



Public infrastructure investment and fiscal sustainability in Latin America: incompatible goals?

Public
infrastructure
investment

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Abstract

Purpose – This paper aims to understand the relationship in developing countries between fiscal consolidation and public investment – a flexible part of the budget that is easier to cut during consolidation effort, but with potentially negative growth effects. Analyzing in detail the case of Peru, the paper explores alternative fiscal rules and frameworks that might help create fiscal space for infrastructure investment.

Design/methodology/approach – The paper analyses trends in public and total infrastructure investment in six large Latin American economies, in the light of fiscal developments since the early 1980s. In particular, the paper explores the association between fiscal consolidations (improvements in the structural fiscal balance) and public infrastructure investment rates. In the second part, the paper analyzes recent changes in the fiscal framework of Peru and shows how they were conducive in creating additional fiscal space.

Findings – The authors argue that post-crisis fiscal frameworks, notably fiscal rules that are increasingly popular in the region, should not only consolidate the recent progress towards debt sustainability, but also create the fiscal space to close these infrastructure gaps. These points are illustrated in a detailed account of recent developments in the fiscal framework and public investment in the Peruvian case.

Originality/value – The paper contributes new evidence to the literature on fiscal consolidation and the composition of government expenditures. While the literature based on evidence from the 1990s has argued that fiscal consolidation plans in Latin America have almost always led to a significant reduction in public infrastructure investment, the paper finds less clear cut evidence when extending the analysis backwards (1980s) and forwards (2000s). The example of the case of Peru is used to explore fiscal institutions and rules that might be useful for other developing countries that face important infrastructure gaps.

Keywords Peru, Latin America, Infrastructure, Fiscal policy, Fiscal rules

Paper type Conceptual paper



I. Introduction

Low and volatile public infrastructure investment is one of the most frequently-cited causes of slow long-term output growth in many Latin American countries. Certainly, fiscal adjustments have been quite sharp following economic crises in the region; have these periodic fiscal contractions harmed long-term infrastructure investment? We find that the evidence for this hypothesis is not that strong. Nevertheless, there are evident links between fiscal sustainability and public investment in infrastructure. Namely, high financing costs due to weak fiscal sustainability seem to have contributed significantly to low levels of infrastructure investment in Latin America. This finding raises the possibility that fiscal consolidation and public infrastructure investment could be complements, rather than substitutes, given the right policy setting. Accordingly, the paper reviews and discussed how fiscal frameworks in the region can be reformed to create fiscal space for more public infrastructure investment.

Latin America overcame the 2008-2009 international crisis with relatively robust macroeconomic health. At the onset of the crisis, most countries in the region had positive budget surpluses, reasonably low debt-to-GDP levels and credible monetary policies thanks, in several cases, to inflation-targeting regimes. As the crisis progressed, policy makers could boast significant fiscal stimulus packages while keeping country risk in check. These solid balances stood in stark contrast to the region's historic performance, in which fiscal fragility had been at the root of protracted crises, including the dramatic debt crisis of the 1980s[1]. Although in the first two quarters of 2009 all countries suffered significant slowdowns – in many cases, recessions – by mid-2009, most economies were already showing solid signs of recovery. After a decline in GDP of 1.9 per cent in 2009, the region grew at 5.9 per cent in 2010 and managed to perform at above trend-growth levels from then on.

Interestingly, with the exception of Brazil, public investment was the primary vehicle of choice for counter cyclical fiscal expansions. Governments in the region announced fiscal stimulus packages ranging in size from around 3 per cent of GDP in Chile and Peru, through 1.5 per cent in Argentina and Mexico to 0.6 per cent in Brazil. Infrastructure investment constituted 2 per cent points of GDP in Peru, more than 1 per cent point in Chile and Argentina and more than half a point in Mexico. To put all these figures in context, governments in OECD economies announced fiscal stimulus packages averaging 3.4 per cent points of GDP from 2008 to 2010, with infrastructure investment accounting for one-fifth of this.

Now that the bulk of the crisis seems over, the debate – in Latin America as in OECD countries – is turning to the exit strategy from the expansive/accommodative monetary and fiscal stance. Far from being a Latin American issue, this question at the centre of the debate about budget and growth strategies in the euro zone, where especially Southern economies are facing significant challenges to time correctly the speed and composition of their fiscal consolidation plans. And this is notably the case in emerging economies given that domestic demand remains solid and negative output gaps have probably been already reversed, so most international institutions are suggesting the need to withdraw stimulus packages (OECD, 2010; IMF, 2011). In this situation, in countries where currencies have appreciated and capital inflows remain buoyant, as is the case in Latin America, fiscal adjustment is a quite sensible option.

The discussion regarding fiscal policy in this adjustment phase focuses on three main questions: the timing of the process (when), the size of the required fiscal adjustment

(how much), and its composition both in terms of revenues/expenditure, but also by type of taxes and expenditure items (what to adjust). A general agreement seems to be emerging with respect to at least two desirable conditions of the fiscal adjustment. First, it should be “growth-friendly” in the short run, which directs attention to the timing of the consolidation[2]. Second, it should be “development-friendly” in the medium and long run, where more attention is devoted to its composition[3].

