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# Determinants of the Choice of Exchange Rate Regime in Resource-Rich Countries\*

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## Abstract

This research studies the specific determinants of the choice of exchange rate regime in resource-rich countries. We run multinomial logit regressions for an unbalanced panel data set of 145 countries over the 1975-2004 period. We find that resource-rich countries are more likely to adopt a fixed exchange rate regime compared to resource-poor countries. Furthermore, we provide evidence that output volatility contributes to the likelihood of choosing a fixed exchange rate regime positively in resource-rich countries and negatively in resource-poor countries. We believe that in resource-rich countries a fixed exchange rate regime is mainly preferred due to its stabilization function in the face of turbulent foreign exchange inflows. Moreover, our results reveal that the role of democracy and independent central banks in choosing more flexible exchange rate regimes is stronger in resource-rich countries. In resource-rich countries that possess non-democratic institutions and non-independent central banks, the government is less accountable in spending natural resource revenues and fiscal dominance prevails. In this situation, fluctuations in natural resource revenues are more easily transmitted into the domestic economy and therefore a fixed exchange rate becomes a more favorable option.

*Keywords:* monetary policy, exchange rate regime, natural resource-rich countries.

*JEL classification:* E52, E58, Q3.

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## Abstrakt

Tento výzkum studuje specifické příčiny volby kurzového režimu v zemích bohatých na zdroje. Využíváme multinomické logitové regrese pro nevyvážená pan-elová data ze 145 zemí mezi lety 1975 a 2004. Zjistili jsme, že země bohaté na zdroje s větší pravděpodobností přijímají pevný kurzový režim v porovnání se zeměmi chudými na zdroje. Dále poskytujeme evidenci, že volatilita výstupů přispívá k pravděpodobnosti výběru režimu pevného kurzu pozitivně v zemích bohatých na zdroje a negativně v zemích chudých na zdroje. Věříme, že v zemích bohatých na zdroje je fixní kurzový režim preferovaný zejména kvůli své stabilizační funkci v prostředí turbulentních devizových příjmů. Navíc naše výsledky odhalují, že role demokracie a nezávislosti centrální banky při výběru pružnějšího kurzového režimu je silnější v zemích bohatých na zdroje. V zemích bohatých na zdroje, které disponují nedemokratickými institucemi a závislou centrální bankou, je vláda méně odpovědná za utrácení příjmů z přírodních zdrojů a převládá fiskální dominance. V této situaci jsou výkyvy v příjmech z přírodních zdrojů jednodušeji přeneseny do domácí ekonomiky, čímž se pevný kurz stává příznivější možností.

# 1 Introduction

In the economic literature much attention has been devoted to the choice of exchange rate regime. Often policymakers are challenged to choose between a fixed exchange rate regime, which may provide trade gains and “policy crutch”, and a floating exchange rate regime, which does not undermine the independence of monetary policy and accommodates the terms of trade shocks. The problem of choosing an appropriate exchange rate strategy is even sharper in resource-rich countries (RRCs) that are exposed to large and volatile foreign exchange inflows. There is empirical evidence that fuel exporters are more likely to have a pegged exchange rate regime (Klein and Shambaugh, 2009). Such behavior may have a rationale, as a natural resource exporting economy facing volatile and huge foreign exchange inflows may benefit from pegging its currency to the dollar (Aliyev, 2012<sup>1</sup>) or to the oil price (Frankel, 2003). Questions then arise as to whether RRCs benefit from extra stabilization advantages of pegging and what determines the choice of exchange rate regime in these countries. To our knowledge there is no empirical study that focuses on these questions.

The main objective of this research is to address these questions by focusing on the specific determinants of the choice of exchange rate regime in RRCs. Given the nature of the dependent variable, which is a categorical variable that defines different exchange rate regimes, we run multinomial logit regressions for an unbalanced panel data set of 145 countries over the 1975-2004 period. We incorporate different theories that are trying to explain the determinants of exchange rate regime. Besides various variables from the literature, our study also includes additional variables that could be interesting from the point of view of RRCs. We expect that a specific set of variables, such as democracy, output volatility, central bank independence, and fiscal discipline may affect the choice of exchange rate regime differently in RRCs. To check this expectation we analyze the multiplicative effect of these

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<sup>1</sup>Aliyev (2012) in a theoretical framework predicts that, under certain conditions pegging the exchange rate allows the softening of the negative effects of Dutch Disease and partially stabilizes the economy in the face of volatile natural resource revenues.

variables with a resource-richness variable on the choice of exchange rate regime.

The remainder of the paper is organized as follows: The next section reviews the theories of the determinants and classification of exchange rate regimes and discusses some important issues related to exchange rate regimes in RRCs. Section 3 describes our methodology and data. The results and findings are presented in section 4 and section 5 concludes.

## 2 Literature Review

### 2.1 Theoretical Determinants of Exchange Rate Regime Choice

Until recently the economic literature was extensively studying the growth effects of exchange rate regimes (Gosh et al., 2002; Levy-Yeyati and Struzenegger, 2003; Husain et al., 2004). More recent literature draws possible endogeneity of the choice of exchange rate regime to the front line and rather focuses on the determinants of this choice than its effects on macroeconomic variables (Berdiev et al., 2012; Levy-Yeyati et al., 2010; Markiewicz, 2006; Von Hagen and Zhou, 2007). In the economic literature three major approaches that explain the choice of exchange rate regimes are (i) Optimal Currency Area (OCA) theory, (ii) financial view, and (iii) political view. Levy-Yeyati and Struzenegger (2010) provide an extensive review on how these three theories were emerged. All these theories have been empirically tested by many scholars who analyze the determination process of exchange rate regimes.

According to the **OCA theory** (originally formulated by Mundell, 1961) geographical location, trade links, size, openness, and intrinsic shocks are the main determinants of the exchange rate regime. From this perspective the trade and welfare gains from a stable exchange rate are compared with the benefits of exchange rate flexibility as a shock absorber. For instance, more open countries are more likely to have a pegged regime. Or, given the fact that smaller countries trade more, one can expect that these countries also tend to have less flexible regimes.

The **Financial view** is based on the impossible trinity hypothesis, according

to which only two out of three goals can be attained: exchange rate stabilization, free capital mobility, and independent monetary policy. Recent global financial deepening and innovation diminished the effectiveness of capital controls. In the presence of free capital mobility the impossible trinity dilemma is reduced to the bipolar view of exchange rate regimes, which defines a fixed exchange rate regime and independent monetary policy tradeoff. According to this view, low financial development should increase the probability of adopting pegs.

The **Political view** highlights political factors as a determinant of exchange rate regime. Less developed countries experiencing low institutional credibility may adopt a peg as a policy crutch. These countries are more corrupted and have a higher level of bureaucracy, therefore, they need to have a stable currency to attract international investors and possibly to provide illegal opportunities for influential members of society. In contrast, in more democratic countries governments are more interested in influencing the economy and hence are more likely to use flexible regimes.

## 2.2 Classification of Exchange Rate Regimes

The classification of exchange rate regimes deserves some explanation. Until recently most of the research relied on de jure exchange rate regime classification which is based on countries' official announcements to the IMF (IMF's Annual Report on Exchange Rate Arrangements and Exchange Restrictions). However, in practice, countries usually demonstrate fear of floating and do not allow their exchange rate to float against their official reports (Calvo and Reinhart, 2002; Levy-Yeyati and Struzenegger, 2005). Therefore, there is a growing popularity of using de facto regime classifications which describe the exchange rate strategies better than de jure regime classifications.

Levy-Yeyati and Struzeneggers' (2003, 2005) de facto exchange rate regime classification is based on the volatility of the bilateral nominal exchange rate, the volatility of exchange rate changes and the volatility of foreign reserves. Reinhart and



Rogoffs' (2004) approach is more sophisticated and accounts for country chronologies, which includes information on the official exchange rate regime, the anchor currency and other important economic events and differences between the official and parallel exchange rates.

The codings of all three directions (de jure classification by IMF, de facto classifications by Levy-Yeyati and Struzenegger, 2003-2005, and by Reinhart and Rogoff, 2004) have been widely used by many scholars and the studies based on de facto classifications significantly differ from the ones that are based on de jure classification.<sup>2</sup> For example, Ghosh et al. (2003) use de jure exchange rate regime classification and find that a fixed exchange rate regime has a positive effect on economic growth. Levy-Yeyati and Struzenegger (2010) by using their own de facto classification find empirical support for three approaches about exchange rate regime choice discussed above. Berdiev et al. (2010) use the same classification and emphasize the role of political factors such as wings of governments (left/right), democratic institutions, central bank independence and financial development among other factors determining the choice of exchange rate regime. Estimations based on the alternative de facto classification of Reinhart and Rogoff (2004) indicate that only rich and financially developed countries can benefit from the flexibility of exchange rate regimes (Reinhart and Rogoff, 2004; Husain et al., 2005; Aghion et al., 2009).

The general conclusion is that countries usually deviate from their official announcements and hence research that is based on de facto classifications delivers more reasonable results. Therefore, in our study we use three-way and five-way classifications proposed by Levy-Yeyati and Struzenegger (2003).

### **2.3 Exchange Rate Regimes in RRCs**

The literature agrees that there is no single exchange rate regime right for all countries (Frankel, 1999) and often focuses on a special set of determinants and group of countries with similar characteristics. RRCs differ from other countries by experi-

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<sup>2</sup>See Harms and Kretschmann (2009) for an extensive survey.

encing a huge and volatile inflow of foreign exchange. In the face of these windfalls RRCs are challenged in achieving stabilization in the short, and economic growth in the long run. Klein and Shambaugh (2009) find that fuel exporters are more likely to peg compared to non-fuel countries. Moreover, it has been documented that the price of oil has a significant effect on real exchange rates in oil rich countries, more precisely, a higher oil price leads to appreciation of the real exchange rate in these countries (Korhonen and Juurikkala, 2009). The effects of oil price change on the domestic economy are mainly transmitted through fiscal policy (Husain et al., 2008).

The intuition behind these phenomena is straightforward: soaring oil prices or the discovery of natural resource reserves increase a government's income denominated in foreign exchange and fiscal expansion financed through these resources creates appreciation pressure on the domestic currency. In this situation, a monetary authority can choose only one out of the two sides of the stick: it can either stabilize the nominal exchange rate at the cost of high inflation or it can control inflation by allowing the nominal exchange rate to adjust.

The evidence supports the contention that monetary authorities in RRCs mainly choose the first option. Aliyev (2012) shows that besides arguments of existing theories of exchange rate determination there may be an additional rationale to peg the exchange rate in resource-rich developing countries. More precisely, under undisciplined fiscal policy<sup>3</sup> by fixing the exchange rate monetary authorities in RRCs may contribute to achieving consumption smoothing across generations and softening the negative effects of Dutch Disease during a boom. Therefore, it could be interesting to study the role of certain factors in the determination of exchange rate regimes in RRCs. To our best knowledge there is no empirical study that concentrates on this issue, and we are trying to fill this gap by focusing on a specific set of determinants such as macroeconomic volatility, democracy, central bank independence, and fiscal

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<sup>3</sup>In this context undisciplined fiscal policy defines a situation when windfall revenues are spent in the short run, while under disciplined fiscal policy fiscal spending is maintained relatively constant in the long run.

discipline.

