

UNIVERSITY OF ANTWERP

FACULTY OF APPLIED ECONOMICS



**Political Influences on Exchange Rate
Regime Choice: Multinomial Logistics
Regression**

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Zeynep Kübra Şavran

Master of Economic Policy

Promoter:

Prof. Dr. Joscha Beckmann

ABSTRACT

This thesis examines the political influences on exchange rate regime and provides an empirical analysis for 148 countries. The time interval for the model is 1980 – 2015, and the model used is multinomial logistic regression.

The empirical results show that more democratic countries are more likely to implement flexible exchange regime. Left – wing party share in the parliament also increases the probability of implementing flexible exchange rate regime. On the contrary, more globalized countries less likely to implement flexible regime.

The estimations contain time effects as well as the regional dummies.

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1) Introduction

Monetary policies and politics have a strong relationship. Because economic policies are made by the policy makers. The political ideology mindset of politicians influence the economic policies. In this thesis, case of the economic policy is the exchange rate regime choices by the governments.

In the globalized world, exchange rate regimes are highly important aspects for the economies. The exchange rate regimes are the policies that authorities choose to manage the exchange rate system. There are a lot of economic determinants of the exchange rate regimes such as inflation rates, interest rates, economic performance, GDP, trade regulations, budget deficit, political stability, etc. The motivation of this thesis is to analyse the political side, the political influences on the exchange rate regime choice and test political variable's significance levels since economic policy can not be separated from politics.

Exchange rate regimes draw the path of real exchange rate appreciation and depreciations. The exchange rate affects many aspects in the economy. For instance, exchange rates are highly important for the trade and countries's budget deficits. Trade has always been a need in the world and in the current scenerio of the globalization, there is not any closed economies in the world. When the exchange rate is appreciating, the exports will decrease, imports will increase. Because the foreign goods and services will be cheaper, domestic goods and services will be more expensive. When the exchange rate is depreciating, imports will increase and exports will decrease. Because the domestic goods and services will be cheaper, and this situation will attract the buyers outside of the country.

Exchange rate regimes are one of the most important reason for financial crises. The central banks are responsible for the intervention of the exchange rate when countries follow fixed (pegged) exchange rate regime. When the exchange rate appreciating, central banks sells the foreign currency to the market, when it is depreciating, central bank buys foreign currency from the market. However, if domestic money appreciate extremely, then imports become cheaper, exports become more expensive. This situtation creates budget deficit. This is one of the biggest disadvantage of the fixed (pegged) exchange rate regime.

If we go back to political ideologies of the countries, one can easily see that the developed, democratic countries usually implements flexible exchange rate regime. On the other hand, the left – wing parties favor the flexible exchange rate regime more than the fixed exchange regime. These are all results from the ideological complexion of the parties. For instance left wing parties favor low unemployment levels and central bank independence depending on their ideology. However, low unemployment rates bring higher infilation rates. With the higher infilation rates, economies are less stable. On the other hand, left – wing parties favor low infilation rates rather than low unemployment rates. In this scenerio, one can assume that left wing parties are more likely to adopt flexible, right wing parties are more likely to drop fixed exchange rate regimes. In the estimation section, each variables explained and tested for the significance.

In the following section, the exchange rate regime types and the “impossible trinity” aproach are discussed. In the third section, the literature on politics and exchange rate regime relationship are reviewed. The fourth section, the data, model, variables and the methodology explained. The multinomial logit estimations are done and the results are presented. The last section concludes the thesis.

2) Exchange Rate Regimes and Classifications

Exchange rate regimes are the forms of how countries relate their own currency to the currencies in terms of the value of the money (Egilmez, 2012). Every money has two different values: domestic and international. Domestic usage of the money defines the ability of purchase within the country. If the goods and services that could be purchased with the fixed amount of money decreases continuously, it means that the domestic money is losing its value, which is called inflation. On the other hand, the international purchasing power of the money depends on the relationship between domestic money and the foreign money. The question of how the parities are determined, takes us to the exchange rate regime choices.

Exchange rate regimes fundamentally divided into two categories; fixed and flexible regimes. Fixed exchange rate regime is when Central Banks fix the value of the domestic money to the foreign money. Once the fixed exchange rate is determined, it stays the same until Central Bank fixes it again. Flexible exchange rate regime is when the parity of the money is defined by the financial markets (supply and demand). In this regime, the parity floats during the day.

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However, there are sub – categories in between these two fundamental regimes. Currency board regime and dollarization are a type of fixed exchange rate regime. The assumptions for fixed exchange rate regime are also valid for these ones. However, there are some differences. In currency board regimes the money supply depends on the foreign money inflow to the country. In dollarization, the domestic money is always fixed to the U.S. dollar.

In the floating regimes, if whether the Central Bank or other institutions do not have any interventions to the parity, this is called free float. Dirty float is when Central Bank controls the floating of the exchange rate. Sometimes, the Central Banks chose an interval for the exchange rate floating, and have interventions on exchange rate once it is no longer on the desired interval. When this is the case, it is called crawling band. The detailed classification of the exchange rate regimes by IMF in the IMF's annual report¹ (2014) are listed in the table 1 below. This classification is called “de facto classification”, and it is defined as “*classification system is*

¹ For more information available at : <https://www.imf.org/external/pubs/nft/2014/areaers/ar2014.pdf>

based on members' actual arrangements as identified by IMF staff, which may differ from their officially announced arrangements" by IMF.

Exchange Rate Regime	Type
Hard Pegs	<ul style="list-style-type: none"> - Exchange arrangement with no separate legal tender (dollarization) - Currency board arrangements
Soft Pegs	<ul style="list-style-type: none"> - Conventional peg - Pegged exchange rate within horizontal bands - Stabilized arrangement - Crawling Peg - Crawl – like arrangement
Floating Regimes	<ul style="list-style-type: none"> - Floating - Free floating

Table 1: Exchange rate regime classification by IMF.

Full flexible (floating) exchange rate regimes minimize the interventions of central banks, and this leads to an independent monetary policy. The other extreme example, perfectly fixed exchange rate regime allows the acts of central banks to protect the value of money and stabilize the economy.

The fixed exchange regime and the stabilized economy hints the credibility of central banks and the governments. Credibility allows more correct forecasts on the exchange rates for the next terms. This means that the uncertainty, therefore the cost of risks will decrease. (Beskaya & Ergun, 2015)

Bretton – Woods system is an example in the history for the dollarization exchange rate regime.

