REAL EXCHANGE RATE APPRECIATION IN EMERGING MARKETS: CAN FISCAL POLICY HELP?

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A number of emerging markets have experienced substantial real exchange rate appreciation in recent years, generating concerns about competitiveness and prompting policymakers to respond with a combination of mitigating policies. This paper shows that fiscal policy can play a role in alleviating these pressures. Using a sample of 28 emerging market economies over 1983-2011, we estimate a dynamic model of the real exchange rate and find that a permanent fiscal adjustment may reduce appreciation pressures over the long term. Furthermore, the composition of public spending matters, with reductions in current spending playing a key role. To illustrate the importance of these findings, the paper focuses on the case of Brazil. Our results suggest that maintaining fiscal discipline while increasing public investment in Brazil is likely to ease real appreciation pressures, hilighting the importance of tackling long-standing budget rigidities.

1   Introduction

A number of emerging markets (EMs) have seen their currencies appreciate substantially in recent years with China, oil exporters, and Latin American countries taking the lead (Figure 1). Several factors explain these trends including terms of trade gains and, in some cases, large capital inflows. The empirical evidence suggests that monetary policy in major advanced economies has been related to the latter (see, for example, IMF 2011a and 2011b). This has generated complaints from export-oriented companies in key industrial and manufacturing sectors in EMs about the collateral damaged created by the ensuing loss of competitiveness. Recent papers have looked into how policies can help manage large capital inflows and the associated exchange rate appreciation pressures (see Gosh *et al.*, 2008; Ostry *et al.*, 2010; and Ostry *et al.*, 2011). The overall conclusion is that, before resorting to capital controls, domestic macroeconomic policies should be appropriately set, including through fiscal consolidation.

The purpose of this paper is to assess empirically to what extent fiscal policy can indeed help contain exchange rate appreciation pressures. Specifically, the paper analyzes (1) whether fiscal adjustment can have a permanent effect on the real effective exchange rate (REER); and (2) to what extent the composition of public spending matters. These are important issues given that, despite its inclusion in the "toolkit", theoretical arguments and empirical work on the impact of fiscal policy on the exchange rate have not generated a unanimous view. To address these questions, the paper uses a panel of 28 emerging market countries over 1983 to 2011 and estimates a parsimonious model of the long-run REER. Our findings suggest that fiscal adjustment can indeed reduce exchange rate appreciation pressures, especially if it results from cuts in current spending. By contrast, fiscal adjustment achieved through a reduction in public investment would not be as effective. In fact, the results suggest that increases in public investment are associated with a decline in the real exchange rate (*i.e.*, depreciation).
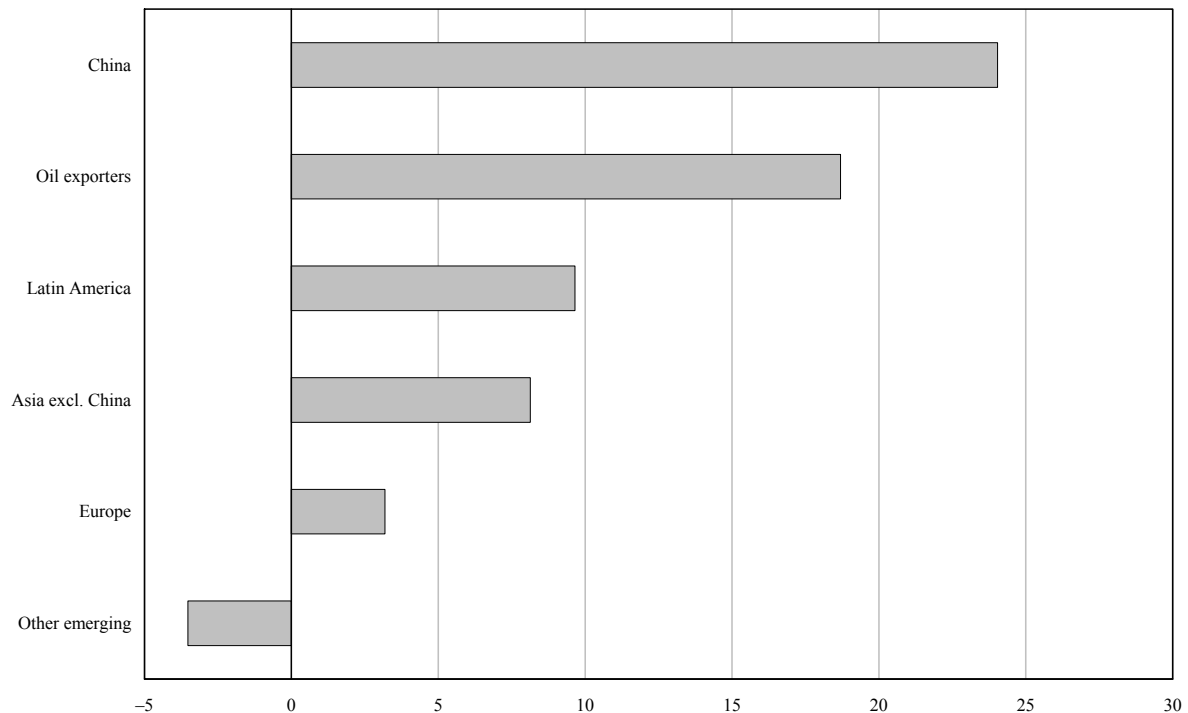
Emerging Markets: Real Effective Exchange Rate Appreciation, Jan. 2007-Dec. 2012
(percent)