This paper contributes to this second, development-friendly, dimension of the debate on fiscal exit strategies. In particular, we stress the relevance not just of maintaining public investment in infrastructure, but creating more fiscal space to increase it for the case of Latin America. The main institutional arrangements of fiscal frameworks and rules in the region are discussed with an emphasis on how they affect public investment. Our conclusions does not stem from the conventional wisdom which holds that fiscal consolidations have typically led to reduced investment, but rather from long-term factors affecting the cost of financing. This has profound policy implications, since the required policy responses differ. According to our analysis, the priority should be to generate more fiscal space in the long-run, beyond immediate cyclical considerations, rather than simply allowing for more discretionary fiscal space during economic slowdowns. These policy recommendations could also be extended to developed economies, especially in Europe and the USA. In both cases, fiscal frameworks (the stability and growth pact in the former, and regional fiscal rules in the latter) may draw some relevant lessons from the contrasting experiences in Latin America. They may shed some lights on the effective design of the different proposals to reactivate economic growth, many of which entailed relaxing numerical fiscal rules while implementing ambitious European investment programmes. The paper is organised as follows. In Section II we describe investment trends in infrastructure, both public and private, in six large Latin American economies since the early 1980s, linking them with the observed and structural state of public finances. Additionally, we present estimations of infrastructure patterns in the region and discuss their determinants, in comparison to other emerging economies. In Section III we integrate this diagnosis with the current debate on fiscal exit strategies, based on the theoretical and empirical literature on fiscal policy and public investment. We assess the implementation and reform of fiscal rules, which take into account public investment in Argentina, Brazil, Chile, Colombia, Mexico and Peru. We pay particular attention to the case of Peru, as a potential benchmark for other developing countries, since it is one of the countries that exhibit both large infrastructure gaps, and some interesting recent experience in setting up fiscal rules that created space for public investment. The main conclusions and references close the paper.

II. Infrastructure trends in Latin America

Comparable statistics on public or private infrastructure investment in Latin America are not available for a large group of countries. Infrastructure series cannot be taken directly from national account and fiscal accounts, since they represents only a fraction of total investment (either public or private), and these series are not usually disaggregated. The latter includes also housing investment, and non-housing assets not considered in the empirical literature as infrastructure (such as office buildings and commercial plants, for instance). This is hardly a new issue even in developed economies (see Gramlich (1994) in the case of the USA), and quite pre-occupying since

“what gets attention gets measured and what gets measured gets attention” (Commission on Growth and Development, 2008).

Therefore, rather than giving a comprehensive survey of all countries in the region and all types of infrastructures, we focus on those for which data are available from the World Bank’s work on infrastructure in Latin America (described in Calderón and Servén (2010)): Argentina, Brazil, Chile, Colombia, Mexico and Peru (LAC-6, henceforth). These six countries represent altogether around 85 per cent of Latin America’s GDP, and therefore a significant share of total investment in the region. Furthermore, this sample covers a wide range of experiences regarding investment trends in the main items – water, telecommunications, transport and electricity – both public and private, as well as budgetary frameworks and fiscal rules. Latin America exhibits relatively low investment rates in key infrastructure categories: water, telecommunications (both fixed and mobile lines), land transport (roads and railways), and electricity (generation capacity). While during the 1980s, total investment in infrastructure in the LAC-6 area was on average around 3.3 per cent of GDP, after the adjustment of the 1990s, in the period 2000-2006 total infrastructure investment amounted to just 2.0 per cent of GDP (Figure 1). These investment levels are far below those recommended by the literature to sustain high growth rates. For example, the aforementioned *Growth Report* by the Commission on Growth and Development (2008) highlighted that in fast-growing Asia, public investment in infrastructure accounts for around 5.0-7.0 per cent of GDP.

Most of the reduction in total infrastructure investment was due to a retrenchment in public investment by the general government, from 2.9 per cent of GDP during the 1980s to 0.9 per cent as of 2000-2007. This public reduction was furthermore not compensated by the increase in private investment, which rose from 0.5 to 1.0 per cent of GDP in the same period. Thus, despite the fact that the privatisation of state-owned enterprises in several of these economies during the 1990s explains, or even justifies, the reduction in public investment, it seems that the private sector was unable to fill the gap as it was expected to do. The spread of public private partnerships (PPPs) in strategic sectors has not changed significantly the picture, stressing the need for

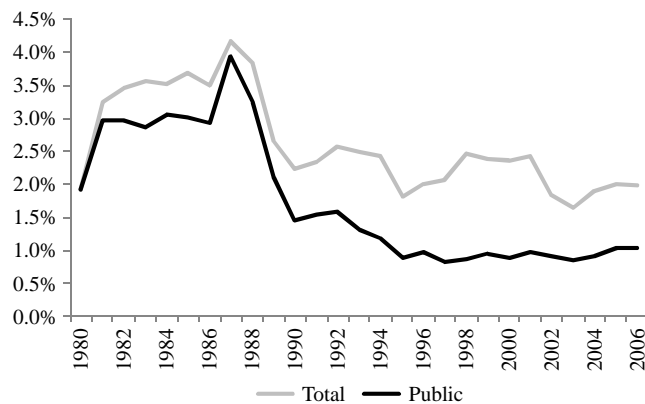
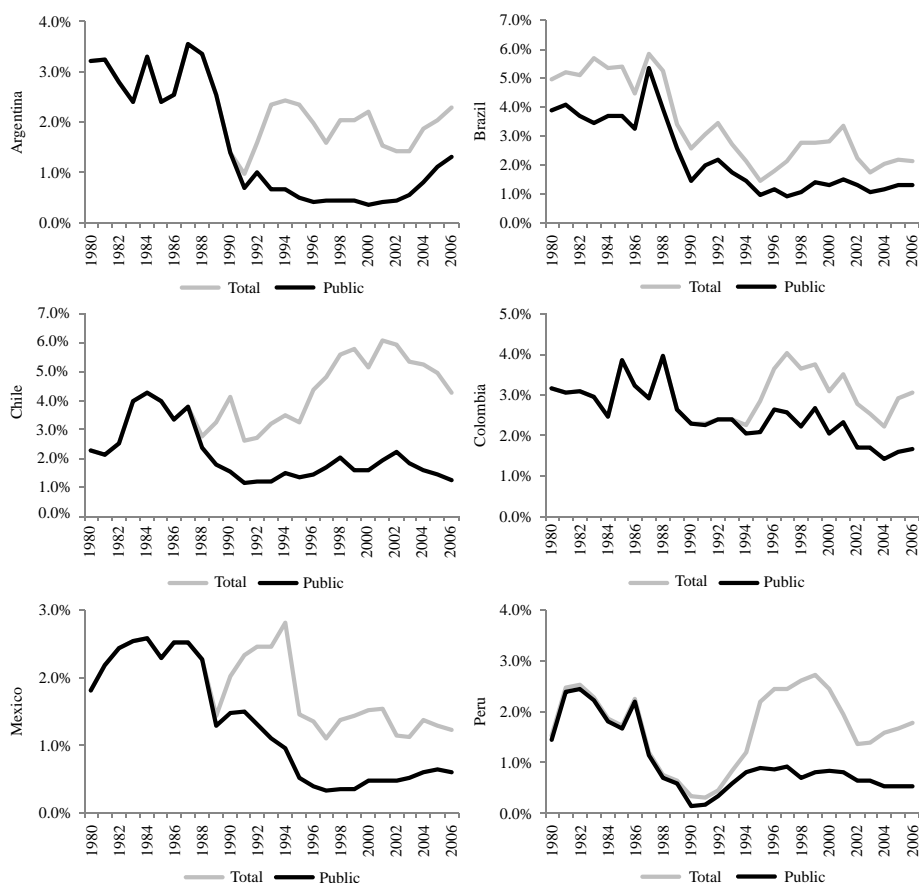