Bretton Woods system was basically a system where U.S. dollars were fixed against the gold in the early 1960's. This system's main motive was combining the advantages of both fixed and floated exchange rate regimes, i.e. the targets were stable exchange rate and independent monetary policy. (Bordo, 1993) However, in the late 1960's, high military spending (a political influence) of United States, threatened the system. United States did not have enough gold to cover the supply of dollar and dollar was overvalued as a result. The system has collapsed in 1971. The reasons was accelerating inflation rates all over the world that caused by accelerating United States inflation rates. After the collapse of the system, IMF countries were allowed to choose their exchange rate system independently, so the most countries started to float their exchange rate.

On the other hand, floating exchange rate regime hints the elasticity of monetary policy. Elasticity in here expresses the capability of defeating the shocks that occurred in international and domestic markets. In this regime, changes in the exchange rates fully express the adjustments that caused by the internal and the external shocks. The costs of this system are higher inflation rates and higher credibility loss. Therefore, in the fixed exchange rate regime, lower inflation targets will be possible, as long as the country adopts the fixed regime. However, this system also comes with a cost, the lack of elasticity.

The choice of exchange rate regimes indicates a trade-off between "elasticity" and "credibility". Governments have to decide adopting whether fixed or flexible exchange rate regimes depending on their domestic and international targets.

The priorities and goals of governments define the exchange rate regime choices. Political influences are highly important in this case. Because the policy makers are politicians and politics is highly related to the economics in this case. For instance, policy makers may be more likely to trying to sustain a credibility to get re-elected. The governments favor different goals in every country depending on their ideology, how they perform, or what are they targeting. In the literature review, detailed information is given about how governments and political parties act depending on different factors.

2.1) An Approach to the Exchange Rate Regime Choice : The Impossible Trinity

The impossible trinity (the policy trilemma) approach that has been proposed by Frankel (1999) and it is a developed version of Mundell – Fleming model. According to Frankel, there are two elements that have to be considered when choosing a exchange rate regime. First, subjective conditions such as products differentiation for every economy, nominal GDP, geographical position of a country and etc. Second, “impossible trinity” hypothesis that is valid for every economy, independently from the subjective conditions. This hypothesis claims that, a country can not target the following goals all together ; independent monetary policy, freedom of capital and stable foreign exchange rate. (fig. 1) One of those three targets have to be left out. In other words, it is impossible to choose independent monetary policy, stable foreign exchange rate and freedom of capital for one economy, because it will fail. If we set aside the freedom of capital; the choice of exchange rate regime will focus on this question : Is independent monetary policy or stable foreign exchange rate is more important in this economy? In this case, subjective conditions in the economy should be considered and put into use. According to the this hypothesis, in the new age which all the financial markets are integrated, the only alternative that countrys have is giving up one of the targets : exchange rate stability or independent monetary policy.

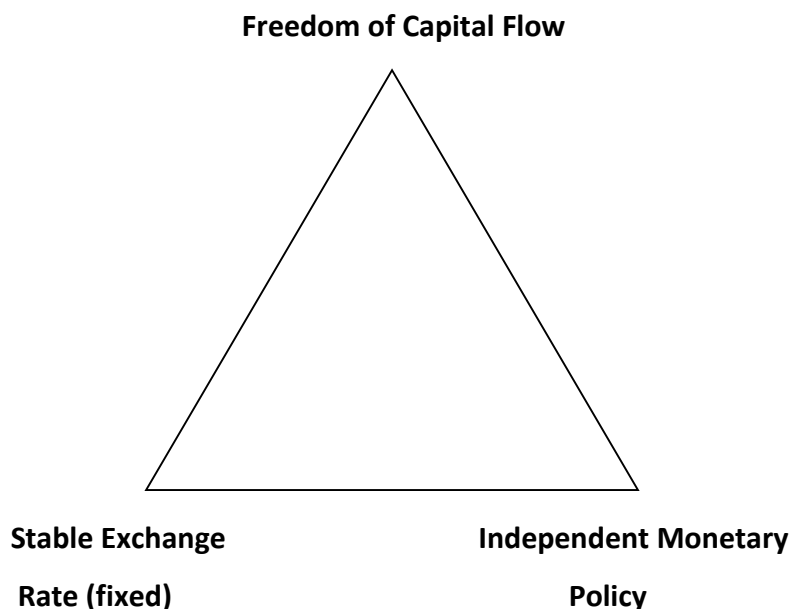


Figure 1 : Impossible Trinity Hypothesis

According to the Aizenman (2011), monetary independence can be used to stabilize the economy, however the policy makers might manipulate this (output movement). When the regime choice is considered in a broader frame, policy makers, and political influences come up to the picture. The inductions on policy makers are important topics to consider since the monetary policy is depending on the policy makers.

3) Literature Review

Leblang (1999) examines effect of domestic political institutions and politicians on the international policies and exchange rate commitments. In the democratic economies where the redistributive policies are important, those policies might conflict with the economic stability. When a high inflation occurs in an economy, policy makers must decide either to devalue currency or continue with the expansionary policies. When policymakers are insulated from the redistributive demands, they implement low inflation and stabilization policy to achieve their domestic goals.

Once countries fix their domestic currency to one another to protect trade volume and reduce risks, bilateral trades are not affected significantly by exchange rate volatility. Author points that, this situation is also the motive behind the European Monetary System.

One of the other problem is that policy makers' decisions might be biased due to their concerns about getting re-elected. He claims that policymakers' own targets play a crucial role on either adopting fixed or floating exchange rate regime. As a common knowledge, politicians are more likely to behave the way that will protect their offices for the next term. Leblang states clearly that the problem of the previous literature on this topic is the assumptions on the policy makers' behaviours. One cannot assume that it is exogenous and fixed.

The article claims that the democratic regimes are more likely to adopt flexible (floating) exchange rate regime. However, democracies are heterogeneous. In the globalized world, democratic electoral systems come in different forms; the system that depends on the proportion of the seats in the parliament and the system that only takes into account the majority of the vote shares. Leblang explains the logic between electoral systems and floating

exchange rate regime. Majoritarian electoral systems cannot risk failure on domestic targets since they are the ruling party and their failure would change the vote shares. This would be risking their offices for the next term. Because in majoritarian electoral systems, a small percentage of vote share might actually change the ruling party. This situation will lead them to prefer flexible (floating) exchange rate regime. In the proportional representation it will not be the case. Because the parties share the responsibility among them.

