
Does globalization enhance the role of fiscal policy in economic stabilization?

Alena Kimakova
York University

Abstract

This note proposes a research agenda for studying the implications of enhanced capital mobility and limited de facto exchange rate flexibility for the conduct of macroeconomic stabilization. The ineffectiveness of monetary policy under such conditions suggests a greater role for fiscal policy as a stabilization instrument. The paper outlines a methodology for empirically verifying whether financially more open economies with a preference for exchange rate regimes with limited de facto flexibility implement a more counter-cyclical fiscal policy. Empirical testing of this hypothesis at the cross-national level is nonetheless hindered by data availability. Statistics on cyclically adjusted budget balances are typically available for OECD member countries only, but this sample offers little variation in terms of de facto exchange rate regime choice.

Citation: Kimakova, Alena, (2006) "Does globalization enhance the role of fiscal policy in economic stabilization?." *Economics Bulletin*, Vol. 8, No. 11 pp. 1-11

Submitted: June 13, 2006. **Accepted:** July 25, 2006.

URL: <http://economicsbulletin.vanderbilt.edu/2006/volume8/EB-06H10001A.pdf>

1. Globalization and fiscal policy

In the Mundell-Fleming open economy model with perfect capital mobility and fixed exchange rates, fiscal policy - unlike monetary policy - can be used to stabilize output. Recent evidence on the evolution of exchange rate systems since the demise of the Bretton Woods system suggests that truly flexible exchange rate systems have in fact been rare. Does this imply that globalization enhances the role of fiscal policy in economic stabilization?

Rodrik (1998) found an empirically strong positive relationship between trade openness and government size, suggesting that government spending plays a risk-reducing role in open economies. Globalization in terms of trade and capital flows has both macro- and micro-economic implications. International trade can have strong distributional effects. For instance, the widening income gap between skilled and unskilled workers in mature economies puts increased demands on compensatory fiscal policy in the form of social insurance in the short run, and public investment in education over the long term. In developing countries, enhanced international capital mobility has further highlighted the significance of public infrastructure investment as a factor in attracting foreign investment and participation in international trade.

This note directs attention to the financial aspects of globalization and their macroeconomic implications. The 1990s were characterized by an upsurge in private capital flows, and developing countries have been important players in this expansion. Figure 1 shows that net private capital flows to low and middle income countries increased tenfold between 1985 and 1997, reaching USD 275.5 bil. at their peak in 1997 (*World Development Indicators*, World Bank). Another important feature of international capital flows is their large degree of volatility.¹

In parallel to these developments, the International Monetary Fund (IMF) has reported that most countries have moved away from the rigid exchange rate arrangements that characterized the Bretton Woods system. During the 1970s most developing countries, as well as smaller industrialized nations, continued to peg their official exchange rates to a single or a basket of major currencies. The 1980s and 1990s saw experimentation with more explicitly flexible forms of exchange rate regimes. According to the IMF, the proportion of developing countries employing some form of a fixed regime decreased from around 90 percent in 1975 to below 50 percent in the late 1990s. A similar pattern of increased flexibility can be detected in the case of more developed economies when exchange rate systems are classified in official terms.²

However, a number of empirical studies of exchange rate regimes have highlighted the large degree of variation in regime characteristics within the same official IMF classification.³ Reinhart and Rogoff (2004), Levy-Yeyati and Sturzenegger (2003, 2005) and Poirson (2001) introduced measures of *de facto* exchange rate regimes and documented a divergence between *de facto* and official or *de jure* declarations of regime by individual governments. Once *de facto* exchange rate regime measures are taken into account, the tendency towards more flexible forms of regime during the 1980s and 1990s is not so obvious any longer. These studies have found that truly flexible regimes are rare. These are typically large economies with well developed

¹ The Asian and Russian crises of 1997 and 1998 respectively are a good case in point. For a discussion of the characteristics and determinants of the microstructure of global capital flows see for example IMF (2001).

² There are notable exceptions to these patterns including the formation of the European Monetary System (EMS) and later the European Monetary Union (EMU). A number of developing countries have also chosen less flexible regimes during this period.