## 3 Methodology and Data

### 3.1 Econometric Model

Given the nature of the dependent variable - which is a categorical variable that takes three values: 1 for flexible, 2 for intermediate, and 3 for peg<sup>4</sup> - we run multinomial ordered logit regressions for an unbalanced panel data set. This technique is the most relevant in a discrete choice analysis since the choice set includes more than two ordered alternatives.<sup>5</sup>

The discrete variable  $y_{it}$  denotes the choice of exchange rate regime by country  $i$  at period  $t$  and is defined as:

$$y_{i,t} = j \begin{cases} j = 1, & \text{if country } i \text{ at period } t \text{ implements a flexible regime,} \\ j = 2, & \text{if country } i \text{ at period } t \text{ implements an intermediate regime,} \\ j = 3, & \text{if country } i \text{ at period } t \text{ implements a fixed regime.} \end{cases} \quad (1)$$

The probability of choosing regime  $j$  is denoted by  $p_j$ , such that  $\sum_{j=1}^3 p_j = 1$ . The choice of exchange rate regime is described by a latent variable  $y_{i,t}^*$  which denotes the unobserved utility that government  $i$  derives in year  $t$  from a fixed regime.  $y_{i,t}^*$  is determined as a linear function of different explanatory variables  $X_{i,t}$ , natural resource-richness dummy  $D_{i,t}^{nr}$  and its interaction term with specific set of variables  $Z_{i,t}$  ( $Z_{i,t} \subset X_{i,t}$ ):

$$y_{i,t}^* = X_{i,t} + D_{i,t}^{nr} + D_{i,t}^{nr} \times Z_{i,t} + u_{i,t}, \text{ for } i = 1, 2, \dots, N; t = 1, 2, \dots, T_i. \quad (2)$$

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<sup>4</sup>To check the robustness of our results we also use the 5-way classification in our estimations.

<sup>5</sup>The information criteria of Akaike, Schwarz and Hannan-Quinn do not clearly favor any model so we employ logit model in our estimations. The econometric literature suggests using a country fixed-effects model on panel data. However, a country-specific fixed-effects model may produce inconsistent results if maximum likelihood estimator (MLE) is used (see Chamberlain, 1980). Therefore, we do not employ a country fixed-effects model in our estimations.

Where  $N$  denotes the number of countries and  $T_i$  is the number of observations for country  $i$ . We assume that the error term  $u_{i,t}$  is i.i.d. with standard logistic distribution. The probabilities of country  $i$  choosing regime  $j$  at period  $t$  are defined in the following way:

$$\begin{aligned}
y_{i,t} &= 1 \text{ if } y_{i,t}^* < c_1 \text{ and } Pr(y_{i,t} = 1) = Pr(y_{i,t}^* < c_1), \\
y_{i,t} &= 2 \text{ if } c_1 < y_{i,t}^* < c_2 \text{ and } Pr(y_{i,t} = 2) = Pr(c_1 < y_{i,t}^* < c_2), \\
y_{i,t} &= 3 \text{ if } y_{i,t}^* > c_2 \text{ and } Pr(y_{i,t} = 3) = Pr(y_{i,t}^* > c_2),
\end{aligned} \tag{3}$$

where  $c_1$  and  $c_2$  ( $c_1 < c_2$ ) are thresholds defining the edges between different regimes. The estimates of all the coefficients and thresholds  $c_1$  and  $c_2$  are obtained by using the maximum likelihood technique.

In order to reduce the potential endogeneity we use lagged values for some explanatory variables. This correction for endogeneity bias may not be a sufficient solution. Some authors try to resolve the endogeneity problem by replacing the variables with their initial values or by using the instrumental variables. However, due to certain limitations these techniques are ineffective in dealing with the endogeneity problem.

The list of control variables  $X_{i,t}$  and their classification according to different approaches are given in Table 1. Most of these explanatory variables are taken from the standard literature and the reasoning behind them is described in the literature review section. The predictions of the **OCA theory** are tested by including the country's openness and its size. A-priori, we expect that larger and more open countries are more likely to adopt more flexible exchange rate regimes. To test the **Financial view** we include the ratio of private credit to GDP as a measure of the financial development and the Chinn-Ito index which measures a country's degree of capital account openness.<sup>6</sup> To capture the effects of **political factors** on the choice of exchange rate regime we use central bank independence index, democracy

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<sup>6</sup>Because of a huge number of missing data in our estimations we do not include liability dollarization, a variable commonly used in the literature for testing the Financial view. Surprisingly, in the robustness test the dollarization variable appears to be insignificant.

dummy and inflation rate. According to the political view countries with more independent central banks and democratic societies would prefer a floating exchange rate. Central bank independence indicates how political conflicts around choices over exchange rate regimes are solved. In other words, this measure points out to what extent monetary authorities can oppose pressures by the ruling party. For example, prior to elections a flexible exchange rate regime may look a more attractive option for policymakers since such policy may achieve employment growth and facilitate their likelihood of reelection. In this situation, a credible independent central bank will not forego its own interests to defend the political interests of the ruling party. Therefore, central bank independence is included among other determinants of the exchange rate regime. Inflation can be in the focus of a government that tries to build up a reputation by attaining monetary stability. For instance, a government favoring low inflation may choose a fixed exchange rate regime.

Besides these variables, we also control for three additional variables and their interaction terms with a resource-richness dummy: volatility of GDP, the cyclical-ity of fiscal policy, and fiscal elasticity (the elasticity of government consumption expenditure to income). Independent effects of these additional variables need to be explained. The effect of GDP volatility on the choice of exchange rate regime is pretty straightforward since the later one has a direct impact on the economic activity in the short run. Exchange rate is extensively used among other policy tools in dealing with macroeconomic stabilization. The cyclical-ity and the elasticity of fiscal expenditure have similar effects on the choice of exchange rate regime. Both variables can be an important determinant of the choice of exchange rate regime, especially in natural-resource exporting countries. For instance, in an undisciplined fiscal environment where fiscal policy is procyclical or fiscal elasticity is high, an oil exporting economy is challenged by volatility in the money market. In this situation a pegged regime may serve as a shock absorber.<sup>7</sup>

In line with these three variables we also focus on the interaction of democ-

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<sup>7</sup>A mechanism of how exchange rate regime affects macroeconomic stabilization and how fiscal discipline shapes the overall macroeconomic situation is extensively explained in Aliyev (2012).

<b>V a r i a b l e</b>	<b>D e s c r i p t i o n</b>	<b>S o u r c e</b>
<b>Dependent variables</b>		
lys_3	3 way de facto classification (1 = float; 2 = intermediate; 3 = fix)	Levy-Yeyati and Struzenegger (2003, 2005)
lys_5	5 way de facto classification (1 = inconclusive; 2 = float; 3 = dirty; 4 = dirty/crawling peg; 5 = fix)	Levy-Yeyati and Struzenegger (2003, 2005)
<b>Independent variables</b>		
<b>OCA theory</b>		
size	Natural logarithm of real GDP (constant 2005 US\$)	WDI
open	Trade openness (the average of exports plus imports, % of GDP)	WDI
<b>Financial view</b>		
fin_dev	Financial development (domestic credit to private sector, % of GDP)	WDI
ka_open	De jure capital account openness (the Chinn-Ito index ). The index is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions.	Chinn and Ito (2008)
<b>Political view</b>		
inf	Inflation, consumer prices (% change)	WDI
dem	Democracy dummy variable (coded 1 if the regime qualifies as democratic and 0 otherwise)	Cheibub (2010)
cbi	Central Bank Independence index	Arnone and Romelli 2013
<b>Additional interest variables</b>		
nr	Natural resource exporter dummy (coded 1 if ores, metals, and fuel exports exports' share of merchandise exports > 50%, 0 otherwise)	WDI
fuel	Fuel exporter dummy (coded 1 if fuel exports' share of merchandise exports > 50%, 0 otherwise)	WDI
rgdp_vol	Standard deviation of the growth rate of real GDP (constant 2005 US\$) over a rolling five-year period	WDI
fis_cyc	Fiscal cyclicity (coefficients estimated based on the linear regression of natural log of change in government consumption (constant 2005 US\$) on log of change in real GDP)	WDI
fis_el	Elasticity of government consumption expenditure (the ratio of % change in government consumption to % change in real GDP)	WDI

Table 1: Variable definitions and sources

racy and central bank independence with the resource-richness dummy. These two variables are related with the accountability of government and may carry extra importance in RRCs where fiscal dominance is a major issue.

### 3.2 Data Analysis

The full sample contains annual observations for 120 developing and 25 developed countries over the 1975-2004 period. The list of all variables and their sources are given in Table 1. Table 5 in Appendix A.1 lists all the countries in our sample. Most

of the macroeconomic data are obtained from the International Financial Statistics (IFS) and World Economic Outlook (WEO) by the IMF, World Development Indicators (WDI) by the World Bank, and from the United Nations Statistics Division. A detailed summary statistics about different variables is provided in Table 6 in Appendix A.1.

We borrow the de facto exchange rate regime classification from Levy-Yeyati and Struzenegger (2003, 2005). Specifically we use two ways of classification named *lys\_3* for three-way classification and *lys\_5* for five-way classification.

As a measure of size we use natural logarithm of real GDP. To control openness we employ two measures: de facto capital account openness (*open*) estimated as the GDP share of the average of exports plus imports and de jure capital account openness (*ka\_open*) measured by Chinn-Ito index (Chinn and Ito, 2008). We also control for CPI as a measure of inflation. Financial development is captured by the ratio of domestic credit to the private sector as a percentage of GDP. Democracy variable (*dem*) comes from Cheibub (2010). The distribution of number of observations according to democracy and resource-richness is given in Table 7 in Appendix A.1. Based on visual inspection we can see that the majority of RRCs are non-democratic.

We use the central bank independence index from Arnone et al. (2007) and Klomp and De Haan (2009).<sup>8</sup> Central bank independence is built based on two indicators of central bank autonomy: (i) political autonomy, the ability of the central bank to choose the objectives of monetary policy, and (ii) economic autonomy, the ability of the central bank to choose its instruments (the methodology is proposed by Grilli et al., 1991).

In our specification a country is considered natural resource exporting if its natural resource (ores, metals, and fuel) exports' share is larger than one half of total merchandize exports. Although the threshold may seem large, countries exposed to a windfall of huge natural resource revenues lie in our interest area. GDP volatility is

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<sup>8</sup>We are grateful to Jeroen Klomp, Jakob de Haan and Davide Romelli for providing us with the data.

measured as a standard deviation of the growth rate of GDP over a rolling centered five-year period.