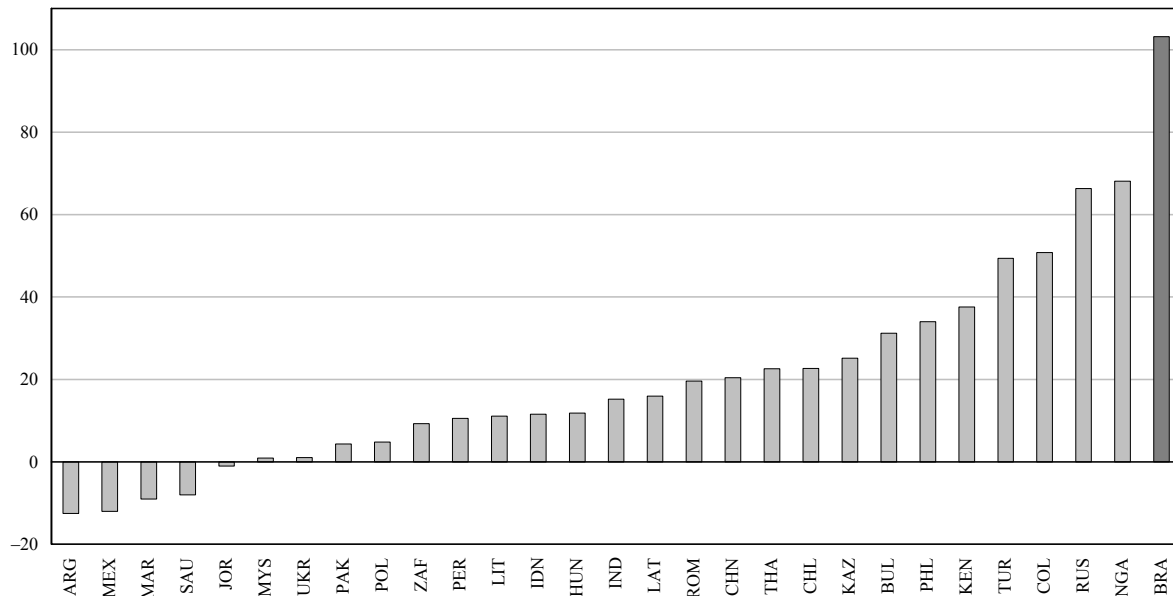Sources: IMF Information Notice System; and IMF staff calculations.

Regional REERs weighted by market GDP. Countries included in the sample are as follows: Asia excl. China: India, Indonesia, Malaysia, Philippines, and Thailand; Oil exporters: Kazakhstan and Russia; Latin America: Argentina, Brazil, Chile, Colombia, Mexico, and Peru; Europe: Bulgaria, Hungary, Lithuania, Poland, Romania, and Turkey; Other emerging: Jordan, Morocco, South Africa, and Ukraine.

To illustrate the critical importance of these results, we examine the case of Brazil. This focus is justified on two grounds. First, Brazil's REER appreciated more than 100 per cent over the period 2002-12 surpassing all other EMs (Figure 2). Second, Brazil has used all aspects of the policy toolkit to manage capital inflows: the exchange rate has appreciated, the macro-policy mix has been adjusted, and reserves have been built. Furthermore, macroprudential measures (such as reserve requirements limiting short dollar position of banks) and capital flow management measures (notably the tax on foreign purchases of domestic bonds and equities, "IOF") have been used in an adaptive manner to stem the large inflow of foreign capital and to slow the pace of nominal appreciation (see Benelli, Segura-Ubiergo and Walker (2011) for further discussion of these issues). Notwithstanding these efforts, the reality is that the real effective exchange rate in Brazil remains somewhat overvalued (IMF, 2013). Our results suggest that, tackling Brazil's public investment gap could help reduce real appreciation but only to the extent that it is financed through a compositional shift within the budget (*i.e.*, reducing government consumption to increase public investment) rather than via additional public debt.

The rest of the paper is organized as follows: Section 2 briefly reviews the literature. Section 3 describes the empirical specification and results and draw policy implications for the case of Brazil. Section 4 concludes.

Figure 2

Emerging Markets: Effective Exchange Rate Appreciation, 2002-12
(percent)

Sources: IMF Information Notice System; and IMF staff calculations.

2   Literature review

While exchange rates are one of the most studied topics in international economics, most papers analyzing their determinants do not focus on fiscal variables. The empirical literature on the long-term behavior of exchange rates is dominated by attempts to test the purchasing power parity (PPP) theory. In the international finance literature, the focus is more on short-term dynamics, with an emphasis on tests of the uncovered interest parity theory. These papers focus mostly on the interaction between monetary policy, interest rates and the nominal exchange rate.[1]

Moreover, there is no consensus in the existing theoretical literature about the relationship between fiscal policy and the real exchange rate:[2]

- In *Keynesian models*, an expansionary fiscal shock raises the demand for home goods and money, thereby inducing a real appreciation either through higher interest rates and arbitrage capital inflows or a rise in domestic prices (see Mundell, 1963; and Flemming, 1962).[3] However, Sachs and Wyploz (1984), argue that the Mundell-Fleming framework ignores a number of critical factors that may be associated with a different result.[4]

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[1]   See Abhyankar, Sarno and Valente (2009); Rime, Sarno and Sojli (2009); Sarno and Taylor (2001); Engel and West (2005); and Mark (1995).

[2]   For a review of the literature, see Abbas *et al.* (2011).

[3]   Goods market clearing will result in a nominal appreciation assuming prices are sticky.

[4]   These include (i) the growth of public debt that may follow a fiscal expansion; (ii) the fiscal measures that may have to be taken to service growing debt; (iii) the wealth and portfolio implications of current account deficits induced by the fiscal expansion; and (iv) forward looking expectations in the asset markets.

- In *real business cycle models*, increases in government spending trigger a decline in domestic private consumption and an increase in labor supply leading to a real appreciation (Backus, Kehoe and Kydland, 1994). However, more recent papers find opposite results. For example, Ravn, Schmitt-Grohe and Uribe (2007) develop a model of deep habit in which an increase in government spending provides an incentive for firms to lower domestic markups relative to foreign markups, leading to a real depreciation.[5] An alternative set of models look at the effect of government spending under incomplete financial markets (see Kollmann, 2010). In this case, when faced with an increase in government spending, domestic households experience a negative wealth effect, work harder and increase domestic output. Limited risk sharing exacerbates the negative wealth effect and the increase in output. Assuming balanced trade (financial autarky), the resulting supply-side response is so strong that the country experiences a deterioration of its terms of trade and a real exchange rate depreciation. Alternatively, in a bonds-only economy, and increase in relative government purchases will lead to a real depreciation if the increase in spending is sufficiently persistent and/or labor supply is highly inelastic.

- The *composition of government spending* could also matter. In particular, increases in government spending – whether tax or debt financed – will result in a real appreciation if skewed toward nontradable goods. The effect of public investment, on the other hand, is ambiguous. An increase in public investment may lead to a real appreciation if it raises productivity in the tradable sector through the Balassa-Samuelson mechanism (see Balassa, 1964; and Samuelson, 1964). But the opposite effect may result if public investment disproportionately increases productivity in the nontradables sector. Moreover, if productivity increases symmetrically in both sectors, there will be no impact on the real exchange rate (Galstyan and Lane, 2009). Chatterjee and Mursagulov (2012), on the other hand, find that in the presence of gradually accumulating stock of public capital and intersectoral adjustment costs, public investment generates a persistent and non-monotonic U-shaped adjustment path of the real exchange rate.