A failure of the government would not cost to only one party. As a result, fixed (pegged) exchange rate regime would be chosen. On the other hand, previous scholars² argue that proportional representations would adopt flexible exchange rate regime. Leblang supports the latter argument, so both proportional and majoritarian democratic regimes would adopt floating exchange rate regime. In sum, the paper claims that democratic regimes are more likely to adopt flexible (floating) exchange rate regime than the authoritarian regimes.

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The empirical analysis is done for the period 1974 – 1994 for 76 countries. Probit model is used for the panel data. Dependent variable, the exchange rate, is binary 0 and 1 whether it is floating or pegged. Independent variables are the country size, openness of the country, democracy index for political institutions to capture elections, domestic credit, real exchange rate shock, capital controls, international financial markets and party fractionalization.³ In the estimation results, democracy influences are significant. When the score of the democracy and open elections of a country increases, policymakers more likely to choose floating exchange rate regime. Open election countries are 10 percent more likely to adopt floating regime than the other. Proportional representation in democracies is also significant. Proportional representation countries are more likely to adopt flexible exchange rate regime than the majoritarian democracies. Party fractionalization is also jointly significant with the PR and

² Haggard and Kaufman (1992) argued that proportional representation in the democratic systems will lead them to adopt the floating exchange regime. The reason behind this argument is the small political parties that play a key role in the government coalitions. Increasing fragmentation in the parliament will increase the competition between the parties. As a result, political parties will prefer floating exchange rate regime in order to control domestic targets to reach their electoral targets.

³ Party fractionalization hereby stands for the number of the parties that are in the parliament, to capture the diversity.

elections. As a result, increasing party fractionalizing leads policymakers to adopt floating exchange regime more likely, because of the increasing competition between political parties, as mentioned before.

Broz and Frieden (2006) examined the aspects of political economy of exchange rates. The paper divides the ideology into two parts, “global” and “national” policies. In this context, those policies affect each other. Increasing globalization in the world have given broader meaning to the “international monetary policy” for the last 150 years. International monetary regimes can also be regional. For instance, Monetary Union in European Union area with the single currency and an existing common central bank. However, the article explains cooperation problems in international monetary policies such as incentives of governments to “cheat”. Joint policies require national sacrifices. When countries agree on the adjustments, then there will be more sustained, common fixed exchange rate regime for them. However we see in the history⁴ that there might be disagreements between countries. Equilibrium in *international* monetary policies could be consistent with such equilibriums as Nash or Prisoner’s dilemma⁵. A focal point embodied in IMF standards⁶ limitates the access for foreign exchange rate. This would benefit the members.

On the other hand, “the domestic political economy exchange rate policies” could be biased because of the electoral concerns. Politicians use exchange rate policy for manipulations to get themselves re-elected. For the domestic policies, fixed exchange rate regimes naturally reduce the exchange rate and this benefits trade, investments and domestic monetary stability. However, according to the author, left wing political parties favor flexible exchange rate regime more than right wing parties, since they ideologically attach more importance to redistribution and labour issues. By contrast, right wing parties favor fixed exchange rate more, because low inflation rates and economic stability are more important for them, since economic stability indicates a credible government. However, in some cases, when election time is approaching,

⁴ Disagreements between USA and EMU about implementing restrictive policies in the late 1960’s

⁵ Broz, 1997

⁶ IMF Articles of Agreement ; available at : <https://www.imf.org/external/pubs/ft/aa/pdf/aa.pdf>

left wing governments may also favor flexible exchange rate regime to gain economic stability i.e. government credibility, for the purpose of getting elected.

Broz and Frieden clearly states that the currency appreciation or depreciation problem is “*a trade-off between competitiveness and purchasing power*”⁷ Denmark and Poland could be considered to illustrate an example. Denmark and Poland use their own currencies, kroner and zlates. Danish kroner are much more appreciated (considering purchasing power parity) than the Polish zlates. This situation makes Polish tradable goods more competitive in the international market than the Danish tradable goods.⁸ In contrast, Denmark has more purchasing power than the Poland. As with the example, in the end, governments have to decide between increasing competitiveness or purchasing power in the international area when they influence the trend of the exchange rate.⁹

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An article by Berdiev, Kim and Chang (2011) examines political influences on exchange rate regime in developed and developing countries for the period of 1974-2004. Exchange rate regime determinants are defined as; political institutions, government ideology and globalization. Exchange rate regimes are classified as five different types.¹⁰ This paper claims that flexible exchange rate regimes allow countries to conduct their own monetary policy, which will lead generating trade surplus, since monetary policy will have significant influence on its determinants.¹¹

The method used in this article is multinomial logit regressions. In the full sample results, political ideology is positive and significant, which means left wing governments are more likely to adopt flexible exchange rate regime, since, as the theory says left wing governments’ favor

⁷Broz and Frieden, 2006, Handbook of Political Science, page : 593

⁸ Assumptions : only comparing the tradable goods that are the same goods with the same quality

⁹ Trend of the real exchange rate (in a way of appreciation or depreciation) However, governments may postpone their influence of depreciation, for the electoral purposes.

¹⁰ (1= inconclusive; 2=float; 3=dirty; 4=dirty/crawling peg; 5=fix)

¹¹ Level of employment, income, real exchange rate, trade surplus (Mundell, 1963)

monetary policy and economic growth. The results for government ideology are also consistent with the theory. Democratic regimes favor flexible exchange rate regime.

On the other hand, globalization, in other words, openness index, has a positive relationship with adopting flexible exchange rates, however, it has less effect on exchange rate than the other variables.

Kılavuz, Topcu and Tülüce (2007), did an empirical analysis on the choice of exchange rate in emerging markets. They use the three exchange rate regime types (fixed, floating and intermediate or inconclusive) which are categorized by Tiwari. The article relaxes the theoretical approaches on the exchange rate regime choices, which are impossible trinity, fear of floating and bipolar view.

In the analysis, they use data of 17 emerging market economies for the period of 1996-2006. The independent variables are; openness index of countries, growth rate, real exchange rate, inflation rate differences and capital inflows. However, the results are not in accord with the theory. While the existing theory says that the countries are less likely to choose fixed exchange regime when the openness is increasing, the openness variable is insignificant in the analysis results. On the other hand capital inflows are also statistically insignificant.

They also find that an increase in the growth rate and real exchange rate decreases the will for adopting the fixed exchange rate regime while the differences between inflation rates have an opposite effect. However, their analysis is only for the emerging market economies, the results may differ in a dataset that contains all economies.