³ For official IMF classification see *Annual Report on Exchange Rate Arrangements and Exchange Restrictions*.

financial markets such as the United States, Japan and the new European Monetary Union (EMU). Most of the countries in the world significantly lag behind in the degree of *de facto* regime flexibility they allow. These findings are consistent across the mentioned studies despite the variation in the method of measuring *de facto* exchange regime.

The IMF revised its classification of exchange rate regimes in 1997 and 1999. The new classification is more disaggregated and is intended to be a *de facto* categorization. Nevertheless, large discrepancies remain between the IMF classification, and other discrete and continuous measures of *de facto* regime in the literature. For this reason, most researchers continue to regard the IMF classification as a *de jure* declaration of regime. See for example von Hagen and Zhou (2004b).

Table 1 provides a cross-tabulation of *de facto* and *de jure* exchange rate classifications by von Hagen and Zhou (2004a) for 112 developing countries between 1978 and 2000. The table demonstrates that in *de facto* terms, fixed regimes are more prevalent and floats more scarce in developing countries than the IMF classification would suggest.

Why do countries continue to exhibit a preference for exchange rate regimes with limited flexibility while officially declaring a more flexible form of regime management? The surge in international capital flows during the 1990s can help explain the growing number of formally flexible regimes. The lack of explicit commitment to maintaining a fixed exchange rate reduces intervention costs in the face of potential speculative attacks under a peg.

At the same time, the revealed preference for *de facto* exchange rate stability is likely to be linked to large holdings of domestic liabilities by non-residents. The so-called ‘fear of floating’ literature explains the motivation to *de facto* peg a currency as means of hedging a country’s burden of foreign currency liabilities and/or the value of its foreign assets (see Calvo and Reinhart (2000), Hausmann et al. (2001)).

Maintaining a stable regime reduces the probability of default on foreign currency denominated liabilities, attracts more foreign capital, and thus reduces risk premia and interest rates to the benefit of domestic borrowers. For instance, Hausmann et al. (1999) find that flexible exchange rate regimes in Latin America from the 1960s through the 1990s were associated with higher real interest rates, smaller financial systems, and greater sensitivity of domestic interest rates to movements in international rates than fixed exchange rate arrangements.

Hakura (2005) argues that emerging market economies have been ‘learning to float’. The paper derives estimates of monetary policy independence based on the sensitivity of domestic interest rates to international interest rates for 21 emerging markets over the period 1992-2003. The estimates of monetary independence are then tabulated across exchange rate regimes using the revised IMF classification. Still, the results reveal a large degree of variation in the degree of estimated monetary independence among countries classified in the same exchange rate regime category. Moreover, the majority of the countries in the sample classified as free float or managed float exhibit a strong and statistically significant positive correlation between domestic and foreign interest rates. This is symptomatic of a lack of monetary independence. The results thus seem to be in congruence with the findings of the literature on *de facto* regime choice rather than validating the IMF’s regime classification as a truly *de facto* categorization.

This paper outlines the implications of enhanced capital mobility and limited *de facto* exchange rate flexibility for the conduct of macroeconomic stabilization. The Mundell-Fleming model suggests that monetary policy becomes ineffective under such circumstances, and Hakura (2005) provides some empirical confirmation for emerging markets in this regard. Hence, does or should this imply a greater emphasis on fiscal policy to support output growth in a Keynesian

demand-constrained open economy? In other words, is the fiscal policy stance more counter-cyclical in countries that are financially open and have a *de facto* fixed exchange rate regime?

Galí and Perotti (2003) estimate empirically fiscal policy rules for eleven EMU countries that officially relinquished monetary policy control as of 1999.⁴ They find that discretionary budget deficits have in fact become more counter-cyclical in the member countries of the EMU after the implementation of the Maastricht Treaty over the period 1997-2001 relative to 1988-92. While this result is broadly consistent with the hypothesis presented in this paper, they also find a similar trend in other OECD countries.