Figure 1.
Public and total
investment in
infrastructure in
LAC-6 countries

Note: Weighted average, percentage of nominal GDP
Source: Authors’ calculations based on Calderón and Servén (2010)

high-quality institutions (for the procurement and concession processes) and regulations, and more developed capital markets.

However, it is important to note that there are some important differences within the region[4]. The regional trend is largely driven by the largest of these six economies: Argentina, Brazil and Mexico. For these three economies, public investment in infrastructure fell around 2 per cent points of GDP, while private flows increase one point in the best cases (Figure 2). In contrast, Colombia and especially Chile have managed to compensate the reduction in public investment, with an increase in private infrastructure investment. Peru represents an extreme case, not only for its low level at the start of the period of analysis, but also for the sudden stop in total investment flows in the late 1980s. Indeed, in Peru as in most of the countries in the region, public investment in infrastructure is not only too low, it is also too volatile.



Note: Percentage of nominal GDP

Source: Authors' calculations based on Calderón and Servén (2010)

Figure 2.
Public and total
investment in
infrastructure

II.1 Fiscal consolidation and public investment in infrastructure

The conventional wisdom stresses that, leaving aside the long lasting effects of the balance of payment crisis in the 1990s, Latin-American policymakers have been prioritising fiscal discipline to restore macro and financial stability. As shown in Calderón and Servén (2004), Martner and Tromben (2005), de Mello and Mulder (2006) or CAF (2009), improvements in primary structural fiscal balances achieved since the mid-1980s in many countries in the region did not come from retrenching current expenditure, but rather from revenue hikes and declines in public infrastructure investment. Lora (2007) also confirms the negative correlation between public infrastructure investments with the current fiscal balance in seven Latin American economies, while debt increases are associated with higher public infrastructure investment. In particular, International Monetary Fund fiscal adjustment loans are associated with lower levels of public investment in infrastructure, according to this author.

A simple graphical approach corroborates, but only weakly, this view (see Figure 3 for a regional weighted average and Figure 4 for the national series). From the mid-1980s to the early-mid 1990s, the reduction of public deficit (cumulatively, 6.3 per cent points of GDP in the period 1987-1992 for LAC-6) has been accompanied by the reduction in public infrastructure investment (-2.4 p.p. of GDP, while private investment in the same period only rose 0.8 p.p.). In other words, one-third of the improvement in fiscal accounts can be effectively attributed to lower infrastructure investment.

A closer look at the evolution of investment rates, headline and cyclically-adjusted budget balances and the business cycle provides a more ambiguous image. In particular, during the whole period of analysis, 1980-2006, it does not seem that fiscal consolidations during crises are the key driver of lower investment rates. The correlation of the variation of fiscal balance and investment retrenchment is low (left panel in Figure 5). This correlation is even weaker when the fiscal stance is measured by the cyclically-adjusted budget balance, a more precise indicator of discretionary fiscal decisions (right panel in Figure 5)[5].