We use two alternative measures of fiscal discipline: (i) the fiscal cyclicality ( $fis\_cyc$ ) and (ii) the elasticity of government consumption ( $fis\_el$ ). To estimate the cyclicality measure we run the following regression of the growth of real government expenditures on real GDP growth (similar to Woo, 2009).

$$\ln G_{i,t} - \ln G_{i,t-1} = \delta_i + \beta_i[\ln Y_{i,t} - \ln Y_{i,t-1}] + \epsilon_{i,t} \quad (4)$$

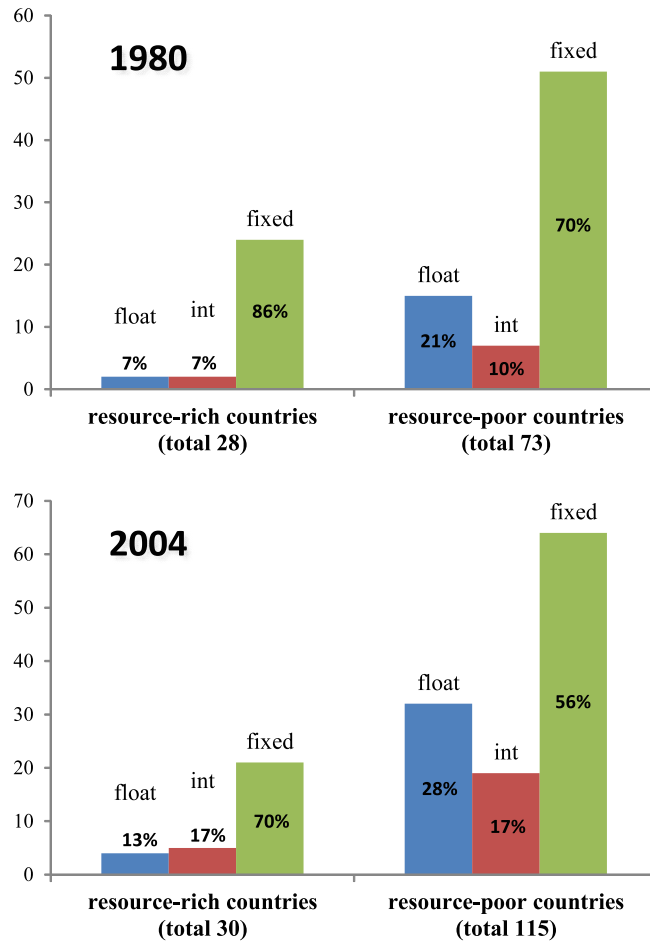


Figure 1: Distribution of countries according to exchange rate regimes

Fiscal elasticity is estimated as the ratio of the percentage change in government consumption to the percentage change in GDP. This variable reflects how much government expenditure responds to changes in income. For example, high values of the  $fis\_el_{i,t}$  would mean that government  $i$  at period  $t$  simultaneously



increases/decreases fiscal expenditures in response to increase/decrease in GDP.

From the first-pass over the data it is interesting to explore the distribution of exchange rate regimes across countries (Figure 1). As can easily be seen from the figure, RRCs adopt a fixed exchange rate regime more frequently as compared to resource-poor countries. In 1980 86% of RRCs adopted a fixed exchange rate regime, hence this number was 70% among resource-poor countries. In 2004 the relative disparity between resource-rich and resource-poor countries remained (a fixed exchange rate regime is adopted by 70% of resource-rich and by 56% of resource-poor countries), though overall popularity of a fixed exchange rate regime dropped in both groups.

## 4 Results

All our main results are summarized in Tables 2 - 4: Table 2 illustrates our estimation results for the full set of countries, Tables 3 and 4 display the results for developing and developed countries respectively<sup>9</sup>. First, we estimate the parameters of the model only with the main effects (column 1) and then include interaction terms (columns 2 - 6).

The effects of control variables on the choice of exchange rate regime are consistent with those found in the literature. Size has negative coefficients in all specifications, meaning that larger countries are less likely to adopt a fixed exchange rate regime. Positive coefficients on the openness indicate that more open countries are more likely to use a fixed exchange rate regime. These two findings are consistent with the principles of the OCA theory.<sup>10</sup>

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<sup>9</sup>The reason of us splitting the sample into developing and developed countries is that there are only few developed countries that export natural resources in large quantities and it would be more proper to focus on developing countries that share many similarities.

<sup>10</sup>Berdiev et al. (2012), Levy-Yeyati et al. (2010), Von Hagen and Zhou (2007) among many others find similar results.

lys_3 <sup>a</sup>						
	(1)	(2)	(3)	(4)	(5)	(6)
size	-0.390 *** 0.027	-0.405 *** 0.027	-0.385 *** 0.028	-0.211 *** 0.035	-0.348 *** 0.033	-0.306 *** 0.032
open	1.546 *** 0.331	1.523 *** 0.324	1.539 *** 0.330	1.771 *** 0.447	1.356 *** 0.372	1.553 *** 0.377
ka_open	0.564 *** 0.144	0.574 *** 0.145	0.493 ** 0.148	0.769 *** 0.178	0.691 *** 0.157	0.622 *** 0.157
fin_dev	0.007 *** 0.001	0.007 *** 0.001	0.007 *** 0.002	0.005 *** 0.002	0.004 ** 0.001	0.004 *** 0.002
inf_1 <sup>b</sup>	-0.0002 *** 0.000	-0.0001 *** 0.000	-0.0002 *** 0.000	-0.0001 ** 0.000	0.0000 0.000	-0.0001 ** 0.000
nr	1.002 *** 0.126	1.292 *** 0.146	0.695 *** 0.223	2.396 *** 0.457	1.573 *** 0.255	0.894 *** 0.141
dem	-0.286 *** 0.098	-0.156 * 0.104	-0.242 * 0.100	0.014 0.123	-0.444 *** 0.107	-0.425 *** 0.109
dem x nr		-0.840 *** 0.256				
rgdp_vol_1			-4.646 ** 2.386			
rgdp_vol_1 x nr			9.420 *** 4.160			
cbi				-0.499 * 0.276		
cbi x nr				-3.092 *** 0.932		
fis_cyc					-0.3592 *** 0.095	
fis_cyc x nr					-1.307 *** 0.315	
fis_el_1						0.0001 ** 0.000
fis_el_1 x nr						0.007 0.017
Pseudo R2 <sup>c</sup>	0.12	0.12	0.12	0.07	0.11	0.10
Log likelihood	-2356.19	-2350.77	-2223.20	-1516.54	-1923.95	-1900.31
Wald chi2 (32)	539.04	565.79	505.57	198.38	345.01	353.36
Number of observations	2712	2712	2537	1532	2096	2040

Estimations from an ordered multinomial logit. All regressions include year dummies. Robust standard errors below coefficients. Significantly different from zero at the 10% (\*), 5% (\*\*), and 1% (\*\*\*) confidence level.

<sup>a</sup> The dependent variable lys\_3 is a categorical variable that takes the value 1 if a country is classified as a floating exchange rate regime, 2 if intermediate and 3 if fixed.

<sup>b</sup> A variable X with lagged values is denoted as X\_1.

<sup>c</sup> For ordered logit models, the R2 statistic is meaningless. Hence, we report McFadden's pseudo R-squared.

Table 2: Multinomial ordered logistic regression estimates: full sample

lys_3 <sup>a</sup>						
	(1)	(2)	(3)	(4)	(5)	(6)
size	-0.563 *** 0.034	-0.596 *** 0.035	-0.566 *** 0.035	-0.395 *** 0.049	-0.537 *** 0.045	-0.509 *** 0.044
open	1.011 *** 0.270	0.986 *** 0.261	1.011 *** 0.270	0.844 *** 0.316	0.743 ** 0.290	0.936 *** 0.278
ka_open	-0.002 0.163	0.000 0.165	-0.063 0.167	0.173 0.213	0.040 0.188	-0.070 0.187
fin_dev	0.010 *** 0.002	0.011 *** 0.002	0.010 *** 0.002	0.012 *** 0.003	0.007 *** 0.002	0.007 *** 0.002
inf_1 <sup>b</sup>	-0.0001 *** 0.000	-0.0001 ** 0.000	-0.0001 *** 0.000	-0.0001 * 0.000	0.0000 0.000	-0.0001 0.000
nr	1.226 *** 0.141	1.707 *** 0.171	0.909 *** 0.253	2.593 *** 0.543	1.446 *** 0.275	0.958 *** 0.157
dem	-0.540 *** 0.106	-0.313 *** 0.112	-0.541 *** 0.109	-0.362 *** 0.138	-0.734 *** 0.120	-0.751 *** 0.119
dem x nr		-1.391 *** 0.274				
rgdp_vol_1			-0.902 2.743			
rgdp_vol_1 x nr			8.938 ** 1.810			
cbi				-0.622 * 0.360		
cbi x nr				-2.798 *** 1.074		
fis_cyc					-0.3588 *** 0.115	
fis_cyc x nr					-0.950 *** 0.331	
fis_el_1						0.0001 ** 0.000
fis_el_1 x nr						0.004 0.019
Pseudo R2 <sup>c</sup>	0.15	0.16	0.15	0.10	0.16	0.15
Log likelihood	-1718.65	-1705.85	-1634.67	-984.42	-1295.21	-1280.04
Wald chi2 (32)	494.36	490.82	467.49	198.31	334.74	353.09
Number of observations	2091	2091	1964	1007	1488	1447

Estimations from an ordered multinomial logit. All regressions include year dummies. Robust standard errors below coefficients. Significantly different from zero at the 10% (\*), 5% (\*\*), and 1% (\*\*\*) confidence level.

<sup>a</sup> The dependent variable lys\_3 is a categorical variable that takes the value 1 if a country is classified as a floating exchange rate regime, 2 if intermediate and 3 if fixed.

<sup>b</sup> A variable X with lagged values is denoted as X\_1.

<sup>c</sup> For ordered logit models, the R2 statistic is meaningless. Hence, we report McFadden's pseudo R-squared.

Table 3: Multinomial ordered logistic regression estimates: developing countries

lys_3 <sup>a</sup>						
	(1)	(2)	(3)	(4)	(5)	(6)
size	-0.548 *** 0.105	-0.544 *** 0.104	-0.556 *** 0.112	-0.505 *** 0.121	-0.483 *** 0.102	-0.538 *** 0.107
open	6.893 *** 1.101	6.795 *** 1.073	7.431 *** 1.276	7.860 *** 1.347	7.503 *** 1.144	7.164 *** 1.136
ka_open	-0.037 0.457	0.000 0.457	-0.531 0.473	0.096 0.648	0.243 0.466	-0.159 0.467
fin_dev	-0.013 *** 0.004	-0.013 *** 0.004	-0.014 *** 0.004	-0.013 *** 0.004	-0.012 *** 0.004	-0.013 *** 0.004
inf_1 <sup>b</sup>	-0.052 *** 0.016	-0.051 *** 0.016	-0.042 *** 0.016	-0.042 *** 0.016	-0.053 *** 0.016	-0.050 *** 0.016
nr	2.160 *** 0.564	1.580 * 0.809	4.272 *** 1.090	3.630 1.082	23.049 *** 0.732	2.144 *** 0.621
dem	-0.925 * 0.484	-1.020 ** 0.515	-0.883 * 0.479	-0.338 0.515	-0.800 * 0.495	-0.734 0.513
dem x nr		13.492 *** 0.903				
rgdp_vol_1			-35.043 *** 10.434			
rgdp_vol_1 x nr			-34.827 * 20.371			
cbi				-0.200 0.723		
cbi x nr				-3.440 2.604		
fis_cyc					1.5516 *** 0.538	
fis_cyc x nr					-35.956 *** 2.437	
fis_el_1						-0.002 0.009
fis_el_1 x nr						0.068 0.120
Pseudo R2 <sup>c</sup>	0.28	0.28	0.29	0.27	0.29	0.28
Log likelihood	-449.62	-448.69	-403.86	-375.17	-435.13	-424.28
Wald chi2 (32)	251.44	3866.30	270.68	184.24	3852.56	242.62
Number of observations	621	621	573	525	608	593

Estimations from an ordered multinomial logit. All regressions include year dummies. Robust standard errors below coefficients. Significantly different from zero at the 10% (\*), 5% (\*\*), and 1% (\*\*\*) confidence level.