Extending the analysis of Galí and Perotti (2003) to all OECD countries and incorporating the control variables suggested by our hypothesis, would unfortunately not provide sufficient variation in regime choice. Current EMU countries, and new EU states aspiring to future membership in the monetary union, make up a significant part of the OECD group. At the same time, expanding the sample to non-OECD countries poses new challenges in terms of data availability. Data on fiscal policy stance that allow distinguishing between discretionary and automatic spending are provided by the OECD for member countries only.

Consequently, this paper outlines the agenda and methodology for future empirical testing of the hypothesis that financial globalization and a revealed preference for exchange rate regimes with limited *de facto* flexibility imply a more-proactive role for fiscal policy in macroeconomic stabilization. The paper is organized as follows: Section two briefly reviews the relevant literature. Section three provides an overview of the methodology for cyclically adjusting budget balances. Section four describes the model specifications for empirical testing. Section five concludes with a call for developing an internationally comparable database on cyclically adjusted fiscal statistics.

2. Fiscal policy effectiveness

Hemming et al. (2002) provide an extensive review of the theoretical and empirical literature on the effectiveness of fiscal policy in stimulating economic activity, primarily as measured by the magnitude of a fiscal multiplier. Spanning the theoretical literature the paper identifies a set of conditions under which fiscal multipliers will generally tend to be positive and quite large. In other words, factors that enhance the effectiveness of fiscal stimulus include:

- a demand constrained economy with excess capacity;
- a closed economy or an open economy with a fixed exchange rate;
- households with limited horizons or liquidity constraints;
- increased government spending does not substitute for private spending, it enhances the productivity of factors of production;
- lower taxes increase labour supply and/or investment;
- government debt is low and the government does not face financing constraints;
- a simultaneous monetary expansion with limited inflationary consequences.

The 1990s were characterized by a perception that reducing the size of the government through spending cuts and tax breaks is likely to have a positive impact on output growth. The theoretical underpinnings of an expansionary fiscal contraction (or a negative fiscal multiplier) include:

⁴ Galí and Perotti (2003) investigate whether the limitations imposed on fiscal policy conduct by the Maastricht Treaty and the Stability and Growth Pact impede the ability of EMU governments to implement macroeconomic stabilization.

- direct crowding out of private provision of output by government provision;
- indirect crowding out as interest rates rise and a flexible exchange rate appreciates in response to a fiscal expansion;
- household behavior conforming to Ricardian equivalence;
- issues of debt sustainability, credibility loss and high risk premia on interest rates.

Most of the empirical findings in the literature relate to OECD countries. Estimates of fiscal multipliers are typically positive yet small, and government spending multipliers are systematically larger than those of tax cuts. Negative fiscal multipliers or expansionary fiscal contractions are empirically rare, but they can be generated by incorporating credibility effects into macroeconomic simulation models.

Another stream of research focuses on the size of government and macroeconomic volatility. Studies in this area typically find a negative association between government size as a percentage of GDP and macroeconomic volatility. For example, the analysis of Galí (1994) in the context of a real business cycle model suggests that government purchases have a stabilizing effect on output variability for most model specifications considered, and the results are even stronger empirically using data for OECD countries. Fatas and Mihov (2001) also show that increase in government spending relative to GDP reduces output volatility in their study of OECD countries and US states.

Rodrik (1998) points out the endogeneity between the determination of government size and macroeconomic volatility. In his political economy framework open economies, which are inherently more volatile, demand larger government as a compensatory device.

Other political economy models on the microfoundations of public finance typically incorporate distributional conflict. In general, voter heterogeneity leads to redistributive conflict and larger government size as a means of placating political opposition. The works of Alesina and Spolaore (1997), Persson et al. (1998), Persson and Tabellini (1999), Annett (2001), and Tridimas and Winer (2005) serve as the benchmarks of this literature.

Among the institutional aspects of fiscal policy relevant to the conduct of macroeconomic stabilization are the lags in the implementation process. First of all, it takes time to detect a downturn in the economy, decide on the appropriate policy response and to actually adjust fiscal policy. Such lags - also referred to as inside lags - are at least partly a function of the political process and the structure of fiscal management. The greater the reliance on automatic stabilizers rather than discretionary measures in a system of public finances, the shorter the inside lags are likely to be. Outside lags on the other hand refer to the time period it takes for the fiscal measures to feed through to aggregate demand. Outside lags tend to be shorter for transfers and income tax cuts targeted at households facing liquidity constraints.