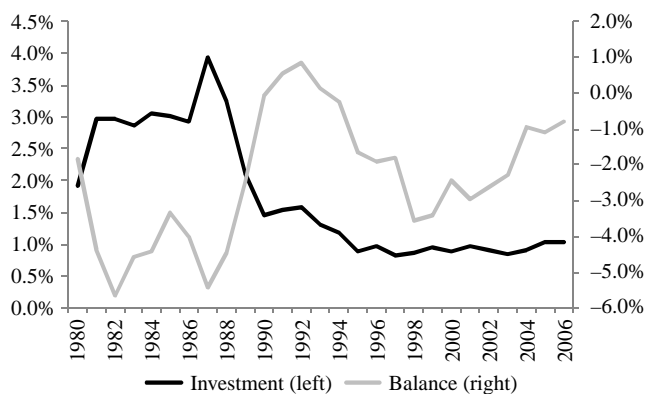
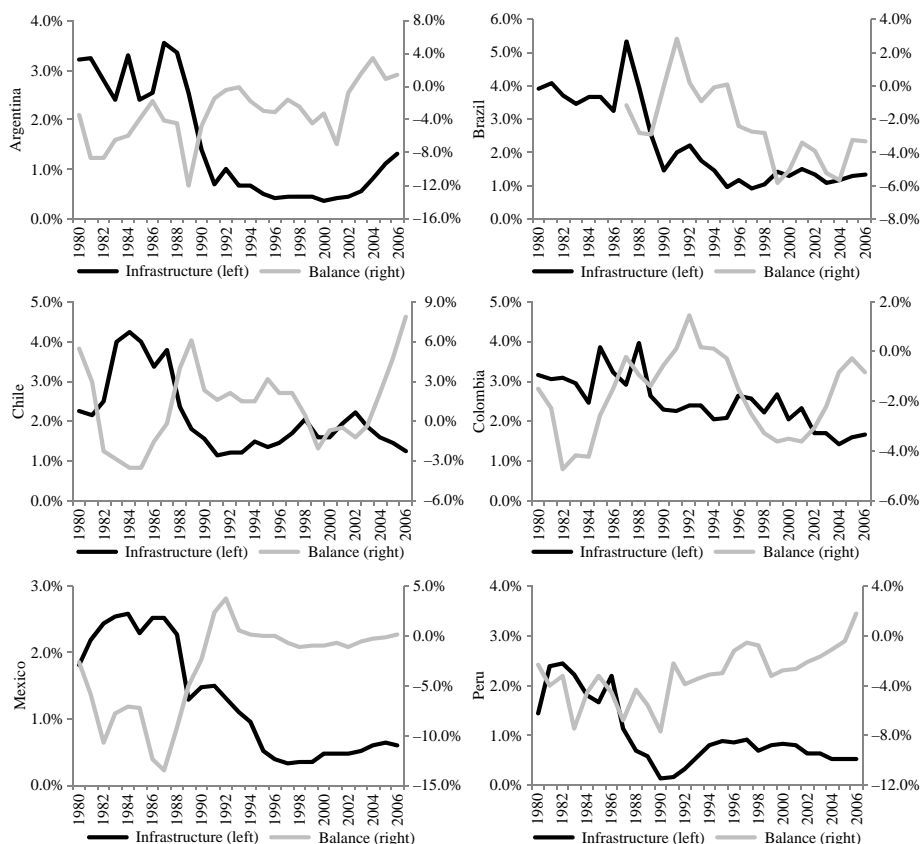


Figure 3.
Public investment in infrastructure and budget balance in LAC-6 countries

Note: Weighted average, percentage of nominal GDP
Source: Authors' calculations based on Calderón and Servén (2010), ECLAC and IMF databases



Note: Percentage of nominal GDP

Source: Authors' calculations based on Calderón and Servén (2010), ECLAC and IMF databases

Figure 4.
Public investment in
infrastructure and budget
balance

Additionally, following the exercise by Martner and Tromben (2005), we analysed episodes of sustained fiscal consolidations, defined as those in which budget balance improved for two or more consecutive years. Also for these episodes, irrespective of whether the analysis is done based on observed or on cyclically-adjusted balances, the infrastructure component of fiscal improvements remains limited (Figure 6). For instance, focusing on the latter, only in the cases of Colombia 1999-2004 and Chile 2002-2005, and less so Peru 2000-2003, investment drove fiscal developments (right panel of Figure 6).

In spite of this, closing the infrastructure gap remains a fiscal issue, whether done jointly with private firms, or by the public sector alone. In particular, as international and regional experience indicates that, due to a combination of flawed contract design, imperfect regulation, deficient institutions and macroeconomic shocks, private provision of infrastructure often involves renegotiations of contracts and consequent

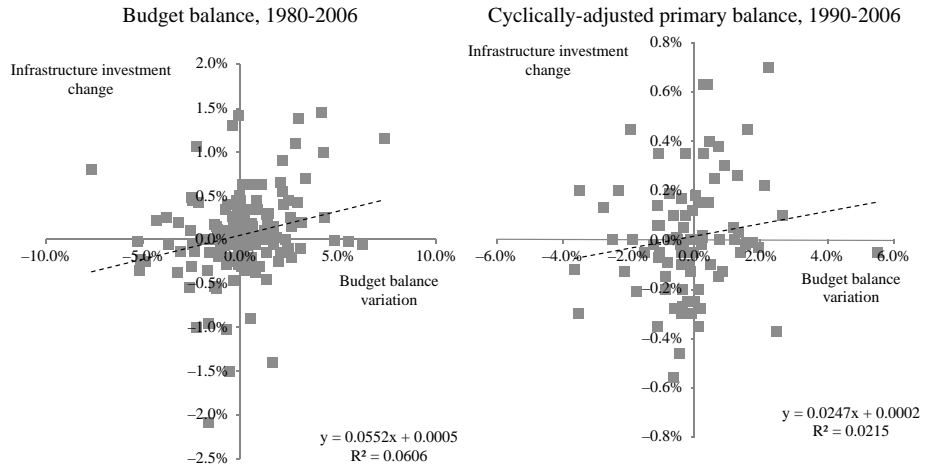


Figure 5. Public investment in infrastructure vs budget balance variations

Note: Surplus increase vs investment reduction, percentage of nominal GDP
Source: Authors' calculations based on Calderón and Servén (2010), Daude *et al.* (2011), ECLAC and IMF databases

