Research Proposal

Exchange Rate Regime and Macroeconomic Performance in Oil Exporting Countries

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1 Objectives

The choice of an optimal exchange rate regime is one of the most discussed topics in the economic literature. Often policymakers are challenged to choose between fixed exchange rate regime, which is a ground for the “stability”, and floating exchange rate regime, which gives independence to monetary policy. The problem is even sharper in oil exporting countries (OECs) that are exposed to large and volatile foreign exchange windfalls. Then the question arises whether the choice of exchange rate regime has an exceptional explanatory power in the variation of macroeconomic performance in these countries, and if yes, which exchange rate regime is more effective.

The main objective of the proposed research is to seek an answer to these questions. The project will provide a multi-country test to check the influence of exchange rate regime on the economic performance in OECs. In particular we intend to examine whether the exchange rate regime plays an important role in macroeconomic stabilization and economic growth using a sample of 180 countries over the thirty two year period 1980-2011. Specifically we are planning to check the impact of exchange rate arrangements on inflation, non-oil output, non-oil export, and consumption, and also on their volatility. Preliminary we expect that less flexible exchange rate regimes are associated with higher growth as well as lower volatility in OECs.

Implemented exchange rate regimes (source: Levy-Yeyati, 2003) exhibit cross-country and cross-time variation over the long run (Figure 1). Average growth rates were higher in countries with pegged exchange rate regime during this period, what explicitly supports our main research idea (Figure 2).

2 Practical contribution of research

The research will contribute to the ongoing debate on the economic consequences of exchange rate regimes. Despite a massive literature studying this issue, to our knowledge there is no multi-country empirical research that focuses solely on the role of exchange rate flexibility in OECs. We will examine the role of implemented exchange rate regime in macroeconomic performance focusing mainly on OECs featuring large and volatile windfall revenues. The results of this project could be valuable for policy makers in OECs as
well as in aid receiving countries due to similarities between aid and oil revenue inflows.

Our theoretical model (Aliyev, 2012b) predicts that pegging the exchange rate allows softening the negative effects of Dutch Disease and stabilizes the economy in the face of volatile natural resource revenues. In the model we demonstrate that the fixed exchange rate regime outperforms price level targeting or laissez-faire policies by delivering higher isolation and hence smaller vulnerability to shocks in foreign revenues. This paper aims at empirically testing these theoretical results. Based on findings from the theoretical model we expect that countries with fixed exchange rate will more likely achieve macroeconomic stabilization compared to flexible regime countries.
3 Hypothesis

Our research hypothesis is that in OECs fixed exchange rate regime delivers higher isolation from, and smaller vulnerability to foreign exchange inflows. This in turn can lead to higher economic growth. The intuition behind this hypothesis is that under fixed exchange rate regime oil revenues are accumulated/decumulated as central bank’s international reserves during the period of high/low oil exports, and therefore countries with pegged exchange regime will have higher isolation. Keeping the source of the curse, i.e. oil-dollars, outside of the economy may help improve the situation. The alternative hypothesis is that the floating (or more flexible) exchange rate regime outperforms the fixed regime in terms of stabilization and long run growth. We will test this hypothesis by using cross-country and cross time multi-country test for a sample of 180 countries over the thirty-two years period. The test will allow us to analyze different exchange rate regimes, namely fixed, managed floating, and floating, specifically to uncover which regime delivers higher stabilization and helps to prevent the negative outcomes of the Dutch Disease.

4 Literature review

Despite controversial and continuous debates, there is no clear answer to the question does the exchange rate regime matter. In more recent literature some researchers find evidence on the importance of exchange rate regime, while others do not find any strong
link between exchange rate regime and maco-economic performance.

Economic research mainly focuses on the impact of exchange rate regime on economic growth, volatility, and inflation using different exchange rate regime classification techniques (see Harms and Kretschmann, 2009 for a detailed comparison).

For example, Gosh et al. (2002) use the de jure exchange rate regime classification (based on the IMF’s Annual Report on Exchange Rate Arrangements and Exchange Restrictions) and find that a fixed exchange rate regime has a positive effect on economic growth. However, in practice, countries usually demonstrate fear of floating and do not allow exchange rate to float against their official announcements (Calvo and Reinhart, 2000; Levy-Yeyati and Struzenegger, 2005).

Levy-Yeyati and Struzenegger (2003) classify de facto exchange rate regimes by using nominal exchange rate and foreign reserves data. They find that in non-industrialized countries fixed exchange rate brings about slower growth and higher output volatility. 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 (Husain et al., 2005; Aghion et al., 2006).

Another important reason for variety of these results is a heterogeneity in country-specific characteristics that possibly can affect the functioning of different regimes.

There is an empirical evidence that fuel exporters are more likely to have a pegged exchange rate regime (Klein and Shambaugh, 2009). Then several questions arise: is there any particular reason; why these countries tend to have bigger fear of floating than others; what are the benefits of pegging (if there is any)? As we see, despite large empirical literature on exchange rate arrangements to our best knowledge there is no research that is trying to answer these questions. In our research, we are planning to address these questions by focusing on the role of exchange rate regimes in OECs. Aliyev (2012b) in a theoretical framework describes the mechanism how under exchange rate pegging some part of petro-dollars are saved outside the domestic economy as central bank’s international reserves during high oil revenues. This finding might be useful in answering these questions.
5 Methodology

5.1 Data

All necessary data in this research are free and publicly available. The full sample contains annual observations on about 180 countries over the period 1980-2011. We will borrow exchange rate regime classification from Levy-Yeyati and Struzenegger (2003) which is available at authors’ web-page. All other macroeconomic data can be 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. The measure for the central bank independence as the turnover of the central bank governor will be taken from Cukierman (1992) and Arnone et al. (2007).