Consequently, using aggregate budget deficits in the analysis of the cyclical nature of fiscal policy is likely to be inadequate. Careful differentiation among fiscal components with various degrees of inside and outside lags seems inevitable. Distinguishing between automatic stabilizers and discretionary tools in fiscal policy conduct, however, poses significant data and methodological challenges.

3. Cyclically adjusted budget balances

Since fluctuations in economic activity affect government budget balances, fiscal data need to be adjusted for such cyclical influences. Additionally, the adjustment method should account for the simultaneity problem between the business cycle and budget balances:

macroeconomic fluctuations affect the fiscal position which, in turn, impacts on economic activity. A number of papers provide guidance on the methodological issues associated with cyclically adjusting budget data, among these are, for example, Giorno et al. (1995), Hagemann (1999), van den Noord (2000), Bouthevillain et al. (2001), and Galí and Perotti (2003).

The components of the analysis include estimating the elasticities of taxes and public expenditures with respect to output, the output gap and their impact on budget components. The adjusted figures are point estimates sensitive to the choice of the method for de-trending macroeconomic data, the treatment of structural breaks and elasticity estimates. Most studies typically employ the Hodrick-Prescott (HP) filter or production function based estimates of potential output. Elasticity estimates integrate information from the tax code, distribution of tax payers across income brackets or involve regression estimates of tax revenue on GDP. Among the institutions providing such data components for cyclically adjusted budget balances are the OECD, IMF and the European Commission, but coverage is typically limited to OECD countries. As outlined above, the OECD sample does not offer sufficient variation in terms of *de facto* exchange rate regime choice for an empirical analysis accounting for the endogenous evolution of regime choice, financial openness and fiscal rules.

To illustrate in simplest terms the structure of analysis, we follow van den Noord (2000) and Galí and Perotti (2003). Let Y_t^* denote the reference value of GDP calculated by an output-smoothing method such as trend or HP-filtered GDP, or potential output. Then structural tax revenues T_t^* and spending G_t^* are calculated as follows

$$\frac{T_t^*}{T_t} = \left(\frac{Y_t^*}{Y_t} \right)^\alpha \quad \text{and} \quad \frac{G_t^*}{G_t} = \left(\frac{Y_t^*}{Y_t} \right)^\beta \quad (1)$$

where α and β denote the output elasticity of tax revenues and spending respectively; and T_t and G_t stand for actual tax revenues and government expenditures (excluding capital and interest spending). The degree of decomposition can be enhanced through differentiation among tax and spending categories.⁵

Dividing structural tax revenues T_t^* and spending G_t^* by the reference value of output Y_t^* yields the structural or discretionary primary deficit as a share of GDP:

$$b_t^* = \frac{T_t^* - G_t^* + X_t}{Y_t^*} \quad (2)$$

Note that the structural deficit in equation (2) is further adjusted for non-tax revenues minus interest on public debt minus net capital outlays, denoted by X_t .

The cyclical component of the budget balance, b_t^{**} , is then calculated as the difference between the actual budget balance b_t (expressed as ratio to actual output) and the structural budget balance b_t^* (as share of potential output).

$$b_t^{**} = b_t - b_t^* \quad (3)$$

For detailed derivations and methodological issues in the estimation of the output elasticities of tax revenues and spending, α and β respectively, the reader may refer to Giorno et al. (1995), van den Noord (2000), Bouthevillain et al. (2001) or OECD (2002). It is worth noting at this point that the bulk of the research effort for calculating cyclically adjusted budget balances lies in the estimation of the elasticities of tax revenues and government spending with respect to output.

⁵ For example, van den Noord (2000) distinguishes among four tax categories: corporate, personal income, social security and indirect tax.

4. Empirical modeling

This section outlines a methodology for empirically testing the hypothesis that financially more open economies with a revealed preference for exchange rate regimes with little *de facto* flexibility are induced to exercise more countercyclical fiscal policy. Fiscal policy can be approximated using structural (discretionary) budget balances, or in terms of cyclical budget balances, also interpreted as automatic stabilizers.