<sup>a</sup> The dependent variable lys\_3 is a categorical variable that takes the value 1 if a country is classified as a floating exchange rate regime, 2 if intermediate and 3 if fixed.

<sup>b</sup> A variable X with lagged values is denoted as X\_1.

<sup>c</sup> For ordered logit models, the R2 statistic is meaningless. Hence, we report McFadden's pseudo R-squared.

Table 4: Multinomial ordered logistic regression estimates: developed countries

We also confirm that higher central bank independence is associated with more flexible exchange rate regimes. A fixed exchange rate regime constraint the central bank to conducting independent monetary policy and a flexible exchange rate regime enables the central bank to have full control over the monetary policy decisions (Siklos, 2008). Therefore, a more flexible exchange rate regime is more likely to

be used by an independent central bank. Our results indicate that democratic countries are more likely to adopt flexible exchange rate regimes. A flexible exchange rate regime allows the government to conduct monetary policy toward domestic stabilization purposes. Democratic countries are more transparent and possess politically accountable institutions. These findings about central bank independence and democracy are intuitive and in line with the political view.

The negative sign on the coefficient of inflation indicates that higher rates of inflation lower the likelihood of a fixed regime. This result is similar to the findings of Berdiev et al. (2012) and Markiewicz (2006). One explanation for this finding could be that it is difficult to maintain stable exchange rate in countries with high levels of consumer prices. Hence high inflation rates may undermine the credibility of a fixed regime, and force a country to move towards a flexible regime. Another explanation for this relationship could be that a fixed exchange rate regime may cause low rates of inflation.

Positive coefficients on the financial development measure in developing countries imply that greater financial development increases the probability of a fixed exchange rate regime in these countries. This finding can be explained through a high correlation of financial deepness with denominated debt and greater currency mismatches in developing countries (Berdiev, 2012; Eichengreen and Hausmann, 2005; Levy-Yeyati et al., 2010). However, in developed countries the financial view holds, since higher financial development is associated with more flexible exchange rate regimes. Capital account openness has a significant and positive coefficient for the full sample, but it is insignificant if developed and developing countries are analyzed separately.

Our notable finding is that the probability of implementing a pegged exchange rate regime is higher in RRCs compared to resource-poor countries. This result is depicted in Figure 2, where we obtain different probabilities by holding all other explanatory variables at their mean. A similar conclusion has been documented by Klein and Shambaugh (2009) for fuel exporting countries. Our study extends

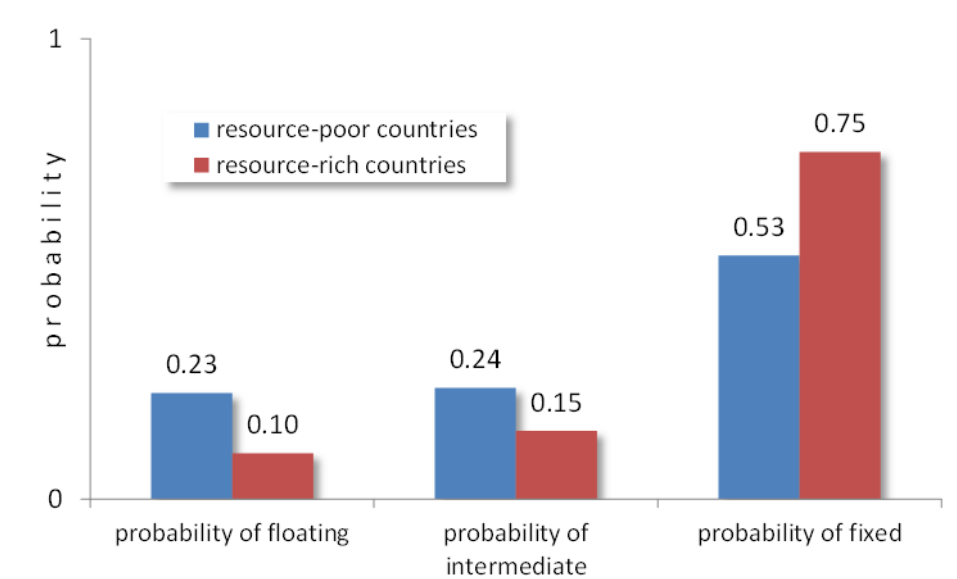


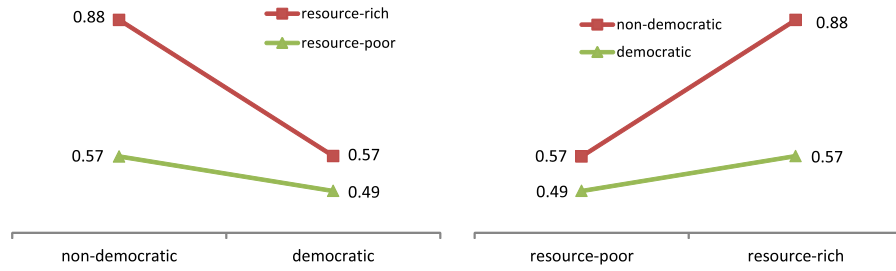
Figure 2: Probabilities of the choices of exchange rate regimes

their results to all natural resource exporting countries. The incentives of RRCs to choose pegging are explained through the stabilization function of the exchange rate and are extensively described above. We believe that on the background of large and volatile foreign exchange inflows, pegging the exchange rate might have a rationale: in a natural resource exporting economy a fixed exchange rate regime may seem the best option to achieve short-term stabilization.

Now we can analyze the interaction terms of the natural resource-richness dummy with some other variables. The coefficient on the interaction term of democracy and the resource-richness dummy ( $dem \times nr$ ) is negative for the full sample and for developing countries.<sup>11</sup> The way democracy influences the effect of resource-richness on the choice of exchange rate regime can be better seen in Figure 3. As we can see, democratic countries are less likely to adopt a fixed exchange rate regime both in resource-rich and resource-poor countries. However, the effect of democracy is stronger in resource-rich countries since we observe a steeper slope for resource-rich countries and a flatter slope for resource-poor countries. If we look at the interaction coefficient from a different perspective, we can observe that resource-richness increases the probability of a fixed exchange rate regime in all countries, though this

<sup>11</sup>The interaction terms for developed countries do not primarily lie in our focus, since among these countries only Norway is classified as a resource-rich country.

a) Probabilities of choosing a fixed exchange rate regime



b) Probabilities of choosing a floating exchange rate regime

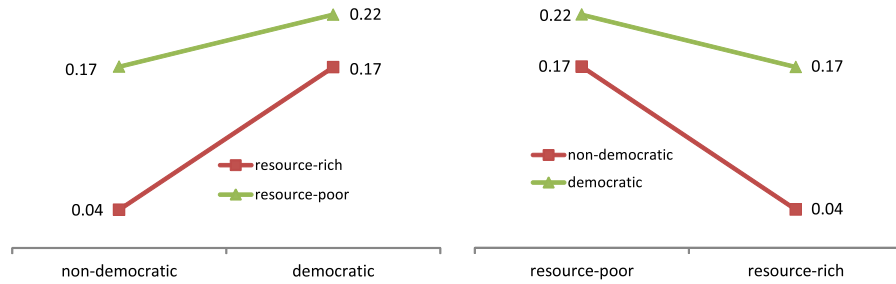


Figure 3: Probabilities of choosing fixed and floating exchange rate regimes in developing countries: democracy

effect is weaker in democratic countries. Therefore, we can conclude that in RRCs democratic institutions play a stronger role in supporting more flexible exchange rate regimes.

The multiplicative effects of output volatility, central bank independence, and fiscal cyclicity with a resource-richness dummy in developing countries are depicted in Figure 4. The interaction effect of GDP volatility and resource-richness is significant at 1% and 10% levels in the full sample and in the developing countries respectively. This multiplicative effect unveils another interesting relation: the probability of adoption of a fixed exchange rate regime decreases in resource-poor countries and increases in resource-rich countries with higher values of output volatility. In RRCs the output mainly consists of natural resources and hence, the fluctuations in natural resource extraction and exports are the main sources of output volatility in these countries. Therefore, we can conclude that in RRCs a

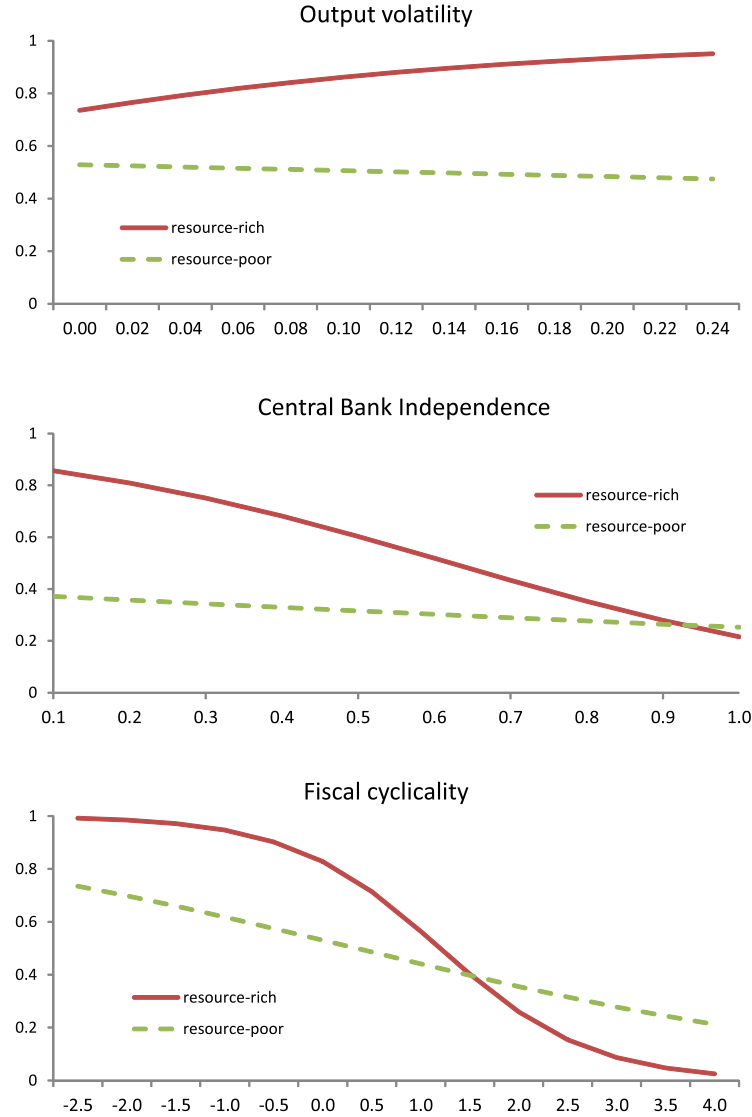


Figure 4: Probabilities of choosing a fixed exchange rate regime in developing countries: output volatility, central bank independence, and fiscal cyclicalities

fixed exchange rate regime is mainly preferred because of high volatility of natural resource revenues.

