled separately, while the dependent variable (choice of exchange rate regime in Sri Lanka) is the same for each model (Ondina, 2011). Then, the model's accuracy was tested under testing and training data. According to the multinomial logistic regression, if the coefficient sign is positive for explanatory variables, there is a lower probability of choosing the reference (base) category or regime. On the other hand, if the coefficient sign is negative for explanatory variables, it means there is a higher probability of choosing the reference (base) category or regime.

The exchange rate regime equation for the three sets of independent variables would take the form;

Model 1- Economic determinants

$$Y_t = f(GDP_t, OPEN_t, INF_t, BRTOR_t, REMITT_t, CACC_t, GLOB_t)$$

Model 2 – Political stability determinants

$$Y_t = f(POLSTAB_t, GOVSTAB_t, ELECT_t)$$

Model 3 – Institutional quality determinants

$$Y_t = f(COCT, REGOLT, LWGt)$$

The econometric estimation of equations requires a definition of the probabilities of choosing any of the three alternatives in a binary form:

$$\text{Log}(P_{jt} / P_{1t}) = BX_t + ut$$

with $j = 2,3$ and $t = 1, \dots, N$. As usual, X represents a matrix of independent variables, and B is a vector of coefficients. The base category or the reference group for all three models is the ‘Pegged regime’ referenced by 1. The statistical software automatically chooses the base category out of all the outcomes.

4. Data analysis and findings

Table 2: Descriptive statistics

Categorical variable	Total observations	Outcome	Observations	Percentages
Exchange Rate regime	49	1	6	12.24
		2	20	40.82
		3	23	46.94

Source: Developed by author

Table 2 shows the distribution of the exchange rate regimes during the analysis period. The first remark is that the exchange rate regime of Sri Lanka can be categorized primarily into three categories (1 pegged, 2 Floating, 3 Intermediate). The second regime most used is the intermediate exchange rate, with a percentage of 46.94%, while the least popular is the fixed regime, with 12.24%. Table 3-5 presents the estimated coefficients of multinomial logistic regression for the choice of the exchange rate regime. The estimation results of the three models can be distinguished.

Table 3-5: Determinants of exchange rate regimes in Sri Lanka, 1972-2020. Dependent variable: exchange rate regime (IMF classification). Estimate: multinomial logit regression

Table 3: Model 1 - Economic determinants

Regime		Coef.	Std. Err.	z	P > z
Floating	(Intercept)	-171.0549	2.01739E-09	-8.5E+10	0.000000000
	GDP	-11.2740	8.35418E-11	-1.3E+11	0.000000000
	OPEN	-190.4305	1.53958E-09	-1.2E+11	0.000000000
	INF	-24.5330	1.92618E-10	-1.3E+11	0.000000000
	BRTOR	-34.8938	7.69644E-09	-4.5E+09	0.000000000
	REMITT	0.8915	1.58067E-10	5.6E+09	0.000000000
	CACC	30.0155	2.88255E-11	1.0E+12	0.000000000
	GLOB	11.7328	1.10366E-07	1.1E+08	0.000000000
Intermediate	(Intercept)	108.0808	2.28364E+01	4.7328	0.000002214
	GDP	-14.6285	5.31469E+00	-2.7525	0.005914779
	OPEN	196.4224	4.20037E-01	467.6308	0.000000000
	INF	26.9975	6.87912E-01	39.2455	0.000000000
	BRTOR	-29.7089	1.39708E+02	-0.2126	0.831600100

	REMITT	19.9574	3.76030E+00	5.3074	0.000000111
	CACC	-47.5486	1.68660E+00	-28.1919	0.000000000
	GDP	0.0603	3.37780E+01	0.0018	0.998575400
	GLOB	108.0808	2.28364E+01	4.7328	0.000002214