This paper suggests a two-step procedure for the empirical test. The first step involves quantifying the degree to which fiscal policy is counter- or pro-cyclical in individual countries over a certain time period using structural and/or cyclical budget balances as outlined in the previous section. In the second step, the estimated measures of fiscal policy stance can be used in a cross-sectional or panel regression relating them to variables of *de facto* regime choice, capital flows and their interaction term.

Following Galí and Perotti (2003) first estimate individual country-specific fiscal rules over several time period windows under the following specification

$$b_t^{*i} = \alpha_o^i + \alpha_x^i E_{t-1} x_t^i + \alpha_d^i d_{t-1}^i + \alpha_b^i b_{t-1}^{*i} + u_t^i \quad \text{for each country } i \quad (4)$$

where b_t^* is the structural budget deficit as share of potential output, x_t is the output gap and d_t^* is the size of public debt relative to potential GDP. The lagged dependent variable is included to account for the likely autocorrelation of budget decisions due to, for example, gradual adjustment to a fiscal target or serial correlation in exogenous shocks.

In order to account for lags in the implementation of discretionary fiscal policy, expected output lagged by one period is employed in the analysis. Galí and Perotti (2003) estimate equation (4) for EMU countries by replacing $E_{t-1} x_t$ with x_{t-1} and instrumenting it by x_{t-1} and the lagged values of the output gap of a reference country which is likely to be correlated. The estimated coefficients α_x^i on the expected output gap then serve as indicators of fiscal stance: more negative values indicate a more counter-cyclical fiscal policy.

Since Figure 1 illustrates that there seems to be a structural break in financial integration in the 1990s, the measures of fiscal policy stance for the 1990s could be compared with the corresponding figures for the 1980s to test if they are statistically different. Galí and Perotti (2003) perform a similar test for EMU countries before and after the Maastricht Treaty.

The second step involves estimating the following panel regression

$$\alpha_{x,jt} = \beta_0 + \beta_1 r_{jt} + \beta_2 f_{jt} + \beta_3 r_{jt} f_{jt} + \beta_4 p_{jt} + \varepsilon_{jt} \quad (5)$$

where r_{jt} is a *de facto* exchange rate regime variable (decreasing in terms of regime flexibility), f_{jt} is a measure of financial openness and p_{jt} can be control variable(s) representing political institutions. In terms of experimentation with the above basic model specification, additional control variables could include a measure of exchange rate regime tenure, GDP per capita or country size. To proxy for the degree of financial development, financial openness could be also interacted with GDP per capita. The explanatory variables should be averaged over a number of years in order to capture their systemic nature and avoid outliers driving the results, and to counter endogeneity problems.

In terms of specific data sources, Reinhart and Rogoff (2004) provide a measure of *de facto* exchange rate regime for a large sample of developing and industrialized countries, and the World Bank's gross private capital flows as a percentage of GDP can serve as an indicator of financial openness. Institutional variables representing the political system can be included to account for characteristics of decision-making that might influence the government's ability to

implement a timely fiscal response to output shocks. For example, political variables could account for presidential vs. parliamentary systems, government fractionalization and similar factors suggested by the political economy literature on the micro-foundations of public finance.⁶ The World Bank's *Database of Political Institutions* by Beck et al. (2001) represents a good source of cross-country data.

Hence, in terms of our hypothesis, the coefficient β_3 on the interaction term of *de facto* regime and financial openness is expected to have a negative sign.

Potential endogeneity problems between the fiscal stance, exchange rate regime and capital flows could be countered using instrumental variables or the Arellano-Bond estimation procedure.

5. Conclusion

This paper identifies a potential challenge for macroeconomic stabilization in the era of enhanced financial integration. Empirical evidence on exchange rate regimes has highlighted the persistence of systems with limited *de facto* flexibility to date. Combined with a dramatic increase in the degree of financial openness during the 1990s, the Mundell-Fleming open economy model implies that fiscal, rather than monetary, policy can be effectively employed in macroeconomic stabilization. Consequently, such an economic environment should induce fiscal policy conduct to be more counter-cyclical.