The empirical evidence is also relatively inconclusive.[6] Results vary depending on the methodology, specification, and sample used in the estimation. For example:

- Cardarelli, Elekdag, and Kose (2007) estimate a model based on a cross-section of countries (including advanced and emerging economies) and show that real appreciation and demand growth is more contained in countries that respond to capital inflows by pursuing a tighter fiscal policy in the form of slower growth of government expenditure.

- Similarly, IMF (2008) and Ricci, Milessi-Ferreti and Lee (2008) estimate panel cointegration models and find that an increase in government consumption is associated with a REER appreciation, while Guajardo, Leigh and Pescatori (2011) use a historical approach to identify changes in fiscal policy in advanced economies and find that the real exchange rate tends to depreciate in response to fiscal consolidation.

- In contrast, several studies based on dynamic VARs have found that fiscal expansions in advanced economies are associated with real depreciations. For example, Kim and Roubini (2008) find that an increase in the government primary deficit induces a real exchange rate depreciation for the United States. Similarly, Monacelli and Perotti (2007) look at the United

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[5] Firms selling in the domestic market find it optimal to reduce markups because the increase in public spending renders the demand for individual goods more price elastic.

[6] The relationship between fiscal policy and the real exchange rate has been much less studied than the relationship between fiscal policy and the current account balance. For example, in a comprehensive review of the literature, Abbas *et al.* (2011) look at 20 papers studying the impact of fiscal policy on the current account balance, and only 5 analyzed the impact on the real exchange rate as well. Most studies find a positive relationship between budget balances and the current account.

States, United Kingdom, Canada, and Australia and show a negative relation between government spending and the real exchange rate.

• Regarding the composition of public spending, Galstyan and Lane (2009) study a sample of OECD countries and find that increases in government consumption appreciates the REER but the effect of government investment is more ambiguous. Caputo and Fuentes (2010), on the other hand find that both government consumption and public investment appreciate the REER (with a long-run elasticity close to 1).

3   Econometric evidence

3.1   Methodology

Given data constraints, we focus on a parsimonious set of economic fundamentals to account for changes in the REER. Our sample covers 28 emerging market economies for the period 1983-2011.[7] In the baseline model, we relate the real effective exchange rate to five underlying determinants drawn from the literature:[8]

• *Relative GDP per capita (GDPPC)* in constant 2005 U.S. dollars is measured relative to a weighted average of trading partners. Since it works as a proxy for the level of productivity, we expect to find a positive correlation between GDPPC and the REER in line with the Balassa-Samuelson conjecture. Also, richer countries tend to spend more on services that have higher income elasticity of demand (see Bergstrand 1991), which would result in a higher real exchange rate.

• *Balance of goods and services (TB)* is measured in percent of GDP and is used as a proxy for the international investment income position. In steady-state, the trade balance surplus should equal the international investment income deficit and, thus, we expect to find a negative relation between the TB and the REER.[9]

• *Structural balance (SB)* is defined as the cyclically-adjusted balance (excluding one-off adjustments) of the non-financial public sector. This measure is a better indication of discretionary changes in fiscal policy than the headline fiscal balance. The use of the SB also mitigates endogeneity concerns because the effect of automatic stabilizers is excluded in this measure.[10] We hypothesize that a higher SB will be associated with a depreciation of the real exchange rate, in line with the conventional Keynesian model.

• *Relative public consumption (PC)* is defined as government consumption in percent of GDP relative to a weighted average across trading partners.[11] We measure this variable in relative

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[7]   The time dimension varies depending on countries and variables. For a description of the variables and a list of countries, see the Appendix.

[8]   Empirical analyses differ in their choices of the underlying real exchange rate fundamentals, sometimes due to data constraints. Alternative specifications were also estimated and some of these results are reported in the robustness checks. We did not include a measure of systemic risks in our estimation, such as VIX, since it is unlikely to affect the REER long-term dynamics and the impact would in any case become insignificant once a time variable is included.

[9]   Standard intertemporal macroeconomic models predict that debtor countries will need a more depreciated real exchange rate to generate trade surpluses necessary to service their external liabilities.

[10]   Not all endogeneity problems are corrected by this approach, however, given the fact that movements in the fiscal position can also have an impact on growth. An alternative to deal with the endogeneity problem would be to use historical documents to identify changes in fiscal policy as has been done in the literature looking at the impact of fiscal policy on growth (see, for example, Romer and Romer, 2010). One limitation of this approach, however, is that retrospective estimates of measures are rarely available and using contemporaneous assessments could be misleading since the size of the fiscal adjustment *ex post* may differ from what policymakers believed *ex ante*. In any case, Granger-causality tests seem to indicate that the REER does not cause movements in the structural balance.

[11]   For each country we focus on the top trading geographic destinations of its exports that account for at least 80 per cent of exports during the period 1980-2010.

terms to capture factors driving the structure of relative prices. We expect an increase in public consumption to raise the relative demand for nontradables, thereby leading to a real appreciation.

- *Relative public investment (PI)* is defined as government investment in percent of GDP relative to trading partners. As discussed above, the effect of PI on the real exchange rate is ambiguous. Public investment may lead to a real appreciation (depreciation) if it improves disproportionally productivity in the tradable (non-tradable) sector. At the same time, if productivity improves symmetrically in the tradable and nontradable sectors, we would not expect an impact on the real exchange rate.

Following Ricci, Milesi-Ferretti and Lee (2008) and Galstyan and Lane (2009), we estimate a panel dynamic OLS (DOLS) to establish the long-run relation between the explanatory variables and the real exchange rate:

$$y_{it} = \alpha_i + t + \beta' x_{it} + \sum_{j=-1}^{j=1} \gamma' \Delta x_{it-j} + \varepsilon_{it} \tag{1}$$

where x is a vector including the explanatory variables described above and t is a time variable. In this model β is the vector of long-run cointegrating coefficients, Δ denotes the first-difference operator, γ is the vector of coefficients of leads and lags of changes in the determinants,[12] and ε_{it} is the residual term. Fixed effects are necessary because the real effective exchange rate is an index number that is not comparable across countries. They also account for time-invariant country-specific factors, reducing possible omitted variable bias. We favor the use of a panel DOLS because: (1) given the limited length of the sample, estimating separate real exchange rate equations for each country would result in imprecise estimates; and (2) data series are non-stationary.[13]

3.2   Results

The results suggest that fiscal policy has a significant effect on the REER. In particular:

- *Permanent fiscal adjustment is associated with a depreciation of the real exchange rate* (Table 1, columns 1 and 3). An improvement in the structural balance of 1 per cent of GDP would imply a depreciation of the real exchange rate of 1.7 per cent over the long term. This is line with the results of Guajardo *et al.* (2011) for advanced economies who find for a sample of advanced countries that a 1 per cent of GDP consolidation is associated with a 1.57 per cent real depreciation.