The article by Milner (1999) analyses the political economy of the international trade. Since this article explains the effect of the behaviour of political institutions and policy makers' to the economic policy, (even though it is trade policy in this case) we are interested with the behavioural part of politicians in this article.

The article claims that politics have three sets of explanations for this. Domestic politics, political institutions and international politics. The article states that international politics are important because the large – scale changes in policies affect the trade structure.

In the globalized world (mostly after the World War II.), trade tariffs reduced from 6.3 % to 3.8 %, according to the World Trade Organisation. Naturally, the developments occurred in the international trade business after these significant changes in tariffs in the new open economy world.

The article states that the political preferences of politicians play a crucial role for the economic policy. However, Nelson (1998) argues that the structure of political institutions are more crucial than the preferences of policy makers. Because, political institutions aggregate the preferences and different institutions implement it differently. The paper also quotes Haggard & Webb (1994: 13);

“In every successful reform effort, politicians delegated decision-making authority to units within the government that were insulated from routine bureaucratic processes, from legislative and interest group pressures, and even from executive pressure.”

Many scholars argue that policymakers should be insulated from the pressure groups. However, this is not the case in real life. There are a lot of ways for policy makers to get corrupted. It could be thought as, politicians, in this case, policymakers could be considered as actors in the economy, like many others. Human behaviour in economics are usually serves the self – benefit system, which we call “rationalism” in economic. However, many would agree on that politicians should have the altruistic behaviour, since they are in charge to control policies in order to provide better system to the citizens. Since the politicians are also from one of us, they tend to have “self – benefited” or “rational” behaviours in order to get re-elected, or in corrupted economies, in order to gain money for themselves from the lobbying, pressure groups, or etc. Behavioural economics is important in this topic to understand the steps of the decision making of the politicians, but in this thesis we will not go in depth of this topic.

The author lastly points out that nature of the political parties, the structure of the government, the system of the parliament, and the behaviour of policy makers

(influences on the decisions caused by their target of keeping their offices by getting re-elected, interest groups, possible lobbying, self – benefits, corruption, altruism, etc..) Influence the

international trade as the political economy instruments. These instruments will also be considered in this analysis, as the political influences on the exchange rate regime.

4) Econometric Model and the Data Analysis

The data set type that used in this analysis is panel data. The time interval is between 1980 and 2015. The data set contains 148 countries¹² (however, unbalanced). Multinomial logit model is constructed due to specifications of the dependent variable. Basic logit models are the choice models between two different alternatives. However, in this case the choices are more than two, and then model becomes a multinomial choice model.

The exchange rate regime choices, Y_{it} , are the function of the governments, as they are chosen and implemented by the policy makers (governments). In this model "i" represents countries and "t" represents years. The dependent variable takes five different values, since it is a choice variable. The X_{ij} represents the independent variables in the analysis.

The multinomial logit models assume that each independent variable have a single value for each case and dependent variable cannot be predicted perfectly. This type of models also assume that there is no need for independent variables to be statistically independent from each other. Another important assumption is that the choices are not dependent to each other. For instance, choosing one choice is not a reason of presence or absence of another alternative.

The basic econometric multinomial choice model can be written as:

$$Y_{ij} = \alpha + \beta_j \cdot X_{ij} + \Omega_i + \epsilon_{ij} \quad (1)$$

Where i represents the government i (country) and j represents the exchange rate regime they choose. The β 's are the coefficients of each dependent variable X. It is assumed that Ω_i is the individual specific effects (aggregated) and ϵ_{ij} 's are the stochastic error terms. If we assume each coefficient β represents each outcome, then the probabilities of each government i to choose each regime j will be:

¹² List of countries presented in Appendix 1.

$$P(y=1) = \frac{e^{X\beta(1)}}{e^{X\beta(1)} + e^{X\beta(2)} + e^{X\beta(3)} + e^{X\beta(4)} + e^{X\beta(5)}} \quad (2)$$

$$P(y=2) = \frac{e^{X\beta(2)}}{e^{X\beta(1)} + e^{X\beta(2)} + e^{X\beta(3)} + e^{X\beta(4)} + e^{X\beta(5)}} \quad (3)$$

$$P(y=3) = \frac{e^{X\beta(3)}}{e^{X\beta(1)} + e^{X\beta(2)} + e^{X\beta(3)} + e^{X\beta(4)} + e^{X\beta(5)}} \quad (4)$$

$$P(y=4) = \frac{e^{X\beta(4)}}{e^{X\beta(1)} + e^{X\beta(2)} + e^{X\beta(3)} + e^{X\beta(4)} + e^{X\beta(5)}} \quad (5)$$

$$P(y=5) = \frac{e^{X\beta(5)}}{e^{X\beta(1)} + e^{X\beta(2)} + e^{X\beta(3)} + e^{X\beta(4)} + e^{X\beta(5)}} \quad (6)$$

When the base outcome is chosen in logit regression, the more frequent one is determined as the base outcome (unless it is not changed by the user for different reasons). The base outcomes are assumed to be statistically zero, for instance if the fifth outcome (pegged outcome) happens to be the base outcome:

$$\beta(5) = 0 \quad (7)$$

$$P(y=5) = \frac{1}{1 + e^{X\beta(2)} + e^{X\beta(3)} + e^{X\beta(4)} + e^{X\beta(5)}} \quad (8)$$

And the relative probability of the $y = 2$ (floating outcome) will be:

$$\frac{P(y=2)}{P(y=1)} = e^{X.\beta(2)} \quad (9)$$

Balanced panel datasets contain all observations in all the time dimensions. In this case, the data set is not balanced. Unbalanced data set means that there are some missing observations i.e. not every countries have data for all years. There are additional error terms " u "¹³ in unbalanced panels. However, the dataset still runs.

Dependent Variable: This thesis follows the methodology of Berdiev, Kim & Chang (2011) when constructing the dependent variable. The exchange rate regime choice variable is the dependent variable (Y_{it}). In order to have better results, exchange rate regimes are not taken only as the very basic classification (fixed and flexible). The exchange rate classification method from IMF is used and dummy variables constructed as exchange rate regime types. These values are 1 for inconclusive, 2 for floating, 3 for dirty, 4 for dirty / crawling and 5 for fixed exchange rate regime. For: $Y_i, t = k$

- $k = 1$; if country i implements inconclusive exchange rate regime in the period of t
- $k = 2$; if country i implements floating exchange rate regime in the period of t
- $k = 3$; if country i implements dirty exchange rate regime in the period of t
- $k = 4$; if country i implements dirty / crawling exchange rate regime in the period of t
- $k = 5$; if country i implements fixed exchange rate regime in the period of t

¹³The additional error term can be modelled as $u = \mu u + v$, where as the first term is mean of random error distribution and v is the random error.