Unfortunately, empirical testing of the proposed hypothesis entails significant challenges in terms of data availability. Data on cyclically adjusted budget balances and output gaps are typically available for OECD member countries only, but this sample offers little variation in terms of *de facto* exchange rate regime choice due to the prevalence of EMU member countries and aspiring new entrants. At the same time, expanding the dataset to non-OECD countries presents large resource requirements in terms of information and estimation that would be best tackled by organizations such as the IMF or the World Bank.

Recognition of the need for improved data availability on cyclically adjusted budget balances comparable over a large sample of countries would be the first step not only towards empirically testing the hypothesis presented here, but also for a better understanding of fiscal policy conduct in developing countries.

⁶ See Alesina and Perotti (1995), Alesina and Spolaore (1997), Persson et al. (1998), Persson and Tabellini (1999), Annett (2001), Tridimas and Winer (2005), for example.

References

- Alesina, A., and R. Perotti (1995) "The Political Economy of Budget Deficits" *International Monetary Fund Staff Papers* **42**, 1-31.
- Alesina, A. and E. Spolaore (1997) "On the Number and Size of Nations" *Quarterly Journal of Economics* **112**, 1027-1056.
- Annett, A.(2010 "Social Fractionalization, Political Instability and the Size of Government" *International Monetary Fund Staff Papers* **48**.
- Beck, T., G. Clarke, A. Groff, P. Keefer and P. Walsh (2001) "New Tools and New Tests in Comparative Political Economy: The Database of Political Institutions" *World Bank Economic Review* **15**, 165-176.
- Bouthevillain, C., P. Courr-Thimann, G. van den Dool, P. Hernandez de Cos, G. Langenus, M. Mohr, S. Momigliano and M. Tujula (2001) "Cyclically Adjusted Budget Balances: An Alternative Approach" European Central Bank Working Paper 77.
- Calvo, G. and C. Reinhart (2000) "Fear of Floating" NBER Working Paper 7993.
- Fatas, A. and I. Mihov (2001) "Government Size and Automatic Stabilizers: International and Intranational Evidence" *Journal of International Economics* **55**, 3-28.
- Galí, J. (1994) "Government Size and Macroeconomic Stability" *European Economic Review* **38**, 117-132.
- Galí, J. and R. Perotti (2003) "Fiscal Policy and Monetary Integration in Europe" *Economic Policy*, 533-572.
- Giorno, C., P. Richardson, D. Roseveare and P. van den Noord (1995) "Potential output, output gaps, and structural budget balances" *OECD Economic Studies* **24**, 167-209.
- Hagemann, R. (1999) "The Structural Budget Balance: The IMF's Methodology" IMF Working Paper 99/95.
- Hakura, D. S. (2005) "Are Emerging Market Countries Learning to Float?" IMF Working Paper 05/98.
- Hausmann, R., M. Gavin, C. Pages-Serra and E. Stein (1999) "Financial Turmoil and the Choice of Exchange Rate Regime" Inter-American Development Bank Working Paper 400.
- Hausmann, R., U. Panizza and E. Stein (2001) "Why Do Countries Float the Way They Float?" *Journal of Development Economics* **66**, 387-414.
- Hemming, R., M. Kell and S. Mahfouz (2002) "The Effectiveness of Fiscal Policy in Stimulating Economic Activity – A Review of the Literature" IMF Working Paper 02/208.
- IMF (2001) "International Capital Markets".
- Levy-Yeyati, E. and F. Sturzenegger (2003) "To Float or Fix: Evidence on the Impact of Exchange Rate Regimes on Growth" *American Economic Review* **93**, 1173-1193.
- Levy-Yeyati, E. and F. Sturzenegger (2005) "Classifying Exchange Rate Regimes: Deeds Versus Words" *European Economic Review* **49**, 1603-1635.
- OECD (2002) "Economic Outlook: Sources and Methods".
- Persson, T. and G. Tabellini (1999) "The Size and Scope of Government: Comparative Politics with Rational Politicians" *European Economic Review* **43**, 699-735.
- Persson, T., G. Roland and G. Tabellini (1998) "Towards Micropolitical Foundations of Public Finance" *European Economic Review* **42**, 685-694.
- Poirson, H. (2001) "How Do Countries Choose Their Exchange Rate Regime?" IMF Working Paper 01/46.