- *The composition of spending also matters*. An increase in relative government investment is associated with real exchange rate depreciation in the long run while government consumption does not have a significant effect (Table 1, columns 2 and 3).[14]

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[12]   The choice of one lead and lag is dictated by the sample length.

[13]   Standard panel unit root tests do not reject the null hypothesis of a unit root for the real exchange rate. In addition, the tests indicate nonstationary for several of the explanatory variables (trade balance, structural balance). The DOLS methodology adds leads and lags of first differences of right-hand side variables to the set of regressors in order to wipe out the correlation of the residuals with the stationary component of the unit root process of the explanatory variables. Since this introduces serial correlation of the residuals, we use the Newey-West correction method to correct the standard errors. The DOLS residuals were found to be stationary using panel unit root tests, which is consistent with panel cointegration.

[14]   An alternative specification with time dummies shows relative public consumption to have a positive significant effect but this result is not robust and thus we do not report it in here.

Table 1

Real Effective Exchange Rate: Long-run Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Structural balance	–0.018		–0.017	–0.018		–0.016
	(0.00)***		(0.00)***	(0.00)***		(0.00)***
Relative government consumption		–0.027	0.164	0.001	0.119	0.184
		(0.62)	(0.30)	(1)	(0.47)	(0.24)
Relative government investment		–0.044	–0.126	–0.114	–0.144	–0.129
		(0.08)*	(0.01)***	(0.00)***	(0.01)***	(0.01)***
Relative GDP per capita	0.127	–0.013	0.139	0.121	0.161	0.154
	(0.05)**	(0.00)***	(0.04)**	(0.03)**	(0.02)**	(0.02)**
Balance of goods and services	–0.303	–0.632	–0.198	–0.278	–0.076	
	(0.23)	(0.00)***	(0.43)	(0.18)	(0.76)	
Structural primary balance					–0.013	
					(0.02)**	
Capital inflows						0.095
						(0.74)
R^2	0.60	0.44	0.65	0.54	0.63	0.65
Observations	195	564	190	190	185	145

Notes: The dependent variable is the log of the real effective exchange rate. Structural balance is the structural balance in percent of GDP.
Rel. government consumption is relative government consumption as a share of GDP; Rel. government investment is relative government investment as a share of GDP; Rel. GDP per capita is the log of real GDP per capita; Balance of goods and service is as a share of GDP; Structural primary balance is in percent of GDP; Capital inflows are direct investment, portfolio investment and other flows as share of GDP. Hausman tests indicate fixed effects are more appropriate than random effects in our preferred specification. Asterisks ***, **, * indicate significance at 1%, 5% and 10% respectively.

Figure 3

Composition of Government Spending
(percent of GDP)

Public Consumption   **Public Investment**
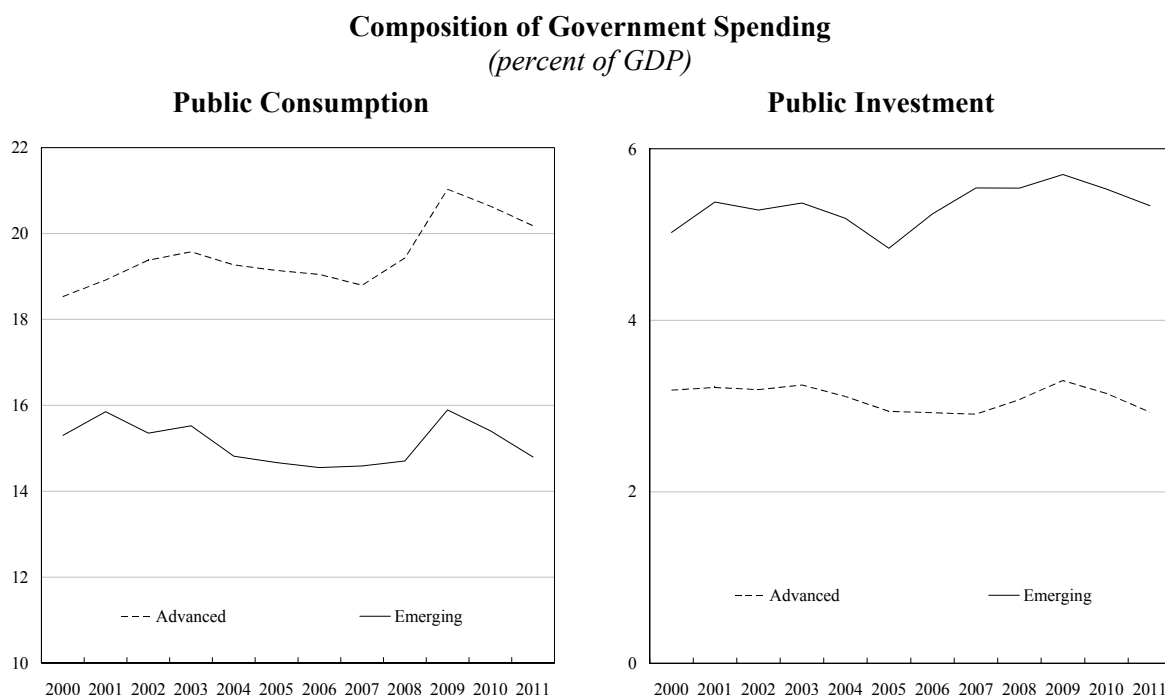
Source: IMF, *World Economic Outlook.*

As an illustration of the effect of these relativities, a 1 percentage point increase in relative public investment in Brazil would mean increasing public investment by 7½ percentage points of GDP; such a sizable increase would be associated with a depreciation in the real exchange rate of 12.6 per cent. These results are in contrast with findings for advanced economies where government consumption appreciates the real exchange rate while public investment does not have an effect (Galstyan and Lane, 2009). A possible explanation for this difference is that public investment is more likely to increase productivity in the nontradable sector among emerging markets given likely lower levels of infrastructure development. An additional argument could be associated with the different composition of government spending: emerging markets have relatively higher public investment but lower public consumption compared to advanced economies (Figure 3).[15]

Sensitivity analyses confirm the robustness of these results.