Table 4: Model 2 - Political stability determinants

Regime		Coef.	Std. Err.	z	P > z
Floating	(Intercept)	-61.2957	2.2131	-27.6968	0.0000000
	POLSTAB	3.3871	10.6173	0.3190	0.7497106
	GOVSTAB	0.7062	1.4253	0.4954	0.6202939
	ELEC	11.6200	48.0165	0.2420	0.8087805
Intermediate	(Intercept)	74.8887	2.1290	35.1751	0.0000000
	POLSTAB	0.4576	10.1416	0.0451	0.9640132
	GOVSTAB	-1.5478	1.2075	-1.2819	0.1998924
	ELEC	14.5861	48.0651	0.3035	0.7615357

Table 5: Model 3 - Institutional quality determinants

Regime		Coef.	Std. Err.	z	P > z
Floating	(Intercept)	293.6586	0.1111	2642.0790	0.0000000
	COC	-8.7201	44.9770	-0.1939	0.8462710
	REGQLT	-1.3608	41.9462	-0.0324	0.9741206
	LWG	251.4523	0.1111	2262.3450	0.0000000
Intermediate	(Intercept)	-132.7377	0.1009	-1315.0550	0.0000000
	COC	0.5601	44.6818	0.0125	0.9899989
	REGQLT	4.0858	41.7193	0.0979	0.9219826
	LWG	-135.6823	0.1009	-1344.2270	0.0000000

Model 1- Economic determinants

Model 1 (Table: 3), which accounts for economic determinants, is more significant in determining an exchange rate regime. GDP: The higher the relative size of the economy, the lower the chances of choosing a more flexible regime. This result confirmed the study of (Hagen, 2005) (Maraoui, 2022) stating that countries with considerable economies opt for a fixed exchange rate regime. Jakob (2015) suggested that free-floating exchange rate regimes adopted by developed countries might not suit developing countries whose insurance markets are not so well developed and whose economies are not stable enough to absorb the risks from exchange rate volatility. In general, more flexible regimes are associated with higher growth. Large countries tend to be more independent and less willing to adopt domestic policies to maintain a fixed rate of exchange with foreign currencies. Therefore, it is understandable that developing countries like Sri Lanka, having a relatively smaller economy, are more likely to adopt pegged exchange rate regimes when the growth is higher. The economic size variable is significant at a 95% confidence level when a floating regime choice is compared with the base case (pegged regime); however, economic size is marginally significant when compared to an intermediate regime.

OPEN: Ishiyama (2015) argued that more open economies are more likely to adopt a fixed regime. The export bills are higher because floating the exchange rate can support external deficits when the local currency depreciates. However, When the local currency depreciates, the country is vulnerable to

inflation/price instability. They might be initially willing to adopt a flexible regime due to the higher export receipts following the currency's depreciation; however, after realizing that it could cause skyrocket inflation, the country would eventually be willing to adopt a fixed regime. Hence, Ishiyama (2015) argued that a fixed exchange rate is more suitable for an open economy. According to Hagen (2005), small and open economies are more likely to adopt fixed exchange rate regimes than large and relatively closed ones. Sri Lanka is a small and reasonably available economy where the country heavily depends on the rest of the world, implying a fixed/pegged regime. For Sri Lanka, the exchange rate regime choice is ambiguous and is supported by the literature (Ondina, 2011) (Papaioannou, 2003). It is suggested that the more open the country is for international trade, the higher the likelihood of choosing either a pegged or a flexible regime, which is ambiguous. It can be due to the initial effort to increase the export bills by adopting a flexible regime and the last attempt to decrease inflation by adopting a pegged regime.