Reinhart, C. M. and K. S. Rogoff (2004) “The Modern History of Exchange Rate Arrangements: A Reinterpretation” *Quarterly Journal of Economics* **119**, 1-48.

Rodrik, D. (1998) “Why Do More Open Economies Have Bigger Governments?” *The Journal of Political Economy* **106**, 997-1032.

Tridimas, G. and S. L. Winer (2005) “The Political Economy of Government Size” *European Journal of Political Economy* **21**, 643-666.

van den Noord, P. (2000) “The Size and Role of Automatic Fiscal Stabilizers in the 1990s and Beyond” OECD Economics Department Working Paper 230.

von Hagen, J. and J. Zhou (2004a) “Fear of Floating and Fear of Pegging: An Empirical Analysis of De Facto Exchange Rate Regimes in Developing Countries” Center for European Integration Studies (ZEI) Working Paper B 31.

von Hagen, J. and J. Zhou (2004b). “The Choice of Exchange Rate Regimes in Developing Countries: A Multinomial Panel Analysis” Center for European Integration Studies (ZEI) Working Paper B 32.

Appendix

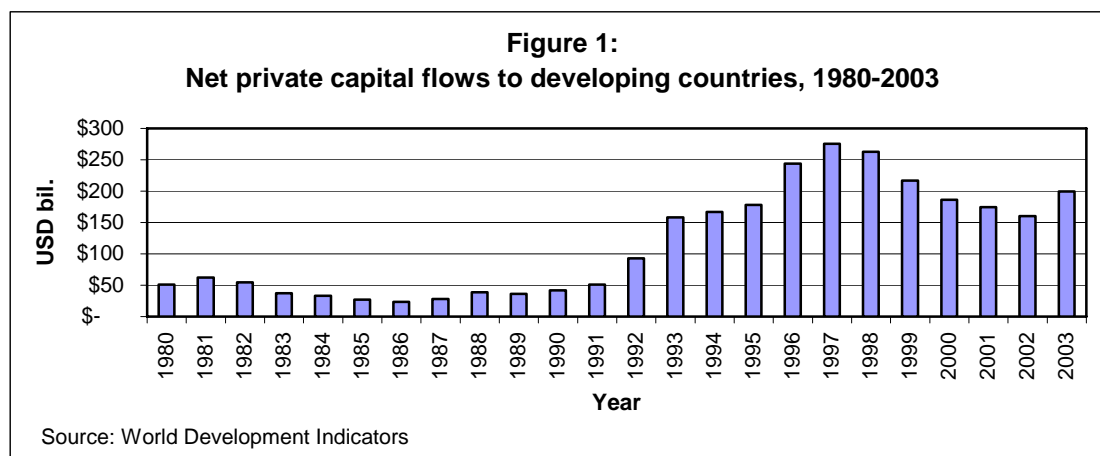


Table 1: Cross-classification of *de facto* and *de jure* exchange rate regimes
(112 developing countries, 1978-2000)

Regime	IMF	Levy-Yeyati & Sturzenegger (2005)			Reinhart and Rogoff (2004)		
		0	1	2	0	1	2
0: Fixed	975 [54.0]	843 (86.5)	87 (8.9)	45 (4.6)	641 (65.7)	155 (15.9)	179 (18.4)
1: Intermediate	123 [6.8]	37 (30.1)	43 (35.0)	43 (35.0)	20 (16.3)	68 (55.3)	35 (28.5)
2: Flexible	707 [39.2]	178 (25.2)	255 (36.1)	274 (38.8)	61 (8.6)	346 (48.9)	300 (42.2)
Total observations	1805 [100.0]	1058 [58.6]	385 [21.3]	362 [20.1]	722 [40.0]	569 [31.5]	514 [28.5]

Note: Numbers in parentheses are percentage shares of row sums reported in the IMF column. Numbers in brackets are percentage shares of the total number of observations, which is 1805. Source: von Hagen and Zhou (2004a)