• The first question is whether these findings are driven by some groups of countries. In particular, Asian emerging economies have particularly large investment rates that could explain these conclusions. Thus, we adjust the model to control for possible outliers and find a similar result as in our baseline specification with the size of the coefficient on investment being only slightly smaller (Table 1, column 4). Also, estimating the model with a dummy for Asia yields the same results.

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[15] Brazil has public investment ratios closer to the average of advanced economies; nevertheless, there are sizable infrastructure gaps, suggesting potential productivity gains from public investment could be large.

- Second, we look into a different measure of fiscal adjustment. In particular we use the structural primary balance instead of the overall structural balance. This variable may be more accurate to capture the true policy stance as interest rates (which are outside the control of the government) may fluctuate, distorting the size of fiscal adjustment. Consistent with our previous results, we find that an increase in the structural primary balance is associated with REER depreciation, although the impact is smaller (Table 1, column 5).

- Finally, the introduction of capital inflows as an additional control does not change the results (Table 1, column 6). Interestingly, capital inflows do not seem to have an effect on the REER over the *long term* irrespective of whether we use portfolio inflows or other inflows as our preferred measure.[16] This is a question we leave for further investigation in future research given our focus on fiscal policy variables.

3.3   *Implications for Brazil*

What role can fiscal policy play in efforts to contain real exchange rate appreciation pressures in Brazil? In order to make an assessment it is important to look at fiscal performance in Brazil and place it in an international perspective.
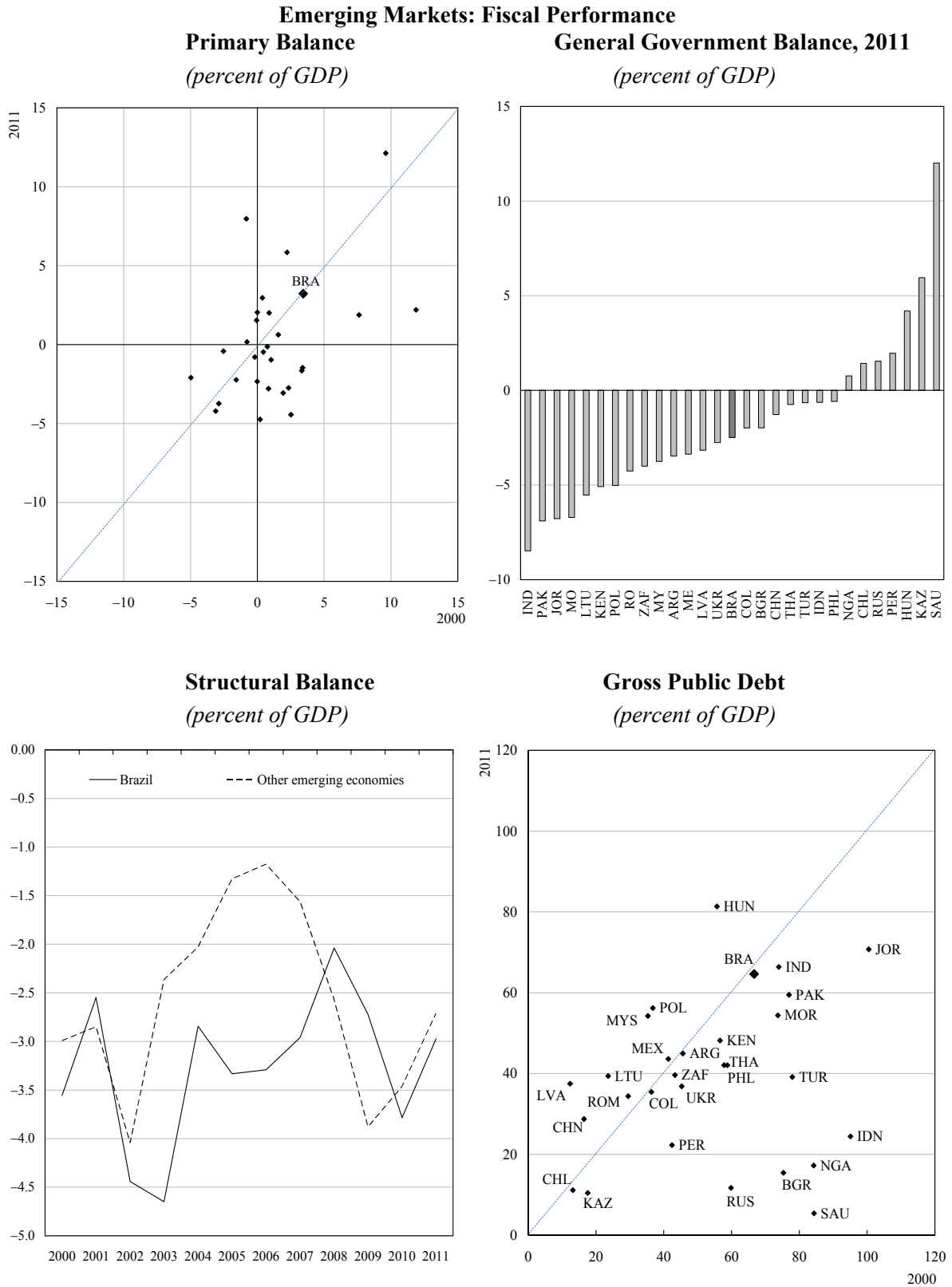
- *Fiscal policy*. Since the introduction of the Fiscal Responsibility Law in 2000 Brazil has maintained primary surpluses of around 3¼ per cent of GDP, one of the highest among emerging markets (Figure 4). However, the overall deficit is still relatively high because of large interest payments. In terms of the fiscal policy stance, there was a large adjustment during the period 2002-08. This allowed the creation of buffers that were used in part during the crisis (and more recently in response to the sharp economic deceleration since 2011) in the form a discretionary stimulus.[17] Following a large fiscal withdrawal in 2011, the structural deficit has declined to about 3 per cent of GDP, still larger than pre-crisis levels. Further improvements will likely require addressing budgetary rigidities going forward.

- *Composition of spending*. Relative to other emerging markets, Brazil is an outlier. In particular, public consumption, at 21¼ per cent of GDP in 2011, is one of the highest among emerging markets and almost double the level of its Latin American peers (Figure 5). Public consumption in percent of GDP has increased by 2 percentage points in Brazil since 2000, in contrast to most other emerging markets where it has declined. This is striking taking into account that public consumption does not include transfers (where increases have been large). On the other hand, public investment in Brazil has increased somewhat since 2000 but, at about 2½ per cent of GDP, is less than half the average of other emerging markets. Moreover, the level of public investment is now 70 per cent below that of trading partners (a marked deterioration since 2000). This evidence suggests that, by reallocating spending, Brazil could make some space for public investment and reap additional benefits.