Explanatory variables: The right hand side of the analysis contains explanatory (independent) variables and control variables to explain exchange rate regime. The independent variables in this thesis are the political influence variables, which constructed from the political economics theory and the literature review.

First political variable is the democracy index variable (pol) where countries get scores on how democratic they perform. These democracy scores are between -10 and 10, where 10 represents full democracy and -10 represents dictatorship. Every country has a value between -10 and 10 depending on their democracy scores.

In order to capture the ideological complexion of government and parliament, the left power variable (leftness) is added to the analysis. With this variable, the left power of the parliament is measured. This variable has values from 0 to 100 depending on their left power in the parliament. The value 100 means that, the parliament is ruled by majoritarian system, and the ruling party is the left wing party. When the value is 0, it means that the parliament is also ruled by majoritarian system, and the ruling party is the right wing party. When the value is between 0 and 100, it means that the parliamentary system is proportional representation, and the value of the number expresses the proportion of the left wing party in the parliament.

Globalization is captured with the openness variable (open) for the analysis. Globalization index is measured by summation of export and imports of a country, divided by their GDP. This measure give us opinion on their openness in the globalized world. When the value of this index is higher, it means that trade is an important influence on the domestic activities in one's economy, and also, larger number is interpreted as a stronger (larger) economy.

According to the theory, (Leblang, 1999), the type of governments also play a role for the exchange rate regime choice as a political influence. The type of government (ToG) variable is also captured in this analysis as a dummy variable with the values from 1 to 6. The values are consecutively, single party system (when one party takes all government seats), minimal

winning coalition (all participating parties are necessary to form the governments), surplus coalition (comprises those coalition governments, which exceed the minimal – winning), single party minority (the party in government does not possess a majority in parliament), multi-party minority (the parties in government do not possess a majority in parliament) and caretaker government (the government formed is not intended to undertake any kind of serious policy – making).

Control variables : The non - political determinants of exchange rate regime choice should be added to the analysis as control variables. The first control variable is the logarithm of gross domestic product to capture the size of economies. The values are constant to 2005 prices (UNCTAD Statistics). On the other hand, the growth of GDP per capita is used. According to the Optimum currency area approach, the development of economics affects the flexibility of the exchange rate regime positively. In this theory, it is better to adopt fixed exchange rate regime for smaller economies, and when economies are emerging, the probability of choosing flexible exchange rate regime will be increased. Inflation rates are also added to the analysis in order to capture the annual percentage changes of consumer prices. The logarithm of population size is denoted for the size of the country.

A historical explanatory variable is included to test its effects. Since the wars and conflicts have huge impact on the economies and the politics, a variable “war” added to the analysis. War is a binary dummy variable and it captures the conflicts in the history. When the value is 1, there were minor conflicts for that country and when the value is 2, there were larger conflicts. The summary of all variables used in the analysis are listed in *table 2*.

Variable	Description	Source
Dependent Variable exrls_5	5 – Ways de facto classification. 1=inconclusive, 2= float, 3=dirty, 4=dirty/crawling , 5= fixed	IMF
Independent variables Political variables		
<i>pol</i>	Democracy index between -10 and 10 where 10 is the best democracy.	Polity 4
<i>LeftPower</i>	Ideological Complexion of Government and Parliament. The score has values between 0 and 100 where 0 is no left power and where 100 is complete left power in the parliament.	World Bank Data
<i>open</i>	Openness index. (Yearly / average) This index calculated as (imports + exports) / GDP.	UNCTAD
<i>ToG</i>	type of government 1 = single party government 2 = minimal winning coalition 3 = surplus coalition 4 = single party minority 5 = multi party minority 6 = caretaker government	Party Government Data Set
Historical variable : <i>war 1</i>	Distinction into minor / large conflicts 1 = minor and 2 = large conflicts	Uppsala Conflict Data Program
Macro Variables : <i>inf & inf1</i>	Inflation rates. inf variable is for consumer prices and inf1 is a gdp deflator. (2005 prices are fixed) yearly inflation / yearly average.	WDI
<i>lgdpc</i>	The logarithm of GDP The growth of GDP per capita	UNCTAD

<i>gdp</i>	The logarithm of the population.	UNCTAD
<i>lpop</i>		UNCTAD

Table 2: Descriptions and sources of the dataset.

Descriptive statistics of variables and distributions of data are shown below in the tables before the regressions, in order to have some general idea about the variables and the model. In the Table, the distribution of the dataset due to dependent variable is shown. As seen on the table, countries adopted mostly fixed exchange rate regime (61 %) followed by the floating exchange rate regime (19,55 %).

exrls_5	Freq.	Percent	Cum.
1	63	1.77	1.77
2	697	19.55	21.32
3	261	7.32	28.64
4	365	10.24	38.88
5	2,179	61.12	100.00
Total	3,565	100.00	

Table 3 : Distribution of dependent variable

Variable	Obs	Mean	Std. Dev.	Min.	Max.
exrls_5	3565	4.093969	1.271672	1	5
pol	5096	1.756868	7.207996	-10	10
ToG	1012	2.585217	1.196881	1	6
open	5376	86.39741	63.73155	12.40783	1514085
LeftPower	5342	28.91111	42.12104	0	100
war1	3102	.3887814	.6462577	0	2
lgdppc_ini	6406	8.026109	1.622516	4.393728	11.39207
lpop	6858	7.773882	2.727089	-.3202053	14.11839
gdp	6398	3.545219	7.021601	-66.11992	165.2914
inf1	5871	45.24722	529.0628	-32.81441	26762.02

Table 4 : Summary of descriptive statistics

In multinomial logit model, there are no assumptions as normal distribution, homoskedasity and linearity. Testing for normality is nor necessary in this case. As we see in the descriptive statistics (Table 4), the mean of left power in the world is quite low, so the center of our data is more to the right wing party side. However the standart deviation is quite high, so there are outliers (left

party ruling countries in the world). On the other hand, openness index vary a lot among countries, due to its calculation method (GDP, imports and exports vary quite a lot among the countries in the world, as well). Same as other political variables, democracy index¹⁴ (center of the data is more to the democracy side) and type of government (ToG) is also very heterogenous. Descriptive statistics give us a general opinion about means and deviations before the regressions in order to illustrate their distribution in the world.

