Exchange-rate regimes and economic growth:

An empirical evaluation

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Abstract

Based on a dataset of 123 economies, this paper empirically investigates the relation between exchange-rate regimes and economic growth. We find that growth performance is best under intermediate exchange rate regimes, while the smallest growth rates are associated with flexible exchange rates. Nevertheless, this conclusion is tempered when we analyze the countries by income level: even though countries that adopt intermediate exchange-rate regimes are characterized by higher economic growth, the higher the level of income, less difference in growth performance across exchange rate regimes.

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1. Introduction

The relationship between exchange-rate regimes and economic growth is a widely discussed topic in economics, but still a controversial one.

This paper provides a fresh and comprehensive assessment of this hypothesis in a large cross-section of countries over a long sample. The key questions that guide our analysis are: (i) is there an optimal exchange rates to render economic growth?, and, (ii) does it depend upon the income level? Answers to these questions seem relevant as they have direct implications for policy makers and academic researchers.

The paper proceeds as follows. The next section briefly reviews the empirical literature on exchange-rate regimes and economic growth. Section 3 details the data. Section 4 describes the empirical strategy and reports the results.

2. Literature review

From the theoretical point of view, there are two strands of thought when it comes to postulating the relationship between exchange-rate regimes and economic growth, although consensus does not yet exist in this literature.

The first strand contents that, thanks to the credibility associated with fixed exchange-rate regimes, a macroeconomic scenario characterized by a reduction in interest rates in the long run would be generated, since the risk premium would be much lower, thus positively affecting incentives for consumption and investment and generating significant economic growth [see, e. g., Dornbusch (2001) and De Grauwe and Schnabl (2004)]. Within this first approach, another commonly used justification for claiming that lesser flexible regimes would promote economic growth is the claim that a most credible environment would encourage economic openness. This would lead to a boost in international trade, resulting from the elimination of risk in the exchange rate channel through which higher economic growth would be triggered.

However, the second stream emphasizes the weakness of fixed exchange-rate regimes in the efficient allocation of resources primarily associated with the absence of an adjustment to face economic shocks. This problem was already highlighted by

Friedman (1953), when he emphasized that the only way to react to external shocks experienced by fixed regimes was through changes in relative prices. This author pointed out that the situation is even worse when we are in a Keynesian world where the price adjustment is slow, causing an economic slowdown.

Given that there is no theoretical consensus, a large number of empirical studies have attempted to evaluate the relationship between exchange-rate regimes and economic growth. But, as pointed out by Petreski (2009), there are studies that find a positive effect on economic growth, others that obtain a negative influence and still other that either the impact remains indeterminate or simply no such effect is .detected. For instance, both Mundell (1995) and Obstfeld and Rogoff (2000) find empirical evidence suggesting that those countries that adopt fixed exchange rate regime are characterized by higher economic growth. On the other hand, Bailliu, Lafrance and Perrault (2003) contend that the lowest growth rates are related with both an intermediate regime and a flexible regime. Finally, Edwards and Levy-Yeyati (2003) claim that the optimal exchange-rate regime is the flexible one, since it is associated with a faster growth.

3. Data

We employ data for a total of 123 countries, both developed and developing countries. The 123 countries are: Algeria, Antigua and Barbuda, Argentina, Australia, Austria, Bahamas, Barbados, Belgium, Belize, Benin, Bolivia, Botswana, Brazil, Burkina Faso, Burundi, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Congo Dem Rep, Congo Republic, Costa Rica, Côte d'Ivoire, Cyprus, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Finland, France, Gabon, Gambia, Germany, Ghana, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran Islamic Rep, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kenya, Korea, Kuwait, Lao People Dem Rep, Lebanon, Lesotho, Liberia, Libya, Luxembourg, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritania, Mauritius, Mexico, Morocco, Myanmar, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Portugal, Romania, San Marino, Saudi Arabia, Senegal, Singapore, South Africa, Spain, Sri Lanka, St Kitts and Nevis, St Lucia, St Vincent and Grenadines, Suriname, Swaziland, Sweden, Switzerland, Syrian Arab Republic, Tanzania, Thailand, Togo, Tunisia,

Turkey, Uganda, United Kingdom, United States, Uruguay, Venezuela, West Bank and Gaza, Zambia and Zimbabwe.

To assess real economic growth, we use the annual percentage change rate of the Gross Domestic Product at market prices expressed in constant 2000 US dollars, taking from the World Bank's Development Indicators (WDI) database.

Regarding the exchange rate regimes, we have used the *de facto* classification of Reinhart and Rogoff (2004), updated to 2010 by Ilzetzki, Reinhart and Rogoff (2011). In line with previous studies, we consider three categories: fixed, intermediate and flexible exchange-rate regimes.

Due to data availability, our sample period ranges from 1970 to 2010. Nevertheless, our sample covers a relevant time period characterized by relatively open and integrated markets over the post-Bretton Woods period.

4. Empirical strategy and results

4.1. Empirical strategy

We form groups of countries at the end of each year based on the *de facto* "natural fine classification" of Reinhart and Rogoff (2004), updated to December 2010 by Ilzetzki, Reinhart and Rogoff (2011), to distinguish between a wide range of *de facto* regimes.

Starting in 1970, we recursively form groups of countries based on the *de facto* classification and we track their growth performance. The dynamic rebalancing of country groups enables us to look at the average growth performance of groups of countries with similar exchange-rate regimes.

This procedure circumvents the need to assume a specific channel through which regime might influence growth and naturally handles unbalanced panels of data where countries enter the sample at different times (or drop out of the sample, e.g., due to the adoption of the euro). Additionally, this approach produces results which are readily interpretable in terms of economic significance, since the difference in growth differentials between groups directly yields an estimate of how much higher the rate of growth is in countries with a given exchange-rate regime versus countries with an alternative one.