Simulation analysis suggests that fiscal policy in Brazil could help reduce real appreciation pressures over the long term. In particular, a 1 per cent of GDP increase in public investment in Brazil would lead to a 1.7 per cent real depreciation. However, this is roughly the same effect but with an opposite sign as a corresponding 1 per cent of GDP deterioration of the

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[16] Nevertheless, in an alternative specification (not reported here) we find that capital inflows have a significant impact on the REER for Brazil although the effect is relatively small.
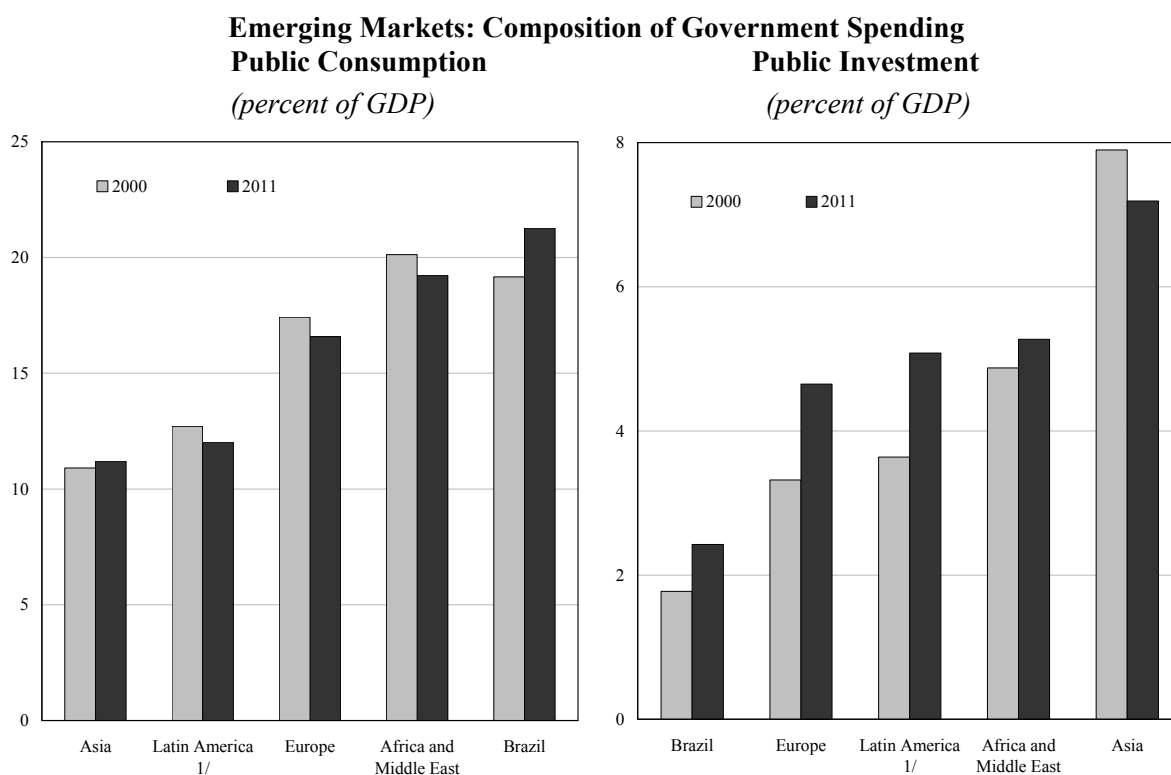
[17] Public gross debt fell from 79.4 per cent of GDP in 2002 to 63.5 per cent of GDP in 2008 reflecting this effort. Moreover the composition of debt improved dramatically with substantial reductions in external and short-term indexed debt. Nonetheless, for some perspective, it is useful to recall that debt levels today are roughly the same as in 2000. This reflects partly the spike in debt associated with the economic shock Brazil experienced in 2002-03, as well as the impact on debt of the stimulus extended during 2009-10 to offset the effects of the global crisis.
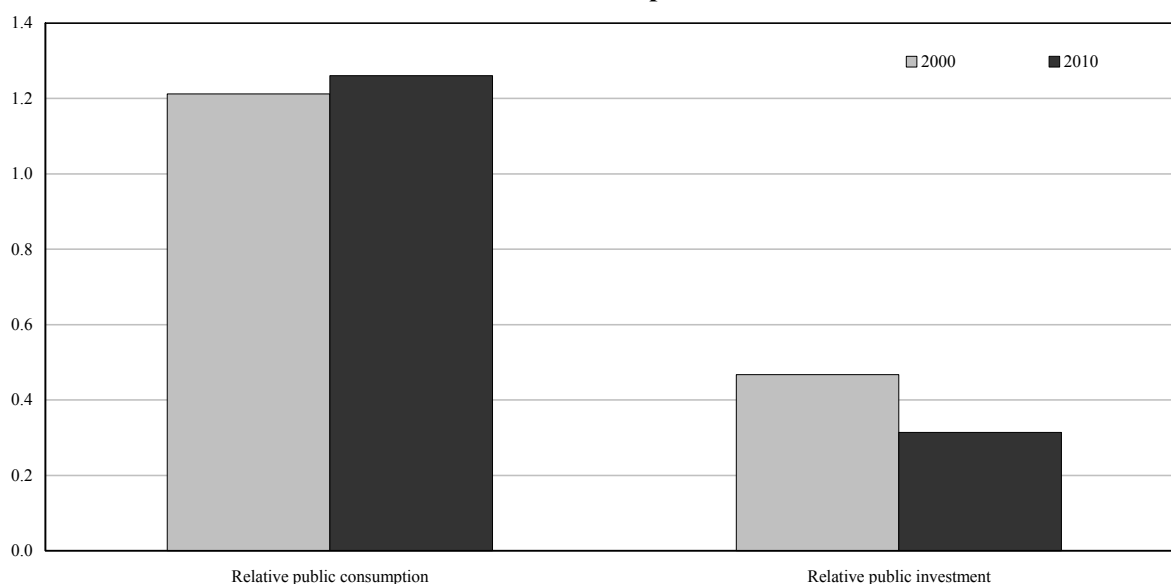
Figure 4

Emerging Markets: Fiscal Performance

Primary Balance	**General Government Balance, 2011**
(percent of GDP)	*(percent of GDP)*

Structural Balance	**Gross Public Debt**
(percent of GDP)	*(percent of GDP)*

Sources: IMF, *World Economic Outlook*, and staff calculations.