Previous studies have shown that central bank independence decreases the probability of a fixed exchange rate regime. In line with this phenomenon our results indicate that the effect of central bank autonomy is more pronounced in resource-rich countries as compared to resource-poor ones. In other words RRCs are more likely to abandon a fixed exchange rate regime if they possess more independent central banks.

We get significant effects of fiscal cyclicalities and its interaction with the resource-



richness dummy on the choice of exchange rate regime. According to our results, countries with procyclical fiscal policies are less likely to adopt a fixed exchange rate regime, meaning that if we move from countries with countercyclical policies towards countries with procyclical fiscal policies, the probability of adopting a fixed exchange rate regime diminishes. This can be due to difficulties in maintaining exchange rate stability in countries where governments pursue a procyclical fiscal policy. We observe that if fiscal policy is countercyclical, then RRCs are more likely to peg their exchange rate. However, when fiscal policy becomes procyclical, the probability of pegging in RRCs drops below the probability of pegging in resource-poor countries. A procyclical fiscal policy in RRCs – a situation when the government changes fiscal expenditure in response to changes in income from natural resource exports – might make it even more difficult to achieve a pegged exchange rate regime.

Fiscal elasticity increases the overall probability of a fixed exchange rate regime, meaning that adoption of a fixed exchange rate regime is more likely in countries where the response of fiscal expenditure to changes in income is high. Its multiplication effect with resource-richness is insignificant.

## 4.1 Robustness Checks

All our robustness checks are given in Appendix A.2. To test the robustness of our results, first, we estimate the model with 5-way exchange rate regime classification, instead of 3-way classification used in our benchmark specification<sup>12</sup>. The results for developing countries with 5-way classification are described in Table 9<sup>13</sup>. One can easily check that the signs and significance of the coefficients are similar in both classifications. The main differences are in the relative values of the coefficients.

We also focus solely on fuel exporting countries instead of all natural resource exporting countries. The results with fuel exporting developing countries are sum-

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<sup>12</sup>Basically it is rather a 4-way classification, since there are only 9 observations (0.33% of total) that belong to the inconclusive category. Observations with these categories are dropped in order to keep the consistency of ordered logit estimations.

<sup>13</sup>The results for the full set of countries and for developing countries are also similar to the benchmark results, so we do not report them.

marized in Table 10. As we can see, new coefficients do not significantly differ from the ones in the benchmark specification.

As the final test, we estimate our model with additional control variables: interest rate, “years office”, and dollarization. To measure interest rate we use the lending interest rate from WDI. “Years office” is obtained from the Database of Political institutions 2012, and indicates how many years the chief executive has been in office. And for dollarization, we use the deposit dollarization ratio (foreign currency deposits over total deposits) assembled by Levy and Yeyati (2006).

The estimation results with these additional variables are summarized in Table 11. We can see that with additional variables the number of observations is reduced more than threefold. Therefore, direct comparison of the new results with the benchmark specification is inappropriate. With additional variables the effect of capital account openness becomes insignificant and financial development obtains significant coefficients. Interest rate and years the chief executive has been in office both are insignificant.

A-priori we could expect that to deal with high dollarization a fixed exchange rate regime may be preferred, since stability of the exchange rate may increase the confidence of residents in the domestic currency. However, our estimation results indicate that higher levels of dollarization are associated with lower probability of a fixed regime in all specifications. We believe that in this relationship the effect works in a reverse direction. A pegged exchange rate regime increases the faith of residents in the domestic currency as they switch from foreign currency to domestic and dollarization falls. Therefore, we observe negative coefficients on the dollarization variable.

## 5 Conclusion

In this research we analyze the determinants of the choice of exchange rate regime in 145 countries over 1975-2004 period by primarily focusing on RRCs. As found by

other studies in the literature, we confirm that size, openness, financial development, central bank independence, and democracy are important determinants of the choice of exchange rate regime.

Moreover, our results reveal that RRCs are more likely to adopt a fixed exchange rate regime compared to resource-poor countries. We think that on the background of large and volatile foreign exchange inflows, pegging exchange rate might have a rationale. In a natural resource exporting economy a fixed exchange rate regime may seem the best option to achieve short-term stabilization. The data provides support for this position: the probability of adoption of a fixed exchange rate regime decreases in resource-poor countries and increases in resource-rich countries with higher values of output volatility. In RRCs the output mainly consists of natural resources and therefore, the fluctuations in natural resource extraction and exports are the main sources of output volatility. Therefore, we can conclude that, in RRCs a fixed exchange rate regime is mainly preferred due to its stabilization function in the face of turbulent foreign exchange inflows.

Our study unveils that democracy and central bank independence affect the choice of exchange rate regime differently in RRCs. Estimations show that democratic countries are less likely to adopt a fixed exchange rate regime both in resource-rich and resource-poor countries. However, we find that the effect of democracy is stronger in resource-rich countries. In other words, in RRCs democratic institutions play a stronger role in supporting more flexible exchange rate regimes. Previous studies have shown that central bank independence decreases the probability of a fixed exchange rate regime. In line with this phenomenon, our results indicate that the effect of central bank autonomy is more pronounced in resource-rich countries as compared to resource-poor ones. This implies that in RRCs more independent central banks are more inclined towards choosing a flexible exchange rate regime.

In resource-rich countries with non-democratic institutions and non-independent central banks, the government is less accountable in spending natural resource revenues and fiscal dominance is more likely. In this situation, fluctuations in natural

resource revenues are more easily transmitted into the domestic economy and therefore a fixed exchange rate becomes a more favorable option.

According to our results countries with procyclical fiscal policies are less likely to adopt a fixed exchange rate regime, meaning that if we move from countries with countercyclical policies towards countries with procyclical fiscal policies, the probability of adopting a fixed exchange rate regime diminishes. This can be due to difficulties in maintaining exchange rate stability in countries where governments pursue a procyclical fiscal policy. We observe that if fiscal policy is countercyclical, then RRCs are more likely to peg their exchange rate. However, when fiscal policy becomes procyclical, the probability of pegging in RRCs drops below the probability of pegging in resource-poor countries. A procyclical fiscal policy in RRCs – a situation when the government changes fiscal expenditure in response to changes in income from natural resource exports – might make it even more difficult to achieve a pegged exchange rate regime.

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# A Appendix

## A.1 Data Description

Developed Countries	Developing Countries			
Australia	Albania	Cote D'Ivoire	Kuwait	Romania
Austria	Algeria	Croatia	Kyrgyz Rep	Russia
Belgium	Angola	Cyprus	Latvia	Samoa
Canada	Antigua Barb	Czech Rep	Lesotho	Saudi Arabia
Denmark	Armenia	Djibouti	Libya	Senegal
Finland	Azerbaijan	Dominica	Lithuania	Seychelles
France	Bahamas	Dominican Rep	Macedonia	Singapore
Germany	Bahrain	Ecuador	Madagascar	Slovak Rep
Greece	Bangladesh	Egypt	Malawi	Slovenia
Iceland	Barbados	El Salvador	Malaysia	South Africa
Ireland	Belarus	Estonia	Mali	Sri Lanka
Italy	Belize	Ethiopia	Mauritius	St Kitts N
Japan	Benin	Fiji	Moldova	St Lucia
Korea	Bhutan	Gabon	Mongolia	St Vincent Gr
Mexico	Bolivia	Gambia	Morocco	Sudan
Netherlands	Botswana	Georgia	Mozambique	Suriname
New Zealand	Brazil	Ghana	Namibia	Swaziland
Norway	Bulgaria	Grenada	Nepal	Syria
Portugal	Burkina Faso	Guatemala	Nicaragua	Tajikistan
Spain	Burundi	Guyana	Niger	Tanzania
Sweden	CAR	Haiti	Nigeria	Thailand
Switzerland	Cambodia	Honduras	Oman	Togo
Turkey	Cape Verde	Hungary	Pakistan	Trinidad Tob
UK	Chad	India	Panama	Tunisia
US	China	Indonesia	Papua New G.	Uganda
	Colombia	Iran	Paraguay	Ukraine
	Comoros	Israel	Peru	Uruguay
	Congo, Dem.	Jordan	Philippines	Yemen
	Congo, Rep.	Kazakhstan	Poland	Zambia
	Costa Rica	Kenya	Qatar	Zimbabwe

Table 5: List of countries (145)



Variable	1976					1986					1996					2004				
	Obs.	Mean	St. De.	Min	Max	Obs.	Mean	St. De.	Min	Max	Obs.	Mean	St. De.	Min	Max	Obs.	Mean	St. De.	Min	Max
lys_3	57	2.39	0.84	1	3	73	2.32	0.80	1	3	116	2.26	0.85	1	3	130	2.32	0.86	1	3
ln_rgdg (size)	57	2.98	2.20	-1.44	8.56	73	2.81	2.31	-1.41	8.89	116	3.15	2.28	-1.10	9.18	130	3.34	2.27	-1.01	9.45
open	57	0.31	0.16	0.08	0.78	73	0.33	0.19	0.06	0.92	116	0.40	0.22	0.07	1.70	130	0.44	0.23	0.12	2.06
fin_dev	57	29.1	23.2	3.85	129	73	35.8	26.5	2.90	154	116	40.3	38.6	1.17	202	130	49.0	46.8	2.9	208
ka_open	57	0.35	0.30	0	1	73	0.34	0.32	0	1	116	0.45	0.35	0	1	130	0.56	0.37	0	1
inf	57	14.3	13.8	1.08	80.4	73	19.2	39.7	-13.1	276	116	49.8	384	-8.48	4145	130	7.29	25.2	-5.36	282
dem	57	0.40	0.49	0	1	73	0.52	0.50	0	1	116	0.64	0.48	0	1	130	0.65	0.48	0	1
cbi	0	-	-	-	-	41	0.37	0.17	0.09	0.82	84	0.51	0.20	0.09	0.94	105	0.61	0.20	0.19	1.00
nr	57	24.0	30.1	0	100	73	22.7	29.7	0	99	116	21.2	28.9	0	100	130	22.4	29.4	0	100
fuel	57	14.1	27.5	0	100	73	14.6	26.0	0	99	116	14.2	27.0	0	99	130	15.3	27.3	0	97
rgdp_vol	0	-	-	-	-	73	0.04	0.03	0	0.11	116	0.03	0.03	0	0.13	130	0.02	0.02	0	0.12
fis_cyc	44	0.37	0.42	-0.45	1.45	54	0.38	0.40	-0.45	1.45	94	0.45	0.54	-0.45	3.19	106	0.50	0.76	-2.51	3.94
fis_el	44	0.84	1.65	-6.01	3.35	54	4.47	18	-10.4	127	94	0.67	3.95	-29.8	11.2	106	0.61	1.63	-8.54	6.63