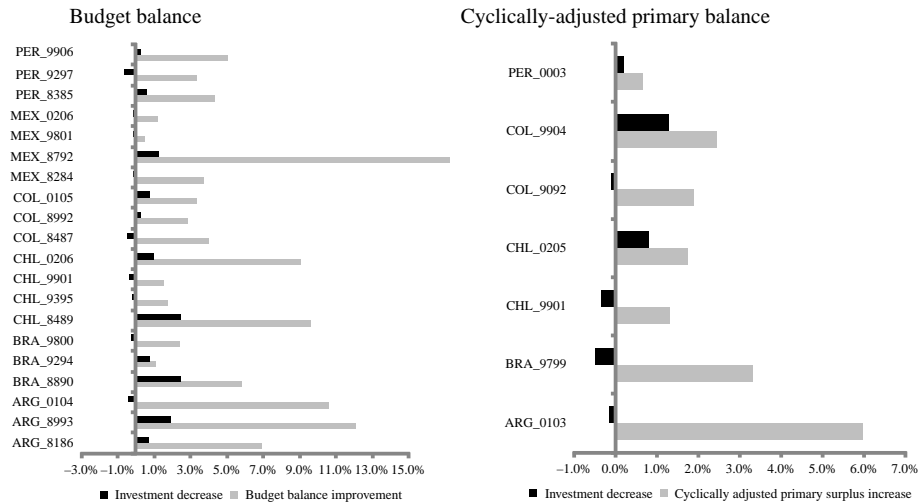


Figure 6. Fiscal balance improvement and investment reduction

Notes: Surplus increase or deficit decrease vs investment reduction, percentage of nominal GDP
Source: Authors' calculations based on Calderón and Servén (2010), Daude *et al.* (2011), ECLAC and IMF databases

changes in contractual conditions that should be accounted for as contingent liabilities of the public sector (for Latin America, see Guasch *et al.* (2007) for the sectors of transport and water, and Engel *et al.* (2003) for highways). Therefore, the emerging consensus is that PPPs should be pursued in sectors and activities where the private

sector management and execution add value and efficiency relative to the public sector, but not to create artificial fiscal space to increase infrastructure investment (OECD, 2008b). Additionally, countries with higher debt-to-GDP levels also exhibit larger infrastructure gaps, as we show in Section II.2. All of this supports the generation of a significant fiscal space for the next decades.

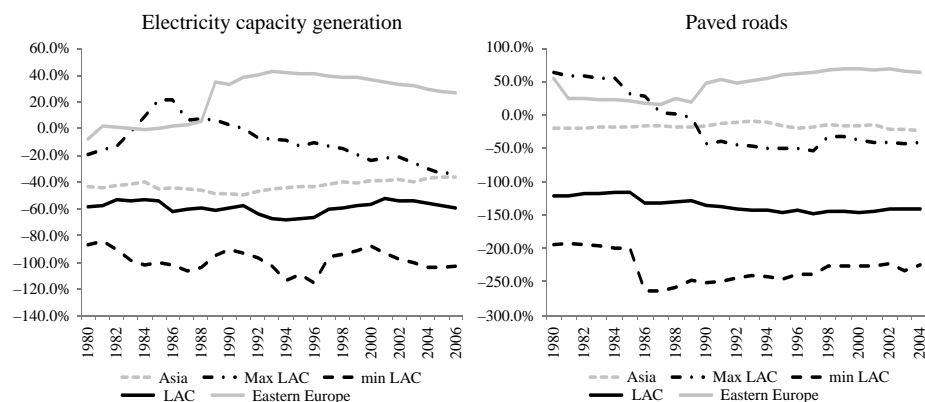
II.2 Infrastructure gaps, debt and governance

As a consequence of years of low – and probably rather inefficient – investment in infrastructure, many countries in Latin America present significant infrastructure gaps (Perry *et al.*, 2008; CAF, 2009; Perroti and Sánchez, 2011). The shortfalls are especially evident in the transportation and electricity sectors. The literature agrees upon the importance of gaps both in quantity and quality of infrastructures in the region.

However, most of the literature analyse observed infrastructure stocks across countries. This might be misleading as it does not take into account structural characteristics which determine the optimal level of infrastructure. For example, the degree of urbanisation or geographical dispersion of the population determines the optimal and effective amount of roads and other transport infrastructures.

Compared to a counterfactual based on such country characteristics, Latin American economies perform in general below their expected patterns (Figure 7). As of 2007, a back-of-the-envelope calculation of the cost of closing these gaps shows that they amount well above 30 per cent of the regional GDP (Balmaseda *et al.*, 2010). The weak performance of Latin America is especially worrisome when contrasted to other developing countries and emerging markets (notably Asia and Eastern Europe). Furthermore, there has been little advancement over the last two decades regarding these gaps in the region.

These large shortfalls in key infrastructure categories are often considered one of the factors that explain Latin America's low levels of economic growth and even persistent levels of inequality and poverty. This is the case since public infrastructure investment



Notes: The degree of achievement is the log difference between the observed pattern and the country-specific expected value according to the contra-factual estimated from a regression on the degree of urbanisation, the sectorial composition of output, population density, GDP per capita, country fixed effects and common time effects.

Source: Balmaseda *et al.* (2011)

Figure 7.
Comparative degree of achievement in transport and energy infrastructure

is assumed to have growth enhancing properties (see the seminal works by Aschauer (1989a, b) and Fernald (1999) for the US highway sector, which consider explicitly infrastructure as an additional factor in the traditional labour-physical capital production function, or Teles and Mussolini (2012) who opt for a cointegration analysis between infrastructures and total factor productivity in Argentina, Brazil, Chile and Mexico; see also Gramlich (1994) for a methodology survey), This result, albeit with lower impact, has been corroborated by modern economic survey techniques, and an increase of 10 per cent in the stock of public capital allows an increase of 0.5 per cent to 1.0 per cent of long-term output levels (Bonn and Ligyhart, 2008).

Calderón and Servén (2010) estimate that more adequate investment and infrastructure quality in Latin America could accelerate GDP growth significantly. However, there is also evidence showing that public investment does not translate automatically into more infrastructure and economic growth (Pritchett, 2000). An adequate framework – not only for regulating private infrastructure investment but also implementing and evaluating *ex ante* and *ex post* public projects – is important. Otherwise, it is more likely for public investment to simply crowd-out – at least in part – private investment, and have only a reduced impact on economic growth (Cavallo and Daude, 2011).