Figure 5

Emerging Markets: Composition of Government Spending

Public Consumption	Public Investment
(percent of GDP)	*(percent of GDP)*

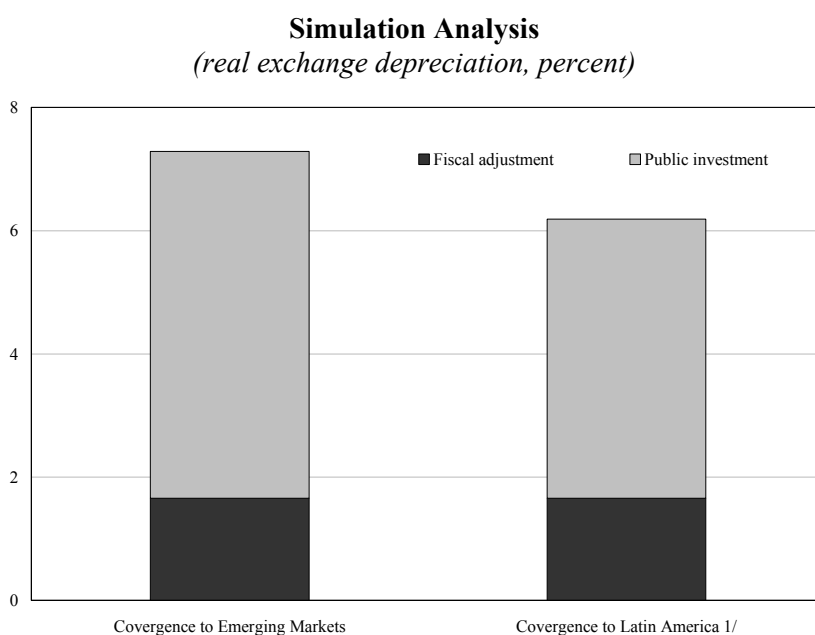### Brazil: Relative Public Consumption and Investment [2]

Sources: IMF, World Economic Outlook; and authors calcSources: IMF, World Economic Outlook; and authors' calculations.

1/ Excluding Brazil.

2/ Relative public consumption (investment) is calculated as the ratio of Brazil's public consumption (investment) in percent of GDP to a weigthed average of its trading partners' public consumption (investment) in percent of GDP. A number above 1 means Brazil has higher public consumption (investment) in percent of GDP than is trading partners.

Figure 6

Simulation Analysis
(real exchange depreciation, percent)

■ Fiscal adjustment   ■ Public investment

Covergence to Emerging Markets   Covergence to Latin America 1/

Sources: IMF, Information Notification System; World Economic Outlook; and staff's calculations.
1/ The countries included in Latin America are: Argentina, Colombia, Peru, and Mexico.

structural balance. Thus, if both investment and the structural deficit were to increase by similar amounts, the REER would not change. In other words, increasing public investment could only help if accompanied by offsetting measures to generate savings (for example, by reducing public consumption). To put this into context, we consider two scenarios. *Scenario 1* assumes Brazil improves the structural balance by 1 per cent of GDP. In addition, we assume public investment in Brazil converges to the level of its Latin American peers. This would require finding additional fiscal space of 2½ per cent of GDP. *Scenario 2* assumes the same improvement in the structural balance but public investment converging to the average in emerging markets (requiring fiscal space of 3¼ per cent of GDP). These scenarios imply that an appropriate combination of fiscal policy actions could, *ceteris paribus*, support a real depreciation in the range of 6¼ to 7¼ per cent in the long term (Figure 6).

In order to reap these benefits, it would be important for Brazil to create fiscal room. Our results show that strengthening the structural fiscal position could play a role in alleviating appreciation pressures. As an added benefit, this could help reducing real interest rates, thus creating additional fiscal space (see Segura-Ubiergo, 2012). A particularly promising avenue to facilitate a real depreciation would be to increase public investment, which is already an important priority for the authorities as demonstrated in their strategy under the Growth Acceleration Program (Programa de aceleração do crescimento, PAC). Nevertheless, to be an effective tool for the exchange rate, the increase in public investment would need to be financed by savings, and not by an increase in the deficit. A similar logic applies to financing investment through quasi-fiscal operations (such as policy lending to BNDES). Beneficial effects on the exchange rate would likely be maximized if these operations were matched by higher public savings. Else the external current account could deteriorate, pressing up the real exchange rate. Moreover, the interest subsidy on BNDES lending directly lowers net public saving, while an increase in contingent liabilities here could gradually push up risk premia. Similarly, public investment projects undertaken via concessions or PPPs could also result in higher current account deficits (if not accompanied by an increase in public savings) and crowding-out of private investment.

The most promising route to create that space would be lowering government consumption. Achieving this end would require reducing fiscal earmarking/mandates that lock current spending at very high levels and create a bias against public investment (Box 1). While some of these

Box 1
Budget Rigidities in Brazil

Budget rigidities – in the form of revenue earmarking and mandatory allocations[18] – appear to be behind the rapid increase of government spending in Brazil in recent years:

- *Revenue earmarking.* Revenues from all sources are to some extent earmarked with the main focus being on social sectors (education, health care, housing, and social benefits). In particular, the Constitution establishes that at least 25 per cent of tax revenue at all levels of governments be allocated to education, and 12 and 15 per cent of the states' and municipalities' tax revenues are earmarked to the provision of health care services (OECD, 2011). To increase flexibility, an arrangement for withholding federal earmarked revenues (*Desvinculação das Receitas da União*, DRU) has been extended until 2015.

- *Mandatory spending.* The Brazilian Constitution guarantees the funding of three types of government expenditure: revenue sharing with states and municipalities; salaries and pension for government employees, and interest on and repayment of the public debt. At the same time, social security spending is mandated with pressures mounting as a result of the indexation of minimum pensions to the minimum wage. In addition, Congress has in recent years designated several other expenditure programs as "mandatory" in the Budget Guidance Law in order to protect them from cuts in the presidential budget implementation decrees. Thus, mandatory spending (at the federal level) now accounts for ¾ of total spending.