5.2 Estimation

To capture the dynamic impact of exchange rate arrangements across OECs we will use a panel data framework. We regress the growth rate and volatility of output, non-oil export, and consumption, and inflation on dummies for exchange rate regimes, and other country specific control variables. The current version of the model is given below:

\[ Y_{i,t} = \alpha_{fix} D_{i,t}^{fix} + \alpha_{int} D_{i,t}^{int} + \alpha_{oil} D_{i,t}^{oil} + \beta_{fix} D_{i,t}^{fix} D_{i,t}^{oil} + \beta_{int} D_{i,t}^{int} D_{i,t}^{oil} + \gamma X_{i,t} + e_{i,t} \]  

Here \( Y_{i,t} \) denotes macroeconomic performance, i.e. output, non-oil export, consumption, or inflation. \( D_{i,t}^{fix} \) and \( D_{i,t}^{int} \) are exchange rate regime dummies. We classify exchange rate arrangements into three categories: (i) fixed, (ii) intermediate, and (iii) floating (based on methodology suggested by Levy-Yeyati and Struzenegger, 2003). \( D_{i,t}^{oil} \) is a dummy that controls oil exporters, and \( X_{i,t} \) captures all other explanatory variables. Following standard literature we will control for country-specific and time-variant variables such as money growth, fiscal stance, oil dependence (share of oil GDP in total GDP), oil exports, estimated oil reserves, inflation, World Bank index of development, initial per capita GDP, the central bank independence, trade openness, and investment (investment to GDP ratio). Moreover we will include dummies to control for the periods before and after oil
discovery, and dummies for regions (e.g. Middle East, Latin America, Post-Soviet).

In our econometric model there is a possibility of reverse causality and the endogeneity of the exchange rate regime (Levy Yeyati et al., 2010). To deal with this problem we will use two stage instrumental variable (2SIV) method. Because of the discrete nature of the exchange rate regime variables, in the first stage, we run a multinomial logit model of exchange rate regime \( D_{i,t}^{\text{regime}} = D_{i,t}^{\text{Fix}}, D_{i,t}^{\text{Int}} \) on the control variables and the instrumental variables \( Z_{i,t} \):

\[
D_{i,t}^{\text{regime}} = \delta_0 + \delta_1 X_{i,t} + \delta_2 Z_{i,t} + \varepsilon_{i,t}. \tag{2}
\]

To address the endogeneity of exchange rate regimes several instrumental variables are proposed in the literature. Levy-Yeyati and Struzenegger (2002) use the size of the country, the level of international reserves relative to the monetary base, and a regional exchange rate indicator equal to the average exchange rate regime of the country’s neighbors. We can also use the square of historical inflation rate [Levy-Yeyati et al. (2002)] or liability dollarization and trade concentration [Yougbare (2008)] as instrumental variables for the exchange rate regime. Another way of dealing with endogeneity is to use 1 or 2 years lagged values of the exchange-rate dummy as an instrument [Husain et al. (2004)]. In the second stage we use the predicted values of the exchange rate regime in the main equation (1).

5.3 Expected research outputs

The purpose of this research is to find which exchange rate regime has been effective in promoting macroeconomic performance in OECs. Our expectation is that fixed exchange rate regime outperforms floating regime in terms of macroeconomic stabilization and long run growth. In general, testing the hypothesis of the current research can provide us with an answer to the following question: is there a unique role of of exchange rate regime in OECs? We believe that given distinctive features of resource richness, exchange rate flexibility does matter in OECs in a specific way. If our expectation is true, we expect finding that coefficients \( \beta_{fix} \) and/or \( \beta_{int} \) are significantly different from zero.
6 Bibliography


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7 Participants

**Ruslan Aliyev - project head**

- Junior Economic Institute Researcher, Academy of Sciences of the Czech Republic
- Participant, Czech National Banks Call for Research Projects 2010, The Impact of Monetary Policy on Financing of Czech Firms
- Project head, 11th Global Development Network Regional Research Competition Monetary Policy in Resource-Rich Developing Economies
- Advanced Student Fellowship, Macroeconomic Forecasting Project with Institute for Democracy & Economic Analysis (IDEA)
- Research Assistant, Center for Economic Research and Graduate Education - Economics Institute (CERGE-EI)
- Economist, The Central Bank of Azerbaijan, Monetary Policy Department

**Ilkin Aliyev - project participant**

- Economist, Ministry of Finance of the Czech Republic
- Investment Analyst (Russian cluster), ExxonMobil Petroleum and Chemical
- Junior Economic Institute Researcher, Academy of Sciences of the Czech Republic
- Research Assistant, Center for Economic Research and Graduate Education - Economics Institute (CERGE-EI)
- Economist, The Central Bank of Azerbaijan, Monetary Policy Department
## Project timetable

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<td>Preparing the preliminary results</td>
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