What explains quantitatively these infrastructure gaps in Latin America? As discussed above, a prominent explanation has been fiscal consolidation programmes that have cut public investment, as other budget items – current expenditures – are less flexible to postpone or reduce fast. In fact, Balmaseda *et al.* (2010) show that a significant fraction of the cross-country differences in the degrees of achievement in infrastructure is explained by fiscal and institutional factors. The results show that countries with higher public debt-to-GDP ratios tend to underperform in terms of infrastructure. Also, a higher budget balance is correlated with less achievement in transport infrastructure (not so for energy). In both cases, the quality of institutions relevant for the management of public infrastructure projects has a positive and significant impact on the degree of infrastructure achievement.

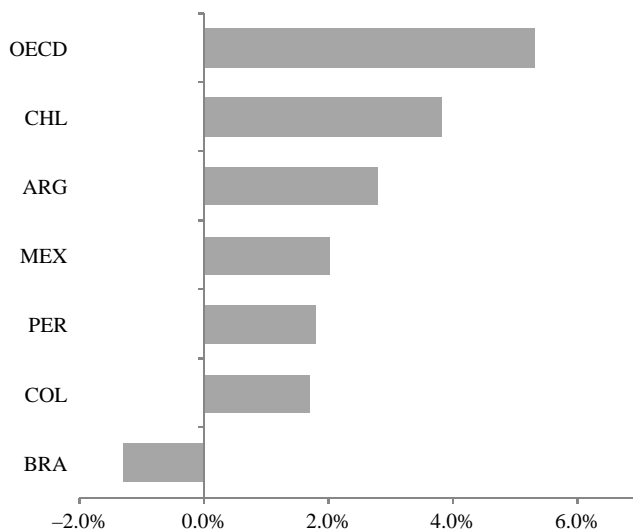
While on average debt-to-GDP levels have declined and the debt composition has become less risky in terms of currency composition and maturity in the past decade in Latin America, these estimates show that countries with high levels of debt could still benefit from fiscal consolidation, as lower debt levels imply lower financing costs for infrastructure investment (either public or private). However, if such a consolidation is based primarily on a reduction of public investment, it will come at a price of increasing further the infrastructure gaps at least in some sectors. The other important result is that in terms of explaining differences across countries in their infrastructure achievements, the institutional dimension is important. Actually, the quality of the bureaucracy explains by its self almost one-fourth of the total variation in the observed infrastructure gaps. A one-standard-deviation improvement in this dimension (e.g. passing from Peru's institutional quality to that of Chile), would on average close the gap in paved roads by around 58 per cent and the gap for electricity generation by around 45 per cent. This shows the importance of adopting complementary reforms in public institutions which would raise the efficiency of public investment more generally (a point emphasised by Isham and Kaufmann (1999), Fedelino and Hemming (2005) and Cavallo and Daude (2011); among others). Of course, other drivers are also relevant, in particular the development of financial markets.

III. Public infrastructure investment, fiscal perspectives and frameworks

There is no doubt that Latin America shares the need to pursue fiscal consolidation, despite the aforementioned improvements. According to standard debt sustainability analysis, fiscal positions in most countries in the region during the 2000s were in line with those needed to stabilise the current debt-to-GDP ratios, and much closer than those exhibited among most OECD countries. However, with the exception of Brazil, Latin America has not completely decoupled in this sense, such that in some cases a considerable fiscal consolidation is needed in the years ahead. Daude *et al.* (2011) show that cyclically-adjusted primary balance should increase between 2 and 4 per cent points of GDP to stabilise debt at pre-crisis levels[6]. In a similar exercise, OECD (2010) estimates that the required fiscal adjustment in industrialised economies is higher than 5 p.p. of GDP (Figure 8).

The main difference between Latin America and other regions, especially developed countries, is that fiscal adjustments in the region tend to be required mostly for cyclical reasons, as its strong recovery and high commodity prices are pushing countries in South America into the expansive phase of the business cycle. For example, while Chile would require an improvement of 3.8 p.p of GDP to stabilise its debt-to-GDP ratio, the highest in our sample, this ratio was just around 13 per cent of GDP as of 2009.

However, as important as the size and urgency of the fiscal adjustment ahead is its composition. The current debate on fiscal frameworks, both in emerging and developed economies, runs the risk of being too limited. This is delicate, since well-defined fiscal frameworks (from budgetary processes and numerical fiscal rules, to fiscal agencies and councils)[7] can both enhance social confidence in the medium-term orientation of fiscal policy and facilitate returning public finances to sustainable positions in the short-term (OECD, 2010). As the IMF clearly put it: “where improvements are needed, reforms to these (fiscal) institutions should be part of the exit strategy” (Bornhost *et al.*, 2010).



Note: Percentage of nominal GDP

Source: OECD (2010), and Daude *et al.* (2011) for Latin America

Figure 8.
Required change in
structural primary
balances to stabilise
debt-to-GDP ratios

In order to avoid this potential drawback, we argue that the debate on fiscal frameworks should complement the usual sustainability focus with at least two other dimensions. First, reforms should address socio-economic challenges in the short-run, leaving enough room for stabilisation policies (automatic and discretionary, at least during severe downturns). And second, they should incorporate medium and long run elements, managing both “assets” (for instance commodity revenues) and “liabilities” (such as poverty reduction, infrastructure gaps, and age-related expenditures).

Focusing on the infrastructure dimension, in order to set an adequate framework in practice, it is important first to review first the trade-off regarding sustainability and public investment. It is often argued that fiscal consolidation programmes based on cutting public infrastructure investments are short-sighted as these investments would increase potential output growth and therefore increase fiscal solvency (Easterly *et al.*, 2008). Thus, if the growth effects would be taken into account in the solvency assessments and the fiscal policy framework more in general, reducing public infrastructure investments would be less attractive.