Table 6: Summary statistics

	Resource-poor	Resource-rich	Total
Non-democratic	779	360	1,139
Democratic	1,446	127	1,573
Total	2,225	487	2,712

Table 7: Distribution of number of observations according to democracy and resource-richness

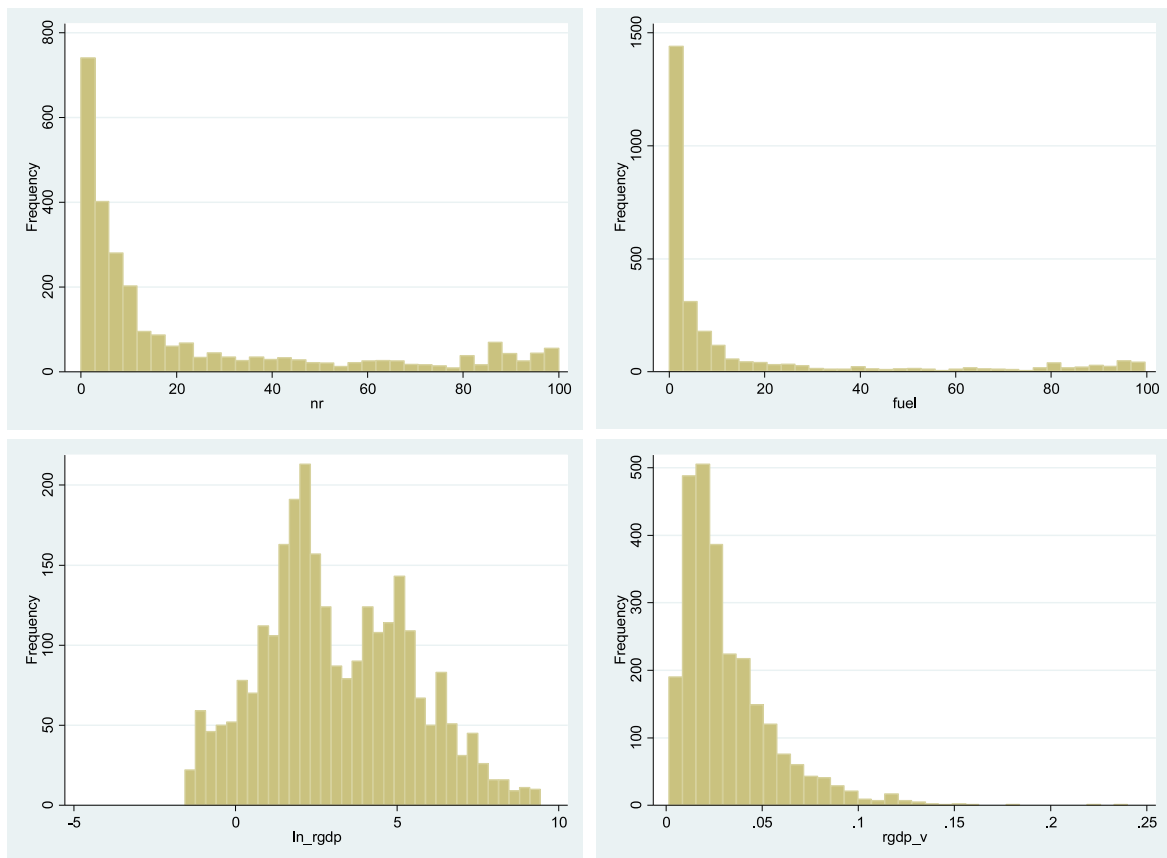


Figure 5: Distributions of number of observations for selected variables

country	year	lys_3	ln_rgdp	rgdp_v	open	ka_open	interest	inf	fin_dev	dollar	dem	yrsoffc	nr	fuel	cbi	fis_cyc	fis_dis
Albania	2003	1	2.01	0.02	0.33	0.41	14.27	0.48	7.67	0.31	1	1.0	0	0	0.75	1.07	1.80
Algeria	2003	1	4.54	0.01	0.31	0.16	8.13	4.27	11.39	0.16	0	4.0	1	1	0.81	0.68	0.59
Angola	2003	2	3.07	0.06	0.66	0.16	96.12	98.22	5.01	0.74	0	24.0	1	1	0.31	-	-
Antigua Barb	2003	3	-0.11	0.04	0.58	0.75	12.82	1.99	65.05	0.06	1	-	0	0	-	-	-
Armenia	2003	2	1.36	0.02	0.41	1.00	20.83	4.72	5.68	0.71	1	5.0	0	0	0.81	0.29	1.00
Australia	2003	1	6.47	0.01	0.20	0.69	8.41	2.77	99.36	-	1	7.0	0	0	0.63	0.07	0.99
Austria	2003	3	5.67	0.01	0.46	1.00	-	1.36	104.81	0.01	1	4.0	0	0	0.94	0.27	1.44
Azerbaijan	2003	3	2.25	0.07	0.54	0.41	15.46	2.23	7.01	0.82	0	10.0	1	1	-	0.54	2.73
Bahamas	2003	3	2.00	0.02	0.41	0.00	6.00	3.03	58.92	0.03	1	1.0	0	0	0.31	0.54	8.55
Bahrain	2003	3	2.64	0.02	0.73	1.00	8.30	1.59	42.13	0.3	0	4.0	1	1	0.44	-	-
Barbados	2003	3	1.31	0.02	0.54	0.16	8.50	1.62	61.23	0.15	1	9.0	0	0	0.38	-	-
Belarus	2003	2	3.21	0.03	0.67	0.16	23.98	28.40	11.75	0.55	0	9.0	0	0	0.44	0.60	0.03
Belgium	2003	3	5.88	0.01	0.71	1.00	6.89	1.59	73.81	-	1	4.0	0	0	0.94	-0.01	1.74
Belize	2003	3	0.03	0.02	0.60	0.00	14.35	2.61	51.03	0.12	1	5.0	0	0	0.38	0.03	0.58
Benin	2003	3	1.41	0.01	0.20	0.16	-	1.49	14.21	-	1	7.0	0	0	-	0.84	1.79
Bolivia	2003	3	2.17	0.01	0.26	0.75	17.66	3.34	47.88	0.93	1	1.0	0	0	0.75	1.25	1.31
Botswana	2003	3	2.22	0.02	0.40	0.84	16.40	9.19	19.98	0.33	0	5.0	0	0	0.44	0.78	0.27
Brazil	2003	1	6.70	0.02	0.14	0.41	67.08	14.72	28.65	-	1	1.0	0	0	0.63	1.14	1.01
Bulgaria	2003	3	3.24	0.01	0.54	0.22	8.54	2.16	26.49	0.5	1	2.0	0	0	-	1.16	1.57
Burkina Faso	2003	3	1.57	0.02	0.15	0.16	-	2.03	13.91	-	0	12.0	0	0	-	0.65	0.41
Burundi	2003	2	0.05	0.03	0.14	0.16	18.23	10.76	22.20	-	0	7.0	0	0	0.38	3.94	-17.88
CAR	2003	3	0.23	0.04	0.16	0.16	18.00	4.13	6.18	-	0	10.0	0	0	-	3.00	6.21
Cambodia	2003	2	1.62	0.03	0.62	0.43	-	1.21	7.21	0.95	0	10.0	0	0	0.56	2.04	0.57
Canada	2003	1	7.00	0.01	0.36	1.00	4.69	2.76	162.92	-	1	1.0	0	0	0.63	-0.10	1.48
Chad	2003	3	1.44	0.10	0.42	0.16	18.00	-1.75	4.19	-	0	13.0	1	0	-	-0.38	0.89
China	2003	3	7.52	0.01	0.28	0.16	5.31	1.16	127.15	0.06	0	-	0	0	0.56	-0.08	0.48
Colombia	2003	1	4.89	0.02	0.19	0.16	15.19	7.13	24.89	0	1	1.0	0	0	0.5	0.80	0.46
Comoros	2003	3	-0.99	0.02	0.24	0.16	11.83	3.80	9.55	0.01	0	4.0	0	0	0.44	-	-
Congo, Rep.	2003	3	1.70	0.02	0.78	0.16	18.00	-0.63	3.64	-	0	6.0	1	1	-	0.81	-13.34
Costa Rica	2003	3	2.90	0.02	0.48	0.71	25.58	9.45	31.32	0.45	1	1.0	0	0	0.69	0.47	-0.05
Cote D'Ivoire	2003	3	2.76	0.02	0.40	0.16	-	3.35	13.62	-	0	3.0	0	0	-	1.45	-0.58
Croatia	2003	1	3.72	0.01	0.47	0.69	11.58	1.75	45.76	0.65	1	3.0	0	0	0.88	-0.07	0.36
Cyprus	2003	2	2.75	0.01	0.48	0.41	6.95	4.14	206.23	0.05	1	10.0	0	0	0.56	0.48	3.06
Czech Rep	2003	2	4.76	0.02	0.60	0.94	5.95	0.11	30.48	0.09	1	5.0	0	0	0.88	0.63	1.58
Denmark	2003	3	5.50	0.01	0.42	1.00	-	2.09	151.62	-	1	2.0	0	0	0.75	0.21	1.85
Djibouti	2003	3	-0.41	0.01	0.44	1.00	11.30	1.98	22.58	0.5	0	4.0	0	0	-	2.80	2.38
Dominica	2003	3	-1.04	0.04	0.40	0.16	11.50	1.45	45.71	0.02	1	-	0	0	-	-	-
Dominican Rep	2003	2	3.42	0.04	0.43	0.45	31.39	27.45	37.51	0.27	1	3.0	0	0	0.56	0.18	52.90
Ecuador	2003	3	3.60	0.02	0.27	0.47	13.64	7.93	16.72	-	1	1.0	0	0	0.94	0.46	0.43
Egypt	2003	1	4.41	0.01	0.23	0.71	13.53	4.51	53.90	0.31	0	22.0	0	0	0.38	-0.14	0.86
El Salvador	2003	3	2.79	0.01	0.35	1.00	-	2.12	41.75	-	1	4.0	0	0	0.81	0.26	-0.14
Estonia	2003	3	2.49	0.01	0.73	1.00	5.51	1.34	50.65	0.26	1	2.0	0	0	-	-0.18	0.81
Ethiopia	2003	3	2.26	0.07	0.20	0.16	7.00	17.76	20.53	-	0	8.0	0	0	0.5	1.36	5.61
Finland	2003	3	5.21	0.01	0.35	1.00	4.13	0.88	64.18	-	1	4.0	0	0	0.94	0.20	0.77
France	2003	3	7.62	0.01	0.25	1.00	6.60	2.11	88.66	-	1	1.0	0	0	0.94	-0.10	2.09
Gabon	2003	3	2.12	0.01	0.43	0.16	18.00	2.24	12.36	-	0	36.0	0	0	-	0.87	-1.47
Gambia	2003	3	-0.53	0.05	0.34	1.00	29.33	17.03	11.76	0.26	0	9.0	0	0	-	-0.16	0.19
Georgia	2003	1	1.71	0.03	0.39	0.75	32.27	4.76	8.62	0.74	0	11.0	0	0	0.75	-	-
Germany	2003	3	7.91	0.01	0.34	1.00	-	1.03	116.30	-	1	5.0	0	0	0.88	0.14	-0.93
Ghana	2003	3	2.26	0.01	0.49	0.16	-	26.67	12.49	0.31	1	3.0	0	0	0.5	-	-
Greece	2003	3	5.42	0.01	0.27	1.00	6.79	3.53	64.77	0.15	1	7.0	0	0	0.81	0.48	-0.15
Grenada	2003	3	0.49	0.02	0.41	0.16	12.05	2.23	57.94	0.07	1	8.0	0	0	-	-	-
Guatemala	2003	2	3.24	0.01	0.33	1.00	14.98	5.60	26.24	0.1	1	4.0	0	0	0.63	0.87	-0.59
Guyana	2003	2	-0.21	0.02	0.95	1.00	14.99	5.98	57.64	-	0	4.0	0	0	0.5	-	-
Haiti	2003	1	1.44	0.02	0.32	0.76	44.21	39.28	16.57	-	0	3.0	0	0	0.5	-	-
Honduras	2003	2	2.15	0.01	0.61	0.41	20.80	7.67	37.61	0.35	1	2.0	0	0	0.5	0.69	0.82
Hungary	2003	3	4.62	0.00	0.63	0.88	9.60	4.65	42.71	0.14	1	1.0	0	0	0.94	0.13	1.30
Iceland	2003	3	2.65	0.03	0.36	0.69	11.95	2.06	130.39	0.09	1	6.0	0	0	0.75	0.10	0.75
India	2003	2	6.56	0.02	0.15	0.16	11.46	3.81	31.08	0.03	1	5.0	0	0	0.5	0.14	0.36
Indonesia	2003	1	5.55	0.01	0.27	0.69	16.94	6.59	22.95	0.16	1	2.0	0	0	0.69	0.98	2.05
Iran	2003	2	5.16	0.02	0.26	0.45	-	16.47	26.28	-	0	2.0	1	1	-	0.54	0.09
Ireland	2003	3	5.21	0.01	0.75	1.00	2.85	3.48	113.93	-	1	6.0	0	0	0.81	0.42	0.81
Israel	2003	1	4.80	0.03	0.37	0.82	10.65	0.67	85.66	-	1	3.0	0	0	0.38	-0.06	-1.88
Italy	2003	3	7.46	0.01	0.24	1.00	5.83	2.68	83.21	0.04	1	2.0	0	0	0.81	0.20	-42.65
Japan	2003	1	8.39	0.01	0.11	1.00	1.82	0.17	186.47	-	1	3.0	0	0	0.44	0.26	1.11
Jordan	2003	3	2.37	0.02	0.58	1.00	9.30	1.63	70.82	0.28	0	4.0	0	0	0.38	0.57	0.59