4.2. Empirical Results

We considered three statistics to evaluate the economic growth performance of each group of countries: the median, the 20% trimmed mean and the 20% winsorised mean[1]. Table 1 (Panel A) presents the results. As can be seen, those countries that adopt intermediate exchange-rate regimes are characterized by higher economic growth, while the smallest growth rates are associated with flexible exchange rates. A formal test of equality indicates that there are indeed significant differences between growth rate of each group of countries. This finding is in line with Ghosh *et al.* (2002) and could be related with the fact that, compared with the corner solutions, intermediate regimes could achieve a better balance between the stability of a fixed rate with the monetary policy independence of a floating regime.

To assess the robustness of our results, we divide economies under study in four income groups using the World Bank's classification: low income, lower middle income, upper middle income and high income. Given that income classifications are set each year based on their *per capita* income data, we recursively formed groups of countries based on the *de facto* and income classifications, tracking their growth performance. Panels B to E in Table 1 report the results. As can be seen, we find again that growth rates are much higher in countries with intermediate exchange-rate regimes. Nevertheless, for low income countries, there are significant differences between fixed and intermediate regimes and between intermediate and flexible regimes, but not between fixed and flexible regimes. For lower middle and upper middle income countries, there are significant differences between fixed and flexible regimes and between intermediate and flexible regimes, but not between fixed and intermediates regimes. Finally, for high income countries, there are not significant differences between exchange rate regimes.

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[1]Note that, in contrast to the arithmetic mean, the trimmed and winsorised means are robust measures of central tendency because they are less sensitive to outliers.

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Table 1: Empirical results

	Median	Winsorised mean	Trimmed mean
Panel A: All countries			
Fixed regimes	3.5726 (15.9831)	3.7309 (17.8092)	3.6871 (17.4534)
Intermediate regimes	4.3534 (23.3072)	4.3822 (22.8686)	4.3939 (23.6684)
Flexible regimes	3.0327 (13.8638)	2.8332 (12.6824)	2.8946 (13.5147)
Fixed *vs.* Intermediate	7.1836 [0.0089]	5.2615 [0.0244]	6.3150 [0.0140]
Fixed *vs.* Flexible	2.9811 [0.0881]	8.5958 [0.0044]	6.9402 [0.0101]
Intermediate *vs.* Flexible	21.0823 [0.0000]	27.69833 [0.0000]	27.9794 [0.0000]
Panel B: Low income countries			
Fixed regimes	3.2957 (11.3223)	3.3726 (12.9016)	3.3347 (12.4205)
Intermediate regimes	5.0982 (27.5644)	4.9080 (21.8960)	4.9480 (23.2159)
Flexible regimes	3.4073 (7.9990)	3.0791 (6.9267)	3.1173 (7.0735)
Fixed *vs.* Intermediate	27.0242 [0.0000]	19.7996 [0.0000]	22.0185 [0.0000]
Fixed *vs.* Flexible	0.0469 [0.8292]	0.3239 [0.5713]	0.1774 [0.6750]
Intermediate *vs.* Flexible	13.2573 [0.0006]	13.4955 [0.0005]	13.9845 [0.0004]
Panel C: Lower middle income countries			
Fixed regimes	4.4863 (16.9195)	4.7064 (19.7568)	4.6226 (19.3172)
Intermediate regimes	4.8720 (21.2966)	5.079281 (22.4644)	5.0118 (22.7599)
Flexible regimes	2.6446 (5.7975)	2.886295 (6.5608)	2.8433 (6.4773)
Fixed *vs.* Intermediate	1.2137 [0.2739]	1.2891 [0.2596]	1.4318 [0.2350]
Fixed *vs.* Flexible	12.1832 [0.0009]	13.2358 [0.0006]	12.6664 [0.0000]
Intermediate *vs.* Flexible	19.05231 [0.0001]	19.6565 [0.0000]	19.4969 [0.0000]
Panel D: Upper income countries			
Fixed regimes	3.8560 (8.9645)	3.9899 (9.4291)	3.9493 (9.2975)
Intermediate regimes	4.9756 (13.4232)	5.0149 (12.6031)	5.0118 (13.0271)
Flexible regimes	2.1240 (4.2902)	2.2018 (4.4284)	2.1854 (4.4058)
Fixed *vs.* Intermediate	3.8430 [0.0535]	3.1004 [0.0822]	3.4158 [0.0684]
Fixed *vs.* Flexible	6.9984 [0.0098]	7.5009 [0.0076]	7.2957 [0.0084]
Intermediate *vs.* Flexible	21.2946 [0.0000]	19.2752 [0.0000]	19.9958 [0.0000]

Table 1 (continued)

	Median	Winsorised mean	Trimmed mean
Panel E: High income countries			
Fixed regimes	2.8685	2.9258	2.9145
	(8.4902)	(8.3221)	(8.4712)
Intermediate regimes	3.1549	3.2097	3.1875
	(12.0952)	(11.9013)	(12.0717)
Flexible regimes	2.9031	2.9253	2.9321
	(11.3381)	(12.5832)	(12.4916)
Fixed *vs.* Intermediate	0.4503	0.4107	0.3960
	[0.5041]	[0.5234]	[0.5309]
Fixed *vs.* Flexible	0.0067	1.19E-06	0.0018
	[0.9351]	[0.9991]	[0.9664]
Intermediate *vs.* Flexible	0.4744	0.6381	0.5222
	[0.4929]	[0.4268]	[0.4720]

Notes:

In the ordinary brackets below the parameter estimates are the corresponding *t*-statistics based on Newey and West (1987) standard errors.

XX *vs.* XX are equality tests. In the square brackets we report the associated *p*-values are given.