Figure 7

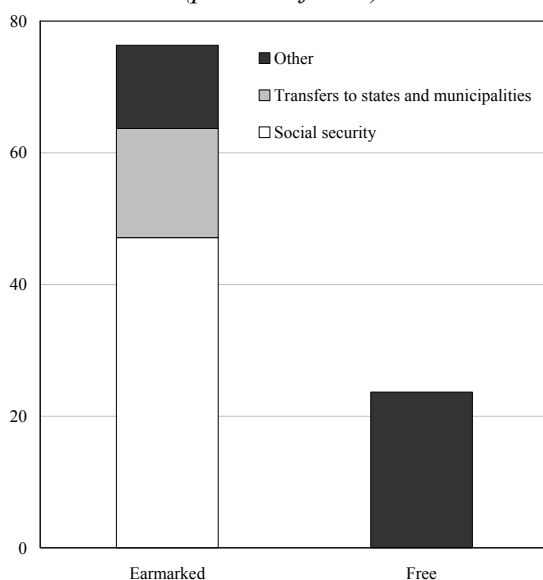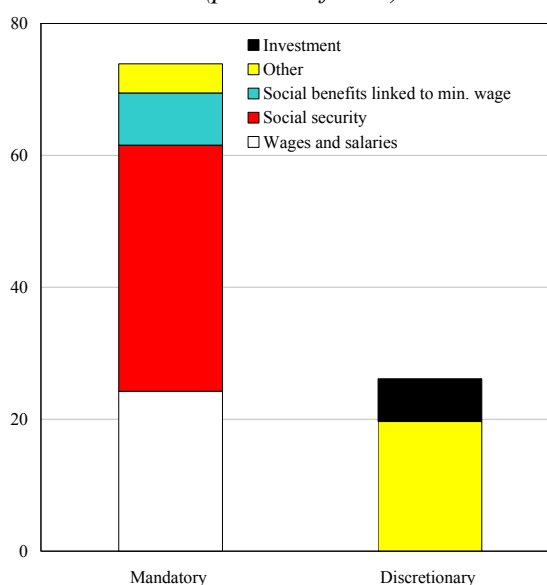**Brazil: Central Government Revenue, 2001**
(percent of total)

Figure 8

Brazil: Central Government Expenditure, 2001
(percent of total)

Sources: Ministry of Finance; Ministry of Planning; IMF, World Economic Outlook; and authors' calculations.

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[18] For more details, see Alier and Costa (2005) and Weisman and Blanco (2006).

These rigidities introduce important distortions in fiscal management and reduce the space for investment. First, rigidities discourage efficiency gains by perpetuating budget allocations on the basis of historical spending and leave limited space for reallocation in response to changing needs. This is illustrated by Brazil's difficulty in increasing public investment which, at 2½ per cent of GDP in 2011, is less than half the average of other emerging markets. Second, these rigidities affect the quality of fiscal adjustment with retrenchment in spending falling just on a subset of budget items. Finally, budget rigidities have contributed to procyclical spending with revenue windfalls being spent as a result of earmarking. This trend in spending, however, might be difficult to reverse in case of an economic slowdown.

earmarks/mandates, like those for health and education spending floors have positive social objectives, improvements at the margin in their design could be explored. The priorities could include (i) reducing revenue-earmarking and mandatory spending in combination with more effective medium-term planning and rolling multi-year budget plans; and (ii) strengthening the costing, monitoring, and evaluation of public spending with a view to increasing its efficiency.

4   Conclusions

Fiscal policy in emerging markets can have an important effect on the REER. This works through two channels. First, increases in public savings (*i.e.*, a stronger structural fiscal position) could reduce real appreciation over the long term and hence might be an important instrument to ensure higher competitiveness. Second, the structure of government spending matters, with increases in public investment leading to a reduction in appreciation pressures. This last finding has important implications for Brazil since current spending accounts for almost 90 per cent of total spending. Hence, there is scope to increase public investment. One caveat, however, is that both channels have roughly the same impact on the REER. What this means in practice is that increases in public investment that are not accompanied by offsetting measures to reduce current spending would likely have little effect on the REER. Therefore, creating room for investment by a reallocation of public spending would have multiple beneficial effects, both for improving public service delivery but also for helping address real appreciation pressures. Just as an example, Brazil would need to increase public investment by 2½ to 3¼ per cent of GDP to converge to levels in emerging market peers. Given already high primary surpluses, achieving this solely through fiscal adjustment is likely to be challenging, which highlights the importance of addressing budgetary rigidities to reallocate resources from public consumption to investment. Equally important to increase public investment would be to improve project's delivery and spending execution. This is an area where lack of capacity in planning and management, difficulties in obtaining necessary licenses and procedural problems have resulted in long delays in the past (for further discussion, see OECD, 2011). Finally, this discussion also highlights the importance of making careful budgetary choices once oil productions increases in a few years and Brazil becomes a major oil exporter. Given the risk of Dutch diseases usually associated with increases in exports of natural resources, it would be particularly important that fiscal space generated by natural resource wealth is used to finance higher public investment.

APPENDIX
DATA

The sample includes 28 emerging countries for the period 1983 to 2011: Argentina, Brazil, Bulgaria, Chile, China, Colombia, Hungary, India, Indonesia, Jordan, Kazakhstan, Kenya, Lithuania, Malaysia, Mexico, Morocco, Nigeria, Pakistan, Peru, Philippines, Poland, Romania, Russia, Saudi Arabia, South Africa, Thailand, Turkey, and Ukraine. Time span varies depending on the countries with shorter data available for the fiscal aggregates.

Variables are defined as follows:

• *Real effective exchange rate* is based on consumer price index and taken from the IMF, Information Notification System.

• *Balance of goods and services* is defined as the difference between exports and imports of goods and services. The data are taken from the IMF, *World Economic Outlook.*

• *Real GDP per capita (in constant 2005 prices)* is taken from the IMF, *World Economic Outlook.*

• *Structural balance* is defined as the overall balance adjusted for the cycle and excluding one-offs. Due to data availability, we take the cyclically adjusted balance for Mexico and Philippines. Cyclically adjusted balance is defined as the overall balance minus cyclical balance whereby the cyclical revenues and expenditures are computed using country-specific elasticities with respect to the output gap. Data are from the IMF, *World Economic Outlook.*

• *Public consumption* is defined as current primary spending excluding transfers. The data are based on national accounts and come from IMF, *World Economic Outlook.*

• *Public investment* is defined as public gross fixed capital formation. Data come from IMF, *World Economic Outlook.*

• *Trade weights* are calculated using *Direction of Trade Statistics* data. For each country we focus on the top trading geographic destinations of its exports that account for at least 80 per cent of exports during the period 1980-2010. Because of data limitations, coverage is below 80 per cent at the beginning of the sample.

• *Capital inflows* are defined as gross flows including direct investment, portfolio investment and other flows. Data are from the IMF, *World Economic Outlook.*

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