INF: Generally, inflation has a direct relationship with the exchange rate. Inflation tends to devalue a currency, leading to cheaper domestic goods for foreign consumers. When inflation increases, banks raise interest rates to encourage people to spend less and save more. In theory, this should reduce demand for goods and services, which helps to contain inflation. Also, due to higher interest rates, foreign investors tend to invest in the domestic country, increasing economic growth. Likewise, inflation in Sri Lanka significantly determines an optimal exchange rate regime since the variable inflation is highly significant in this study. Results suggest that an ambiguous regime choice is applicable for Sri Lanka for higher inflation. This is supported by studies by (Chang, 2013; Javoer, 2006; Papaioannou, 2003) that suggest inflation as a factor determining the choice of exchange rate regime is ambiguous. However, according to Chang (2013) and Hagen (2005), higher inflation is associated with a flexible exchange rate than a fixed rate. i.e., there can be high inflation due to the exchange rate volatility when the exchange rate is floating, making it challenging to sustain low inflation levels. On the other hand, low inflation levels are generally associated with a fixed exchange rate. Higher import bills and inflation led Sri Lanka to peg the exchange rate in September 2021. While inflation was further booming, CBSL floated the currency in March 2022, leading to skyrocketing inflation. In Sri Lanka, left-wing government ideology has dominated throughout this study. Left-wing governments are likelier to adopt expansionary policies and are less inflation-averse. Other than the left-wing ideology, there were central governments for a smaller period, where the government could support expansionary policies. This could also be a cause for Sri Lanka to peg and, at the same time, float the currency while inflation was increasing. Hence, in the case of Sri Lanka, it has an ambiguous regime when the inflation is higher, so the results of this study suggest that the impact of inflation on the exchange rate regime choice in Sri Lanka is ambiguous and highly significant. i.e., regime choice can be pegged or floating when inflation increases.

BRTOR: International reserves are significant when compared to a floating regime. However, it is insignificant compared to the intermediate regime. The higher the stock of international reserves measured by the proxy board money to reserves ratio, the lower the chances of choosing a flexible regime. This was proven by the studies conducted by (Hagen, 2005; Chang, 2013; Kateryna, 2004). Indeed, it is generally only possible to establish a fixed regime with significant foreign exchange reserves.

REMITT: Results for remittances show a positive relationship with regime choices, which depict that the higher the remittances received, the higher the probability of choosing a flexible regime. For small countries like Sri Lanka with strong migration outflows, the inflow of remittances in foreign currency and their conversion into national currency could cause a real exchange rate appreciation. Remittances from overseas

migrants constitute a major source of capital for most developing countries like Sri Lanka, and Sri Lanka relies on remittances for foreign exchange. A floating regime is likely to be adopted to increase remittance inflows. The results by Lartey (2016) suggested that more flexible exchange rate regimes are associated with a more significant increase in economic growth following increased remittances. This seems to contradict the results of economic size. Because of the more influential the economic size, the higher the chances of adopting a fixed regime. However, technically, in regression, one variable is considered when the other variables are held constant. Hence, when the remittances are considered, additional explanatory variables are continuous. When the Sri Lankan government pegged the exchange rate during the economic crisis in 2021, remitters stopped sending money through the official channels to the resident households. Instead, they moved towards unofficial market exchanges because they could send their money at higher rates than at the rate prevailing in the official exchange. Eventually, Sri Lanka let the exchange rate float, and only the remittance receipts increased. Therefore, it is understandable that choosing a floating regime over a fixed regime to increase the inflows of remittances is highly significant.

CACC: Current account balance is also very significant as a source of foreign currency. In the recent economic crisis in late 2021 and early 2022, Sri Lanka was in declining foreign currency inflows and increasing outflows due to imports outpacing exports, leading the Sri Lankan government to peg the rupee. Indeed, the vast import bill in the current account increases demand for foreign currency, while a slowdown in exports of goods reduces the inflow of foreign currency. Hence, the high significance of these determinants is obvious. The survey conducted by Juhn (2002) suggests that current account balance as a factor determining the exchange rate is ambiguous. According to Ondina (2011) and Kateryna (2004) higher the current account deficit, the higher the probability of choosing a flexible regime. Current account deficits cause the exchange rate to devalue, increasing the likelihood of selecting a flexible regime. Because it helps boost exports by making goods more competitive globally, reducing the trade deficit and debt burden. In practice, a flexible exchange rate is more responsive to the changes in the current account than a fixed rate. On the other hand, a significant current account deficit results in choosing a fixed exchange rate to make the import bills lower in value. This can happen during economic shocks, as Sri Lanka pegged the exchange rate during the latter 2021 crisis, to make the exchange rate favorable to imports. Hence, it can be concluded that a flexible regime is suitable when a deficit exists, and a fixed regime is appropriate when economic shocks occur, making the result ambiguous.