The reason of the high heterogeneity is the data selection. If we have chosen groups of countries (for instance, developed countries), then there would be less heterogeneity in the dataset.

In the table 5, the data set is constraint to the Europe. When only european countries are taken to the statistics, it is clear that the data is more homogenous. Especially it is very clear that the mean of democracy scores (pol) are very different. For the whole sample, the mean of democracy score is 1.756868, which indicates very poor democracy (flawed democracy) and in the european case, the mean is 9.757447 which indicates full democracy. Distribution of the left wing parties in the parliament is also higher in european countries than the full sample. Not suprisingly, the mean of the log GDP is also larger in the Europe.

Variable	Obs.	Mean	Std. Dev.	Min	Max
pol	470	9.757447	.5699455	8	10
ToG	433	2.640718	1.281369	1	5.649315
open	457	94.13489	49.59525	29.61124	280.6237
LeftPower	478	37.62928	41.83125	0	100
war1	66	.2575758	.4406501	0	1
lgdppc_ini	479	10.08145	.5707542	8.294621	11.39207
lpop	479	9.164931	1.445639	5.897288	11.09991
gdpg	479	2.327778	3.276747	-17.72921	11.49555
inf1	458	4.036303	4.293727	-4.639313	27.21275

Table 5 : Summary of Descriptive statistics for European Countries

¹⁴ See the democracy index by Economist that are quite heterogenous : http://www.economist.com/media/pdf/DEMOCRACY_INDEX_2007_v3.pdf

The theory behind the method that is used for this analysis is fixed effects. Fixed effects method is used in panel data analysis when we analyse the effect of variables that vary over time. By employing the fixed effects with multinomial choice model, we counter the omitted variable bias. In this panel, each political system in countries have its own characteristics and impacts within the countries. Fixed effects do not assume that there is no correlation between the error terms of countries and the predictor variables. With the fixed effects method, we can analyse the net effects of the explanatory variables on the exchange rate regime as we clear the effects of the time – invariant variables. Another assumption is that time invariant variables are different for each variable, and they are not correlated with each other. When this assumption is violated, fixed effects method will not be suitable for this analysis anymore. However, since it is a multinomial choice model, fixed effects are not applied directly in this thesis. Time effects are also considered, as well as the regional effects to the outcome. Because when the sample is too big, there might be endogeneity in the analysis. Since there are a lot of countries, they differ a lot in terms of politics, history (colonizations, wars, etc.), regional specifics, economics and etc. Fixed effects method is tried to captured with time invariant dummies. Because all these aspects might be correlated with the outcome. The main reason is the heterogeneity between the countries.

First the model is analysed without time – invariant effects. These results are not robust, because it violates the heterogeneity among the countries. However they are estimated in order to have a general idea beforehand. The results are in the table 6.

5th outcome (fixed exchange rate regime)

exrls_5	Coef.	Std. Error	z	P > z
Left Power	-.216387	.0090903	-2.38	0.017**
pol	.305878	.2687223	1.14	0.255
open	.055296	.0382031	1.45	0.148
ToG	.1339392	.3133264	0.43	0.669
war1	-1.872769	.7832452	-2.39	0.017**
gdpg	-.0762862	.1371276	-0.56	0.578
lgdppc_ini	-.3879374	.5045622	-0.77	0.442
lpop	.094009	.5468042	0.17	0.863
inf1	-.011558	.0145146	-0.80	0.426
_cons	-3.531712	9.066969	-0.39	0.697

Legend:

** significant variables at 5 %

* significant variables at 10 %

Table 6 : Estimation with multinomial logit, without time-invariant effects.

Floating exchange regime have been taken as the base outcome. Table 6 only shows the results for the 5th outcome. However, in the first outcome (inconclusive), no variable is significant. For the rest of this analysis, inconclusive outcome will not be discussed. For the third and fourth outcome, only the macro variables are significant.

When we look at the fifth outcome, fixed exchange regime, the LeftPower and war1 variable is significant as expected. The left power of the government has negative effect, which is consistent with the theory. The increase of left party share in the parliament, decrease the possibility of choosing fixed exchange rate regime by the governments. The results are the same for the war1, the increase of the effects (damages) that caused by wars in the history, decreases the possibility for governments to choose fixed exchange rate regime.

In multinomial logit, coefficients cannot be interpreted by the outcome. Marginal effects have to be calculated in order to see the volume of the effects. However, these results cannot be trusted since the dataset is too large, and the time - invariant effects are not considered yet. In large datasets, there is a high chance for countries to be very heterogeneous from each other.

In order to capture the differences¹⁵, regional dummies is used. On the other hand, for controlling the common economic or political shocks in the past, time effects are added to the estimation. Since the data set is not linear, both regional dummies and time effects are playing the “fixed effects method” role in multinomial logit in this thesis in order to have robust results.

The regional dummies are North America1, North America2, Latin America, Europe¹⁶ (two types), Nordic Countries¹⁷, Middle East¹⁸, East Asia, Africa and Commonwealth of Independent States (former Soviet Union members). With regional dummy variables included, the new estimation results are presented in Table 7. The estimation takes 5th outcome as the base outcome.

exrls_5	Coef.	Std. Error	Z	P > Z
pol	.1123962	.015599	7.21	0.000**
open	-.0193754	.0034824	-5.56	0.000**
LeftPower	.047954	.0020459	2.34	0.019**
war1	.4745399	.1318632	3.60	0.000**
lpop	.3745688	.071497	5.24	0.000**
gdpg	.0490844	0.173928	2.82	0.005**
lgdppc_ini	.5476616	.0972288	5.63	0.000**
inf1	-.0066446	.0025009	-2.66	0.008**
namerica1	0 (omitted)			
namerica2	-.7328002	.3027675	-2.42	0.016**
middleeast	-1.268016	.3644382	-3.48	0.001**
latin	.3566264	.3219279	1.11	0.268
nordic	0 (omitted)			
europa1	2.892291	.7855866	3.68	0.000**
europa2	-1.919267	.561018	-3.42	0.001**
afr	-.2110356	.2095423	-1.01	0.314
easia	.6235097	.5206622	1.20	0.231
cis	.0055863	.799844	0.01	0.994

Legend : ** indicates the variable significance at 5 %

¹⁵ Individual specifics Ω_i . See eq. 1

¹⁶ Europe dummy variable is divided as Europe1 and Europe2. The reason is the heterogeneity among the whole Europe. They are divided considering not only the geographical reasons, but also their GDP level.