Table 8: Raw data sample

country	year	lys_3	ln_rgdp	rgdp_v	open	ka_open	interest	inf	fin_dev	dollar	dem	yrsoffc	nr	fuel	cbi	fis_cyc	fis_dis
Kazakhstan	2003	3	3.86	0.02	0.46	0.16	-	6.44	21.94	0.47	0	12.0	1	1	-	0.79	0.96
Kenya	2003	1	2.82	0.02	0.27	0.69	16.57	9.82	24.60	0.14	1	1.0	0	0	0.44	0.15	2.02
Korea	2003	3	6.71	0.02	0.34	0.41	6.24	3.51	114.74	-	1	-	0	0	0.56	0.04	1.28
Kuwait	2003	3	4.19	0.07	0.43	0.69	5.42	0.96	67.74	0.13	0	26.0	1	1	0.31	-	-
Kyrgyz Rep	2003	1	0.83	0.04	0.42	0.69	19.13	2.97	4.78	0.67	0	13.0	0	0	0.88	1.10	0.18
Latvia	2003	3	2.59	0.02	0.48	1.00	5.38	2.96	40.23	0.38	1	1.0	0	0	1	-0.01	0.27
Lesotho	2003	3	0.26	0.02	0.84	0.16	16.02	6.63	6.39	-	0	5.0	0	0	0.44	-0.12	0.22
Lithuania	2003	1	3.11	0.01	0.54	1.00	5.84	-1.15	22.78	0.26	1	6.0	0	0	0.81	1.04	0.41
Macedonia	2003	3	1.70	0.04	0.46	0.45	16.00	1.10	18.26	0.52	1	1.0	0	0	0.88	-0.07	-3.77
Madagascar	2003	1	1.52	0.09	0.28	0.41	24.25	-1.22	8.78	0.19	1	2.0	0	0	0.63	1.05	2.67
Malawi	2003	1	0.94	0.04	0.34	0.16	48.92	9.58	5.46	0.19	1	9.0	0	0	0.38	-	-
Malaysia	2003	3	4.85	0.02	0.97	0.41	6.30	0.99	118.97	0.03	0	22.0	0	0	0.5	0.51	1.47
Mali	2003	3	1.59	0.04	0.32	0.16	-	-1.35	19.04	-	1	1.0	0	0	-	-	-
Mauritius	2003	1	1.77	0.02	0.56	1.00	21.00	3.92	73.25	0.11	1	3.0	0	0	-	0.13	0.82
Mexico	2003	1	6.69	0.02	0.26	0.45	7.02	4.55	15.71	0.06	1	3.0	0	0	0.69	0.61	-0.39
Moldova	2003	1	0.95	0.01	0.70	0.16	19.29	11.62	20.32	0.5	1	2.0	0	0	0.75	0.68	0.34
Mongolia	2003	2	0.75	0.03	0.60	0.69	31.91	5.13	22.31	0.44	1	6.0	0	0	0.75	-	-
Mozambique	2003	3	1.72	0.02	0.38	0.16	24.69	13.43	11.40	0.46	0	17.0	1	0	0.44	1.11	1.05
Nepal	2003	2	2.02	0.02	0.22	0.16	7.42	5.71	26.14	-	0	1.0	0	0	0.5	-0.03	2.59
Netherlands	2003	3	6.42	0.01	0.60	1.00	3.00	2.11	147.99	-	1	9.0	0	0	0.88	0.04	8.54
New Zealand	2003	3	4.66	0.01	0.29	1.00	7.00	1.12	107.90	0.04	1	4.0	0	0	0.44	0.09	1.13
Nicaragua	2003	2	1.75	0.02	0.38	1.00	15.55	5.30	17.68	0.7	1	2.0	0	0	0.56	0.64	2.20
Niger	2003	3	1.18	0.03	0.21	0.16	-	-1.61	5.23	-	1	4.0	1	0	-	-	-
Nigeria	2003	1	4.40	0.13	0.42	0.31	20.71	14.03	13.82	0.08	1	4.0	1	1	0.44	-	-
Norway	2003	3	5.65	0.01	0.34	1.00	4.73	2.48	77.44	-	1	2.0	1	1	0.75	0.22	1.32
Oman	2003	3	3.36	0.03	0.41	1.00	8.23	0.19	36.94	0.16	0	33.0	1	1	0.31	-	-
Panama	2003	3	2.60	0.03	0.61	1.00	9.93	0.39	87.12	-	1	4.0	0	0	0.38	0.75	0.10
Papua New G.	2003	3	1.53	0.02	0.62	0.16	13.36	14.71	13.59	0.08	1	1.0	1	0	0.63	-	-
Paraguay	2003	1	2.11	0.02	0.49	0.75	49.99	14.24	14.81	0.62	1	4.0	0	0	0.5	0.70	-0.48
Philippines	2003	1	4.52	0.01	0.51	0.45	9.47	2.29	33.14	0.31	1	3.0	0	0	0.63	0.88	0.73
Poland	2003	1	5.63	0.02	0.35	0.45	7.30	0.79	28.07	0.16	1	8.0	0	0	0.88	-0.34	1.25
Portugal	2003	3	5.23	0.01	0.31	1.00	-	3.28	135.38	-	1	1.0	0	0	0.81	0.58	-0.47
Qatar	2003	3	3.55	0.06	0.45	1.00	-	2.26	29.99	0.27	0	8.0	1	1	0.19	-	-
Romania	2003	1	4.47	0.02	0.38	0.51	25.44	15.27	13.74	0.42	1	3.0	0	0	0.27	-0.28	1.90
Russia	2003	2	6.51	0.01	0.30	0.41	12.98	13.68	21.24	0.27	0	3.0	1	1	0.44	0.46	0.34
Saudi Arabia	2003	3	5.64	0.04	0.35	0.69	-	0.59	28.40	0.18	0	21.0	1	1	0.5	-	-
Senegal	2003	3	2.05	0.02	0.33	0.16	-	-0.03	19.68	-	1	4.0	0	0	-	0.17	0.41
Singapore	2003	3	4.68	0.04	1.93	1.00	5.31	0.51	105.48	-	0	13.0	0	0	0.38	-0.25	0.09
Slovak Rep	2003	2	4.00	0.01	0.77	0.45	8.46	8.55	31.85	0.14	1	5.0	0	0	0.63	0.55	0.89
Slovenia	2003	3	3.49	0.01	0.54	0.76	10.75	5.58	41.28	0.32	1	1.0	0	0	0.81	0.28	0.79
South Africa	2003	1	5.41	0.01	0.27	0.16	14.96	5.86	120.71	0.03	0	4.0	0	0	0.25	0.31	2.02
Spain	2003	3	6.96	0.00	0.28	1.00	-	3.04	113.17	-	1	7.0	0	0	0.88	0.42	1.54
Sri Lanka	2003	2	3.08	0.03	0.38	0.45	10.34	6.31	28.92	0.22	1	10.0	0	0	0.56	0.89	0.81
St Kitts N	2003	3	-0.76	0.04	0.48	0.16	12.22	2.24	55.21	0.31	1	-	0	0	-	-	-
St Lucia	2003	3	-0.16	0.05	0.58	0.16	15.00	1.03	71.02	0.02	1	6.0	0	0	-	-	-
St Vincent Gr	2003	3	-0.66	0.02	0.43	0.16	11.83	0.21	48.94	0.02	1	-	0	0	-	-	-
Suriname	2003	2	0.45	0.02	0.33	0.00	21.04	23.00	17.27	0.56	1	3.0	0	0	-	-	-
Swaziland	2003	3	0.90	0.01	1.01	0.16	14.63	7.29	15.11	-	0	17.0	0	0	-	0.74	-2.75
Sweden	2003	2	5.84	0.01	0.40	1.00	4.79	1.93	99.82	-	1	1.0	0	0	0.94	-0.23	0.40
Switzerland	2003	2	5.90	0.01	0.41	1.00	3.27	0.64	152.47	-	1	5.0	0	0	0.75	0.21	132.35
Syria	2003	3	3.24	0.03	0.31	0.00	7.50	5.80	10.10	0.07	0	3.0	1	1	0.44	-0.45	17.27
Tajikistan	2003	3	0.68	0.02	0.68	0.16	16.67	16.30	14.76	0.6	0	11.0	0	0	0.81	1.61	0.12
Tanzania	2003	1	2.50	0.01	0.21	0.16	14.52	5.30	8.08	0.36	0	8.0	0	0	0.38	3.19	3.82
Thailand	2003	1	5.07	0.02	0.62	0.41	5.94	1.80	100.50	0.01	1	3.0	0	0	0.44	0.25	0.35
Togo	2003	3	0.72	0.03	0.51	0.16	-	-0.96	17.17	-	0	10.0	0	0	-	-0.17	3.39
Trinidad Tob	2003	3	2.65	0.04	0.45	1.00	11.17	3.81	36.84	0.2	1	2.0	1	1	0.44	0.54	0.01
Tunisia	2003	1	3.38	0.02	0.41	0.16	-	2.71	60.75	0.03	0	16.0	0	0	-	0.29	1.36
Turkey	2003	1	6.01	0.06	0.24	0.16	-	25.30	14.55	0.49	1	1.0	0	0	0.81	0.49	-0.52
UK	2003	1	7.69	0.01	0.27	1.00	3.69	1.36	142.04	0.17	1	6.0	0	0	0.69	-0.19	1.02
US	2003	1	9.41	0.01	0.12	1.00	4.12	2.27	176.54	-	1	1.0	0	0	0.75	-0.08	0.65
Uganda	2003	3	2.07	0.01	0.18	1.00	18.94	8.68	8.40	0.32	0	18.0	0	0	0.56	0.43	0.79
Ukraine	2003	3	4.32	0.04	0.56	0.16	17.89	5.18	24.58	0.32	1	9.0	0	0	0.81	0.33	0.74
Uruguay	2003	1	2.73	0.06	0.26	1.00	58.94	19.38	43.19	0.89	1	3.0	0	0	0.63	0.54	-6.13
Yemen	2003	2	2.73	0.01	0.37	1.00	18.00	10.83	6.37	0.51	0	25.0	1	1	0.44	-	-
Zambia	2003	3	1.87	0.01	0.35	1.00	40.57	21.40	6.77	0.42	0	2.0	1	0	0.44	-0.17	3.95
Zimbabwe	2003	2	1.87	0.07	0.35	0.00	97.29	431.70	57.03	0.07	0	16.0	0	0	0.44	-	-