GLOB: Indeed, the more globalized, the higher the chances of choosing a flexible regime. The study by Chang (2013) supported this argument. Notably, almost all economic determinants are perfectly significant under the floating regime compared to the base case, pegged regime (1). In particular, the determinants that are paramount in choosing an exchange rate regime in Sri Lanka are trade openness, inflation, current account balance, and remittances, which are perfectly significant under both regime choices compared to the base case, pegged regime (1).

Model 2 - Political stability determinants

Table 4 presents the political stability determinants of choosing an exchange rate regime. For Sri Lanka, none of the three determinants, political stability (POLSTAB), government stability (GOVSTAB), and election (ELEC), are significant under each of the cases. POLSTAB & GOVSTAB: Political stability and election show a positive relationship with the regime choices, reflecting a flexible regime choice except for ambiguous government stability (Maraoui, 2022; Chang, 2013). The more stable the country's political situation, the higher the chances of choosing a flexible regime. If the country is in political and government

instability, governments might try to maintain a fixed regime to strengthen its credibility. ELEC: If there is an election in a given year, then there can be a probability of choosing a flexible regime compared to a fixed regime. It is harder to adopt a fixed regime due to the political pressures to support expansionary policies during elections (Carmignani et al., 2008).

Model 3 - Institutional quality determinants

Table 5 depicts the institutional quality determinants of choosing an exchange rate regime. COC: It is harder to adopt a fixed regime when the country is corrupted due to poor management (Maraoui, 2022). However, in the case of Sri Lanka, the variable corruption is not significant in determining an exchange rate regime, and the result is ambiguous. REGQLT: Regulatory quality also has an ambiguous impact on the choice of exchange rate regime in Sri Lanka and is not significant. LWG: left-wing governments are less inflation averse in the short-term, allowing for more flexible regimes, whereas, in the medium to long run, fixed regimes are adopted to strengthen credibility (Bodea, 2009). However, in the case of Sri Lanka, the variable LWG is not significant in determining an exchange rate regime, and the result is ambiguous.

Model accuracy

Table 6-8 shows the models' accuracy for testing data in predicting regime choice under economic, political stability, and institutional quality determinants. Training and testing data are the subset of the original data used to train the model, whereas testing data is used to check the model's accuracy. Here, the model's accuracy for testing data is shown because generalization refers to the model's ability to adapt appropriately to new, previously unseen data; testing data, drawn from the same distribution as the one used to create the model; training data. The models' accuracy for training data for all three models is 100%, while the accuracy for testing data is slightly different. When it comes to the generalization of the results of this study for economic determinants, it is 90.48% accurate in predicting the regime choice in Sri Lanka. For political stability determinants, it is 80.95% prediction accuracy, while for institutional quality determinants, it is 90.48% accurate in predicting. Hence, we can conclude that the accuracy of predicting the model in testing and training data is significant, and generalization is possible.

Table 6: Model accuracy (economic determinants) - Testing data

Observed	Predicted		
	Fixed	Floating	Intermediate
Fixed	0.6666667	0.0000000	0.3333333
Floating	0.0000000	1	0.0000000
Intermediate	0.1666667	0	0.8333333
Percent Correctly Predicted	0.9047619		

Table 7: Model accuracy (political stability determinants) - Testing data

Observed	Predicted		
	Fixed	Floating	Intermediate
Fixed	0.0000000	0.0000000	0.0000000
Floating	0.0000000	0.9166667	0.0000000
Intermediate	0.5000000	0.1666667	1.0000000
Percent Correctly Predicted	0.8095238		