¹⁷ Scandic countries are divided from the europe dummy, because they hold the highest levels of democracy scores and the relation with the other political variables.

¹⁸ Note that Cyprus and Turkey are in the middle east but they are excluded from the middle east dummy variable due to political heterogeneity. They are both included in the Europe1 variable.

Table 7 : Estimation results, multinomial logit model with regional dummies for the 2nd

The list of countries that are in the regional dummies presented in the *Appendix 1*.

Estimation Results : As the estimation took the 5th outcome as the base outcome, the results are interpreted from the 2nd outcome, which is the probability of choosing the flexible exchange regime. (For the 3rd and 4th outcome, see Appendix 2.) All of the explanatory variables that constructed in the data section are significant and in consistent with the theory. The type of government is omitted from the analysis manually, because of the collinearity reasons with the regional dummy variables. (In the first estimation, it was not significant either)

The first political variable, democracy scores (pol) indicates that more democratic countries are more likely to choose flexible exchange rate regime. On the other hand, increasing left party shares in the parliament, increases the probability of implementing the flexible exchange rate regime. As explained in the literature review section, left wing parties favor independent monetary policy more (see Impossible Trinity). These results are in line with the results from Berdiev, Kim & Chang, 2012. However, the effect of the democracy score is higher than the effect of the left party share in the parliament. The variable open shows that the more globalized countries are less likely to implement flexible exchange rate regime.

The historical variable war1, indicates that countries that have more damage from wars in the past, are more likely to implement the flexible exchange rate regime.

The Macro variables are all significant as expected since they are taken from the theory. As seen on the table, log of GDP is significant. Countries who have higher GDPs are more likely to implement flexible exchange rate regime.

Growth of the GDP is also significant, and countries who have higher growth of GDP, are also more likely to implement flexible exchange rate regime. However, the growth of GDP has less effect on probability of choosing flexible exchange regime than the log of GDP levels. The size of the population also significant and increasing population indicates increasing probability of choosing the flexible exchange rate regime. These results were also highly expected considering the Optimum Currency Area approach. The approach indicates that for smaller (also small GDP

growth) countries, it is better to implement fixed exchange regime, and for emerging countries it is better to implement flexible exchange rate regime. It is the same case for the population variable. The population is considered in order to capture the size of the country. However, in this situation we assume a positive relationship between the land and the population. This is not always the case and there are exceptions in the world (For instance, larger country and smaller population, or very large population but not very large country). This population variable could be developed in the literature for the next researches.

Inflation effects are also consistent with the theory. According to the estimation results, when inflation rates increase, the probability for government i to adopt flexible exchange rate regime in time t decreases. This results are in accord with the impossible trinity approach. When the inflation rates are high, the governments will favor stable economy before independent monetary policy. Because the priority will be stabilizing the economy.

The regional dummy variables vary when it comes to significance. First of all, the variables Nordic and North America (U.S. & Canada) are omitted from the estimation because of the collinear relation. Africa, Eastern Asia, Commonwealth of Independent Countries and Latin America dummies are not significant. This means that being a country “ i ” in one of those countries, do not affect the probability of implementing the flexible exchange rate regime. On the other hand, Middle East is significant. Being a country “ i ” in the Middle East, decreases the probability of adopting the flexible exchange rate regime. Considering the low level of democracy scores and left power in the parliament, these results were also expected. The other significant region is the North America (except U.S. and Canada). Being a country “ i ” in North America decreases the probability for policy makers to choose flexible exchange rate regime.

The last two significant regions are Europe1 and Europe2. Europe 1 represents Eastern Europe, and Europe 2 represents the Western Europe. The results for Eastern Europe indicates that, Eastern European countries are more likely to implement flexible exchange rate regime. However, for Europe2, being a country “ i ” in Western Europe decreases the probability of implementing flexible exchange rate regime. These results were not expected but when the 3rd outcome from the estimation is considered, it is clear that being a country “ i ” in Western Europe

increases the probability of implementing dirty exchange rate regimes. (See table 8)

exrls_5	Coef.	Std. Error	Z	P > Z
europe2	2.735766	.9127836	-3.00	0.003 **

Table 8 : Estimation results for the 3rd outcome for Europe2 (dirty exchange rate regime)

As discussed before, time effects are also added in the analysis in order to capture the common shocks among the countries. The significant years are listed in the table 9.

	Coef.	Std. Error	Z	P > Z
1997	1.240379	.5756503	2.15	0.031 **
1999	1.153264	.5844585	1.97	0.048 **
2000	1.140334	.5764243	1.98	0.048 **

Table 9 : Estimations results when time effects are included. (i.Year) Note that only significant years are listed.

As seen on the table, years 1997, 1999 and 2000 are significant. It means that there are some common shocks that happened to a group of countries in those years that affected the estimation results. After a literature check, the reason found is more likely the financial crises that occurred in the Eastern Asia in 1997. In June 1997, the crisis started in the Thailand. Central Bank of the Thailand floated after failing to protect the currency from speculative attack. (The Economist, July 4th 2007) This situation triggered the financial and economic crisis, and it spread to the other countries in the region quickly (Indonesia, Malaysia, South Korea, Hong Kong). As the Economist states :

“ If factors such as exchange-rate policies had helped to precipitate the financial crisis, above all it was excessive and poorly supervised foreign borrowing that made it so disastrous.”

Marginal Effects : In the estimation results, the coefficient is positive. It means being one of those countries who had this financial crisis increased the probability of choosing fixed exchange rate regime. (The base outcome in the estimation was the 5th outcome)

After checking the significance for our variables, the numeric significances are checked. In multinomial logit regressions, one cannot interpret the coefficients as they are in the estimation. The marginal effects (odds ratios) have to be calculated in order to interpret the coefficients. The reason behind that is the construction of the equations (see eq. 9). For the calculations, the

exponential function of the multinomial logitics regression estimation results ($e^{X \cdot \beta(2)}$) are calculated.

According to the odds ratios, one unit increase in the democracy scores indicates 11 % higher probability to implement flexible exchange rate regime relative to the fixed exchange rate regime. ($\exp|0.1123|$). The countries whose governments have one unit higher than left power, are 4 % ($\exp|0.04|$) more likely to choose flexible exchange regime rather than the fixed exchange rate regime. On the other hand, unit increase of the openness index indicates 2 % ($\exp|-0.0193|$) decreasing probability of choosing the flexible exchange rate regime. The effects of war interpreted differently since it is a dummy variable. When a country had more damage and conflicts from the previous wars ($\text{war1}=2$) they are 60 % ($\exp|0.4745|$) more likely to implement the flexible exchange rate regime relative to the fixed one.