Table 8 (cont.): Raw data sample

## A.2 Robustness Tests

	lys_5 <sup>a</sup>					
	(1)	(2)	(3)	(4)	(5)	(6)
size	-0.550 *** 0.034	-0.583 *** 0.035	-0.552 *** 0.035	-0.380 *** 0.049	-0.522 *** 0.045	-0.495 *** 0.044
open	0.891 *** 0.272	0.867 *** 0.263	0.891 *** 0.272	0.715 ** 0.323	0.612 ** 0.291	0.796 *** 0.280
ka_open	0.010 0.163	0.011 0.165	-0.051 0.168	0.186 0.213	0.048 0.189	-0.066 0.188
fin_dev	0.010 *** 0.002	0.011 *** 0.002	0.011 *** 0.002	0.012 *** 0.003	0.007 *** 0.002	0.007 *** 0.002
inf_1 <sup>b</sup>	-0.0001 *** 0.000	-0.0001 * 0.000	-0.0001 ** 0.000	-0.0001 * 0.000	0.0000 0.000	-0.0001 0.000
nr	1.197 *** 0.141	1.673 *** 0.170	0.893 *** 0.253	2.464 *** 0.543	1.444 *** 0.281	0.927 *** 0.157
dem	-0.505 *** 0.106	-0.281 ** 0.112	-0.505 *** 0.108	-0.317 ** 0.137	-0.687 *** 0.119	-0.704 *** 0.119
dem x nr		-1.377 *** 0.272				
rgdp_vol_1			-0.641 2.732			
rgdp_vol_1 x nr			8.515 * 4.930			
cbi				-0.680 * 0.353		
cbi x nr				-2.613 ** 1.064		
fis_cyc					-0.3416 *** 0.114	
fis_cyc x nr					-0.999 *** 0.343	
fis_el_1						0.0001 ** 0.000
fis_el_1 x nr						0.005 0.0191761
Pseudo R2 <sup>c</sup>	0.13	0.13	0.13	0.08	0.13	0.12
Log likelihood	-2014.49	-2001.75	-1918.77	-1167.58	-1533.19	-1513.25
Wald chi2 (32)	475.52	474.18	451.12	183.26	314.81	333.47
Number of observations	2086	2086	1959	1003	1483	1442

Estimations from an ordered multinomial logit. All regressions include year dummies. Robust standard errors below coefficients. Significantly different from zero at the 10% (\*), 5% (\*\*), and 1% (\*\*\*) confidence level.

<sup>a</sup> The dependent variable *lys\_5* is a categorical variable that takes the value 1 if a country is classified as an inconclusive, 2 if floating exchange rate regime, 3 if dirty, 4 if dirty/crawling peg and 5 if fixed.

<sup>b</sup> A variable X with lagged values is denoted as X\_1.

<sup>c</sup> For ordered logit models, the R2 statistic is meaningless. Hence, we report McFadden's pseudo R-squared.

Table 9: Multinomial ordered logistic regression estimates with 5 way exchange rate regime classification: developing countries

lys_3 <sup>a</sup>						
	(1)	(2)	(3)	(4)	(5)	(6)
size	-0.589 *** 0.036	-0.610 *** 0.036	-0.585 *** 0.036	-0.406 *** 0.050	-0.554 *** 0.046	-0.523 *** 0.045
open	0.891 *** 0.261	0.877 *** 0.258	0.880 *** 0.261	0.797 ** 0.313	0.619 * 0.285	0.843 *** 0.272
ka_open	0.029 0.164	0.030 0.165	-0.021 0.168	0.242 0.213	0.068 0.189	-0.013 0.187
fin_dev	0.009 *** 0.002	0.010 *** 0.002	0.010 *** 0.002	0.011 *** 0.003	0.006 *** 0.002	0.007 *** 0.002
inf_1 <sup>b</sup>	-0.0001 0.000	0.0000 0.000	-0.0001 0.000	-0.0001 0.000	0.0000 0.000	0.0000 0.000
fuel	1.417 *** 0.169	1.735 *** 0.189	1.361 *** 0.288	2.453 *** 0.601	1.412 *** 0.304	1.177 *** 0.186
dem	-0.531 *** 0.105	-0.416 *** 0.107	-0.510 *** 0.108	-0.355 ** 0.140	-0.785 *** 0.118	-0.767 *** 0.118
dem x fuel		-1.299 *** 0.369				
rgdp_vol_1			3.093 2.504			
rgdp_vol_1 x fuel			2.384 5.761			
cbi				-0.609 * 0.357		
cbi x fuel				-2.325 * 1.269		
fis_cyc					-0.4395 *** 0.106	
fis_cyc x fuel					-0.616 * 0.383	
fis_el_1						0.0001 * 0.000
fis_el_1 x fuel						-0.001 0.0222447
Pseudo R2 <sup>c</sup>	0.15	0.16	0.15	0.10	0.16	0.15
Log likelihood	-1719.40	-1712.76	-1636.60	-989.91	-1296.09	-1278.07
Wald chi2 (32)	474.28	473.24	449.49	188.58	341.09	354.43
Number of observations	2091	2091	1964	1007	1488	1447

Estimations from an ordered multinomial logit. All regressions include year dummies. Robust standard errors below coefficients. Significantly different from zero at the 10% (\*), 5% (\*\*), and 1% (\*\*\*) confidence level.

<sup>a</sup> The dependent variable lys\_3 is a categorical variable that takes the value 1 if a country is classified as a floating exchange rate regime, 2 if intermediate and 3 if fixed.

<sup>b</sup> A variable X with lagged values is denoted as X\_1.

<sup>c</sup> For ordered logit models, the R2 statistic is meaningless. Hence, we report McFadden's pseudo R-squared.

Table 10: Multinomial ordered logistic regression estimates with fuel exporters: developing countries

	lys_3 <sup>a</sup>					
	(1)	(2)	(3)	(4)	(5)	(6)
size	-0.572 *** 0.066	-0.600 *** 0.068	-0.597 *** 0.067	-0.581 *** 0.066	-0.690 *** 0.084	-0.561 *** 0.076
open	2.309 *** 0.580	2.224 *** 0.587	2.402 *** 0.577	2.177 *** 0.591	2.114 *** 0.707	2.396 *** 0.681
ka_open	1.159 *** 0.328	1.220 *** 0.335	1.168 *** 0.329	1.124 *** 0.335	1.225 *** 0.398	1.260 *** 0.381
fin_dev	0.003 0.003	0.003 0.003	0.002 0.003	0.003 0.003	0.003 0.003	0.003 0.003
inf_l <sup>b</sup>	-0.0002 * 0.000	-0.0001 * 0.000	-0.0002 * 0.000	-0.0002 * 0.000	-0.0001 0.000	-0.0002 * 0.000
nr	1.266 *** 0.246	1.715 *** 0.325	0.792 * 0.452	2.721 *** 0.784	2.460 *** 0.492	1.694 *** 0.304
cbi	-1.283 *** 0.458	-1.228 *** 0.463	-1.232 ** 0.455	-1.059 ** 0.481	-0.908 * 0.510	-1.034 * 0.539
interest	0.00011 0.000	0.00002 0.000	0.00011 0.000	0.00017 0.000	0.00007 0.000	0.00015 0.000
dollar_l	-2.2909 *** 0.389	-2.3662 *** 0.393	-2.3032 *** 0.385	-2.3615 *** 0.404	-1.8374 *** 0.487	-1.8642 *** 0.450
yrsoffice	0.018 0.013	0.016 0.013	0.015 0.014	0.012 0.014	0.028 0.019	0.029 * 0.016
dem	-0.628 *** 0.214	-0.458 ** 0.233	-0.718 * 0.224	-0.671 *** 0.218	-0.674 ** 0.266	-0.504 ** 0.250
dem x nr		-0.958 * 0.493				
rgdp_vol_l			-10.663 ** 4.790			
rgdp_vol_l x nr			14.541 10.271			
cbi x nr				-3.033 * 1.656		
fis_cyc					-0.941 *** 0.213	
fis_cyc x nr					-1.1080 ** 0.564	
fis_el_l						-0.011 ** 0.005
fis_el_l x nr						0.032 0.035
Pseudo R2 <sup>c</sup>	0.19	0.19	0.19	0.19	0.19	0.16
Log likelihood	-582.91	-580.89	-577.69	-581.05	-	-
Wald chi2 (32)	858.72	1090.44	799.91	917.20	-	-
Number of observations	656	656	655	656	509	504

Estimations from an ordered multinomial logit. All regressions include year dummies. Robust standard errors below coefficients. Significantly different from zero at the 10% (\*), 5% (\*\*), and 1% (\*\*\*) confidence level.

<sup>a</sup> The dependent variable lys\_3 is a categorical variable that takes the value 1 if a country is classified as a floating exchange rate regime, 2 if intermediate and 3 if fixed.

<sup>b</sup> A variable X with lagged values is denoted as X\_l.

<sup>c</sup> For ordered logit models, the R2 statistic is meaningless. Hence, we report McFadden's pseudo R-squared.

Table 11: Multinomial ordered logistic regression estimates with additional variables: developing countries

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