The argument depends on the balance between solvency risks (and probably also liquidity risks) that could trigger a higher financing cost vs the gain in terms of economic growth. In this sense, it is true that public investment reduction during the late 1980s and early-1990s might have set the scene for the low growth performance during the 1990s in Latin America. However, it is also important to remember that most countries were still in default from the 1981-1982 debt crisis and that these fiscal adjustments were part of larger packages under the Brady plan to regain access to finance. Clearly, the reliance on privatisation without proper regulation did not create the expected results in terms of private investment in the region. However, it is not clear if at that time countries had many other options given the overall bad state of public finances. Nowadays, especially resource-rich countries in South America are closer to a situation where they have to decide on the optimal mix between reducing debt further – which would allow a lower interest rate and boost private investment – and more public investment in infrastructure[8].

III.1 Public infrastructure investment and fiscal policy: main policy options

One traditional fiscal framework that in principle allows for more fiscal space to finance public investment are the so-called golden rules, which set targets on the current balance and exclude capital expenditures. In theory, they have many advantages if higher public investment translates into higher growth, and therefore more revenues to sustain debt levels (Blanchard and Giavazzi, 2004). In some sense, this alternative assumes a private-sector approach, in which current revenues finance current expenditures, while borrowing finances capital expenditures. These provisions tend to be used rather often. According to IMF (2009), around one-third of the fiscal rules in emerging and developing countries exclude public investment and other special items from budget targets. However, these paths are not free of practical problems. In addition to the need to run separate (and credible) budgets, the public sector does not usually receive financial returns on its investment, departing from the private sector rationale (Martner and Tromben, 2005)[9]. Besides, several authors have pointed out that even if budget policy remains fiscally sustainable (an assumption which is far from evident in this framework) public infrastructure investment has decreasing rates of returns, and that separating the budget may introduce a bias against education, health and other intangible investments (IMF, 2004; Fedelino and Hemming, 2005; and OECD, 2010 for critical approaches).

Another popular policy option, accepted by several public accounting conventions, is to exclude from the fiscal targets the operations of commercially-run public enterprises. By this means, investment expenditure can be registered along several years. However, once again, it is not straightforward how to identify these public enterprises. The spread of PPPs is a related promising option, if accompanied by good procurement and concession processes, and adequate regulatory frameworks[10].

Finally, a more general and also promising formula would be to explicitly adopt macro-fiscal rules. They should require, by law, the accumulation of savings during good times, generating the fiscal space to maintain public investment during economic downturns (for a comprehensive analysis of the main issues in defining and implementing structural fiscal rules in Latin America, see Ter-Minassian (2011)). We will devote the next two sections to macro-fiscal rules, adapted to the context of the main Latin American economies.

III.2 Basic principles for a way forward

Based on previous arguments, fiscal consolidation and infrastructure convergence should be made compatible, taking also into account an additional restriction: the particularly strong association of investment and political cycles in Latin America (OECD, 2008a; Nieto-Parra and Santiso, 2012). An alternative for fiscal policy in Latin American countries (both in the short and the long run) is to create or modify existing rules and frameworks such that they incorporate a path towards the steady state for an economy with a large infrastructure gap in a very simple way: specifying a debt objective and path, supplemented by a spending and/or deficit rule. In addition, a fiscal council could set the scenarios, estimating the gap, defining the deficit/debt and investment trends.

In this context, moving towards a fiscal framework that assesses more the long-term trade-offs between solvency and different government expenditures and investments seem not only feasible, but necessary. Of course, there are many practical questions of implementation to be addressed to achieve a more long-term approach to public finances that includes these growth effects. For example, infrastructure investments are not the only item with potential growth-enhancing effects. Public expenditures on education, health, or public security could also affect growth as well as the reduction of tax expenditures that create misallocations of resources could boost productivity. Furthermore, the estimates of the effects of these growth effects are inherently imprecise and could be subject to manipulation.

Nevertheless, these challenges can be resolved and improved through learning-by-doing. For example, advisory fiscal councils can present estimates and simulations of the growth effects of the different budget programmes which could be valuable information for the prioritisation of policies. Estimates provided in a transparent manner by an external council – even if they are not binding – would be subject to less manipulation and could be improved by evaluating existing programmes. Also, reporting tax expenditures in a transparent way might be a helpful by-product of a more sophisticated fiscal framework with emphasis on net worth. In this sense, fiscal rules do not automatically translate into better fiscal outcomes (see for instance Areski and Ismail (2010) or Caceres *et al.* (2010)); they must be accompanied by complementary reforms to the transparency and efficiency of the budget process. A combination of

deficit targets and current expenditure limits, supervised by some type of council or independent institutions is probably a good practical option (in a similar line, see Ter-Minassian (2011)).

III.3 Infrastructure in fiscal rules in Latin America, with a focus on Peru

Some advances in fiscal policy-making have been significant since the 2000s. According to Daude *et al.* (2011), from a structural perspective, both cyclically-adjusted balances and debt sustainability analysis confirm the better position enjoyed by most countries in Latin America before the crisis. These good practices in the stabilising role of fiscal policy (notably in Chile, Colombia, and Peru), and in general in fiscal sustainability, stem from a combination of well-designed fiscal rules, better institutions, and good policy makers. However, the institutional framework is often weaker than it appears. IMF (2009) show that only one out of the five countries with fiscal rules during the crisis (Brazil) did not modify the rule (Argentina, Chile, Mexico and Peru did; Colombia has recently approved its own one). In what follows we sketch the treatment of infrastructure investment in Argentina, Brazil, Mexico and Peru.