For the macro variables, one unit of inflation increase in the country i , decreases the probability of that country to adopt the flexible exchange rate regime by 6,3 % ($\exp|-0.006644|$). On the other hand, the 1 unit increase in the growth of GDP increases the probability for the government i to implement flexible exchange rate regime by 5 %. ($\exp|0.0490|$). When the GDP levels are increased by 1 %, the likelihood of choosing flexible exchange rate regime increases by 72 % ($\exp|0.54766|$). As mentioned previously, the log of gdp also increases the probability of adopting flexible exchange rate regime, however the effect is higher than the growth of GDP. The other explanatory variable, the log of population size, increases the likelihood for flexible regime by 45 % ($\exp|0.3745|$) when it increases by 1 unit.

The marginal effects of regional dummies are listed below ;

- Being a country "i" in North America (except U.S. and Canada) decreases the probability of implementing flexible exchange rate regime by 48 % ($\exp|-0.07328|$)
- Being a country "i" in Middle East decreases the probability of implementing flexible exchange rate regime by 28,1 % ($\exp|-1.2680|$)
- Being a country "i" in Latin America does not affect the probability of implementing flexible exchange rate regime

- Being a country “i” in North America (U.S. and Canada) does not affect the probability of implementing flexible exchange rate regime
- Being a country “i” in Nordic area does not affect the probability of implementing the flexible exchange rate regime.
- Being a country “i” in Commonwealth of Independent States does not affect the probability of implementing flexible exchange rate regime
- Being a country “i” in Eastern Asia does not affect the probability of implementing flexible exchange rate regime.
- Being a country “i” in Africa does not affect the probability of implementing flexible exchange rate regime
- Being a country “i” in Eastern Europe increases the probability of implementing flexible exchange rate regime by 180 % ($\exp|2.8922|$)

5) Conclusions

This thesis examines the effect of political influences on the exchange rate regime choice. In order to capture political influences, four different political variables used. Those are democracy index, globalization index, the level of left power in the parliament and type of the government. However, in empirical results type of government had to be eliminated for methodological reasons. The other political variables are perfectly significant and are in line with the theory. This thesis provides an empirical evidence for their significance levels.

The macro and historical variables are also added to the analysis as control variables for model to be more explanatory. In order to capture the country specifics, the regional dummies are added to the analysis. For the aim of including the effects of common financial shocks in the past, time effects are added. Another regression has estimated and the empirical results indicates that being North America and Middle East decreases the probability of choosing flexible exchange rate regime, in contrary, being Eastern Europe increases the probability.

The results for the political variables are in line with the theory. The results shows that, countries

who are more democratic, countries who have more left wing party share in the government are more likely to choose flexible regime. On the other hand, more globalized countries favor fixed exchange rate regime more.

The GDP levels and the growth of GDP variables show that developed countries, emerging markets favor flexible exchange rate regime. The size of population variable indicates that bigger countries are more likely to implement flexible exchange rate regime.

To sum, not only macro variables, but the political variables have significant effects on the monetary policy. Ideological complexion of government and parliament, political institutions, globalization are the fundamental determinants in exchange rate regime choice.

The full list of the 148 countries used in the regression (Full sample)

Afghanistan	Cuba	Kazakhstan	Oman
Albania	Cyprus	Kenya	Pakistan
Algeria	Czech Republic	Kosovo	Palestine
Andorra	Dem. Rep. Congo	Kuwait	Panama
Angola	Denmark	Latvia	Papua New Guinea
Argentina	Dominican Rep.	Lebanon	Paraguay
Armenia	Ecuador	Liberia	Peru
Australia	Egypt	Libya	Philippines
Austria	El Salvador	Liechtenstein	Poland
Azerbaijan	Estonia	Lithuania	Portugal
Bahamas	Ethiopia	Luxembourg	Puerto Rico
Bahrain	Fiji	Macau	Qatar
Bangladesh	Finland	Macedonia	Republic of Vietnam
Belarus	France	Madagascar	Romania
Belgium	Gambia	Malaysia	Russia
Belize	Georgia	Maldives	Rwanda
Benin	Germany	Mali	San Marino
Bermuda	Ghana	Malta	Saudi Arabia
Bhutan	Greece	Mayotte	Senegal
Bolivia	Greenland	Mexico	Serbia
Bosnia and Herz.	Guatemala	Moldova	Singapore
Brazil	Guinea	Monaco	Slovakia
Brunei	Haiti	Mongolia	Slovenia
Bulgaria	Honduras	Montenegro	Somalia
Burundi	Hong Kong	Morocco	South Africa
Cambodia	Hungary	Mozambique	South Korea
Cameroon	Iceland	Myanmar	South Sudan
Canada	India	Namibia	Spain
Central Afr. Rep.	Indonesia	Nauru	Sri Lanka
Chad	Iran	Nepal	Sudan
Chile	Iraq	Netherlands	Suriname
China	Ireland	New Zealand	Sweden
Colombia	Israel	Nicaragua	Switzerland
Congo	Italy	Niger	Syria
Costa Rica	Jamaica	Nigeria	Taiwan
Cote d'Ivoire	Japan	North Korea	Tajikistan
Croatia	Jordan	Norway	Tanzania
Thailand	Tunisia	Turkey	Turkmenistan
Uganda	Ukraine	United Arab Emirates	United Kingdom
United States	Uruguay	Uzbekistan	Venezuela
Western Sahara	Yemen	Zimbabwe	

The list of countries in regional dummy variables. (Only the significant ones are listed)

Eastern Europe

Belarus
Bulgaria
Croatia
Cyprus
Czech Republic
Estonia
Greece
Hungary
Latvia
Lithuania
Moldova
Montenegro
Poland
Romania
Serbia
Slovenia
Turkey
Ukraine

North America

Antigua and Barbuda
Bahamas
Barbados
Belize
Costa Rica
Cuba
Dominica
El Salvador
Grenada
Guatemala
Haiti
Honduras
Jamaica
Mexico
Nicaragua
Panama

Middle East

Bahrain
Egypt
Iran
Iraq
Israel
Jordan
Kuwait
Lebanon
Oman
Palestine
Qatar
Saudi Arabia
Syria
United Arab Emirates
Yemen

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