Table 8: Model accuracy (Institutional quality determinants) - Testing data

Observed	Predicted		
	Fixed	Floating	Intermediate
Fixed	1.0000000	0.0000000	0.3333333
Floating	0.0000000	0.9166667	0.0000000
Intermediate	0.0000000	0.1666667	0.8333333
Percent Correctly Predicted	0.9047619		

5. Discussion

This research was conducted to determine to what extent the economic, political stability and institutional quality determinants impact the choice of exchange rate regime in Sri Lanka. According to the study, there were sixteen variables, including three dependent and thirteen independent variables. The study's dependent variable was the exchange rate regime choice in Sri Lanka, with three options. The economic, political stability, and institutional quality determinants were independent variables of this study. The models were based on the multinomial logistic regression and built three separate models for each set of explanatory variables (Ondina, 2011). According to the regression results, economic factors lead the way in determining an exchange rate regime for Sri Lanka. The econometric results confirmed the importance of economic and institutional quality variables and regulatory quality in determining the exchange rate regime in Sri Lanka.

As discussed in the previous chapter, in the first model (economic determinants), economic size and international reserves showed a negative relationship with the regime choice. Higher GDP growth and international reserves lower the chances of choosing a flexible regime. The result confirmed the findings of Hagen, 2005; Jakob (2015) Maraoui (2022) stating that countries with considerable economic size opt for a fixed exchange rate regime. It is generally impossible to establish a fixed regime without having a significant level of foreign exchange reserves. This was proven by the studies conducted by Hage, 2005; Chang, 2013; Kateryna, 2004).

Remittances and globalization showed a positive relationship with regime choices, indicating that the higher the remittances received and the more globalized the country, the higher the probability of choosing a flexible regime. The results by Lartey (2016) suggested that more flexible exchange rate regimes are associated with a more significant increase in economic growth following increased remittances. Indeed, the more globalized the economy is, the higher the chances of choosing a flexible regime. The study by Chang (2013) supported this argument.

The results suggested that although they are highly significant, inflation, current account balance, and trade openness have an ambiguous impact on the regime choice. Studies by Chang, 2013; Javoer, 2006; Papaioannou, 2003; suggested that inflation as a factor determining the choice of exchange rate regime is ambiguous. For Sri Lanka, no political stability, government stability, and elections are significant under political determinants. Among the control of corruption, law and order, and left-wing government, left-wing government is the robust determinant, while all three determinants are ambiguous under institutional quality determinants.

On the policy front, the findings suggested that the choice of exchange rate regimes should be made at a given time according to the degree of importance and the above-mentioned significant factors. As the findings suggest, economic size, trade openness, inflation, international reserves, personal remittances,

current account balance, and globalization are the highly significant factors determining the choice of an exchange rate regime in Sri Lanka. However, for Sri Lanka, none of the political stability determinants were robust as to the model. Left-wing government as a proxy for the government ideology was the only vital factor under institutional quality determinants.

6. Conclusion

The study checked whether there were any relationships among the independent variables, namely economic, political stability, and institutional quality determinants, with the dependent variable, exchange rate regime choice in Sri Lanka. Future academics interested in determinants of exchange rate regime choice should consider the suggestions: It is preferable to conduct models separately for each set of determinants. For instance, if you are supposed to test the economic, political, and institutional determinants, running three models is suggested due to the variation of the scale of measurements in the data set. After running the model, it is recommended to test the model's accuracy to identify to what extent the model is good at predicting the outcome. It is more credible if the researcher collects the data from the sources of which more period is available. It is suggested that if the reporting currency of a variable highly deviates from the other variables, scaling the variable is accepted. It is recommended that the researcher choose the independent variables from the previous studies that are more likely to impact the given country(s). It would be more credible if the researcher could select the base for categorizing the dependent variable from a reliable source of literature. The authors of this paper identified certain limitations, such as finding the latest references, data unavailability for some years resulting in omitting such years from the data set, etc. Future research can be conducted in specific areas, such as the impact of trade, external debt, and interest rates on the exchange rate regime choice.

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