Chile's fiscal rule (2001) does not include any specific disposition on investment, neither it is discussed (Comité Asesor para el Diseño de una Política Fiscal de Balance Estructural de Segunda Generación para Chile, 2010). In the case of Colombia, the Comité Técnico Interinstitucional (2010) mentioned the possibility to earmark royalties to finance high-productivity local infrastructures. Colombia's Fiscal Responsibility Law from 2003 does not address explicitly the issue of targets and the treatment of infrastructure, but it provide budgeting rules for contingent liabilities due to concessions to the private sector.

Argentina's Fiscal Responsibility Law (set in 1999) allows excluding social programmes, public investment and projects financed by multilaterals from budget balance requirements. There is also a cap on primary expenditure growth, which should grow less than nominal GDP or remain constant in periods of negative nominal growth. However, the rule has frequently been violated or suspended.

The approach employed in Brazil and Mexico can be thought as a soft version of the golden rule, with all the shortcomings already mentioned. Brazil's Fiscal Responsibility Law (2000) allows investment to be excluded from targets for the states. Furthermore, the law imposes certain minimum spending amounts (as a percentage of total revenues and transfers from the federal government) on social issues like health or education. These earmarked allocations reduce significantly the possibility of changing priorities in the budget, in addition to creating pro-cyclicality in expenditures. In the case of Mexico (the Fiscal Responsibility Law was adopted in 2006), the target is set on a cash basis. Since 2009, budget targets exclude investment on behalf of PEMEX, the state-owned oil company. Excess resource revenues can partially be allocated to certain state-level investment projects or to the oil stabilisation fund. If this later fund exceeds 1.5 per cent of GDP, all additional revenue is split between a fund for state-level investment (50 per cent), PEMEX investment (25 per cent) and a fund to finance future pensions (25 per cent) (Villafuerte and Lopez-Murphy, 2010).

The case of Peru. The case of Peru represents probably one of the best practices in the region. As previously shown, Peru represented an extreme case in public investment in infrastructure, not only for its low level at the start of the period of analysis, but also for the volatility of its infrastructure investment. These characteristics explain the

country's very high infrastructure gaps. However, at the same time, recent developments in the design of its fiscal framework may represent a good practice for economies in a similar situation.

At the end of 1999 the Fiscal Prudency and Transparency Law was enacted, imposing two numerical restrictions: a ceiling on the consolidated public sector (non-financial public sector plus the central bank) fiscal deficit of 1 per cent of GDP, and a restriction that the annual increase of non-financial expenditures of the general government should not exceed the inflation rate plus 2 per cent. Expenditures included all transfers and credits with government guarantees. For general election years, there were additional restrictions on non-financial expenditures and the fiscal deficit to prevent outgoing administrations from engineering an opportunistic fiscal expansion: the general government's non-financial expenditure during the first seven months of the year could not exceed 60 per cent of the total non-financial expenditure budgeted for the whole year; and the consolidated public sector deficit for the first semester could not exceed 50 per cent of the programmed annual deficit.

The 1999 fiscal law had escape clauses. In case of national emergency or international crisis that may significantly affect the national economy (GDP falling for three consecutive quarters or annual public debt interest payments amounting to more than 0.4 per cent of GDP), the executive could ask the Congress to suspend for the fiscal year any of the rules described above. Also, given sufficient evidence that real GDP is contracting or could decrease in the following year, based on a report from the Ministry of Economy and Finance, the law authorised a fiscal deficit above the 1 per cent of GDP ceiling, but in no circumstance could it exceed 2 per cent of GDP.

The law also created a Fiscal Stabilisation Fund as a countercyclical expenditure measure. Funding came from the excess of current income (if current income from ordinary resources exceeded its three previous year's average in 0.3 per cent of GDP, the difference would go to the fund) and from privatisation (75 per cent of income from privatisations would go to the fund).

As an accountability and transparency measure, the law mandated the Ministry of Economy and Finance to publish a multi-annual macroeconomic framework, which included forecasts for the next three years of the main macroeconomic variables, fiscal balance targets, public investment, public debt, as well as the guidelines for fiscal policy.

As fiscal accounts were still rather weak, especially after the 1997-1998 crisis, the law established a convergence process for achieving the 1 per cent fiscal deficit target, imposing ceilings of 2.0 per cent for 2000 and 1.5 per cent for 2001. However, these wider limits were not enough and in 2001 a law was enacted to suppress the limits for the years 2001 and 2002. During the next five years the Fiscal Prudency and Transparency Law was modified several times. In 2003, its name was changed to Fiscal Responsibility and Transparency Law; the 1 per cent of GDP ceiling for the fiscal deficit was now for the non-financial public sector rather than the consolidated public sector, and the real annual increase of the general government's non-financial expenditure could not exceed 3 per cent using the GDP deflator as the adjustment factor. During electoral years, the limit on the fiscal deficit for the first semester was reduced to 40 per cent, and changed from consolidated to non-financial public sector.

The 2003 modification introduced fiscal rules for regional and local governments as well. They set restrictions for regional governments' debt, such that the ratio of total debt stock over current income should not exceed 1 and that the ratio of annual debt

service to current income should be lower than 0.25. Also, the average primary balance of the last three years should not be negative for each local and regional government, and regional governments' debt with state guarantees can only be destined to infrastructure.

Exception rules also changed. Now permission to suspend any of the targets could be granted for a maximum of three years, the maximum allowed fiscal deficit would be 2.5 per cent of GDP instead of 2.0 per cent, and for the years following the exception the fiscal deficit should decrease 0.5 per cent of GDP per annum until it reaches the limit established by the law. Furthermore, the Ministry of Economy and Finance will establish the adequate fiscal rules for regional and local governments.

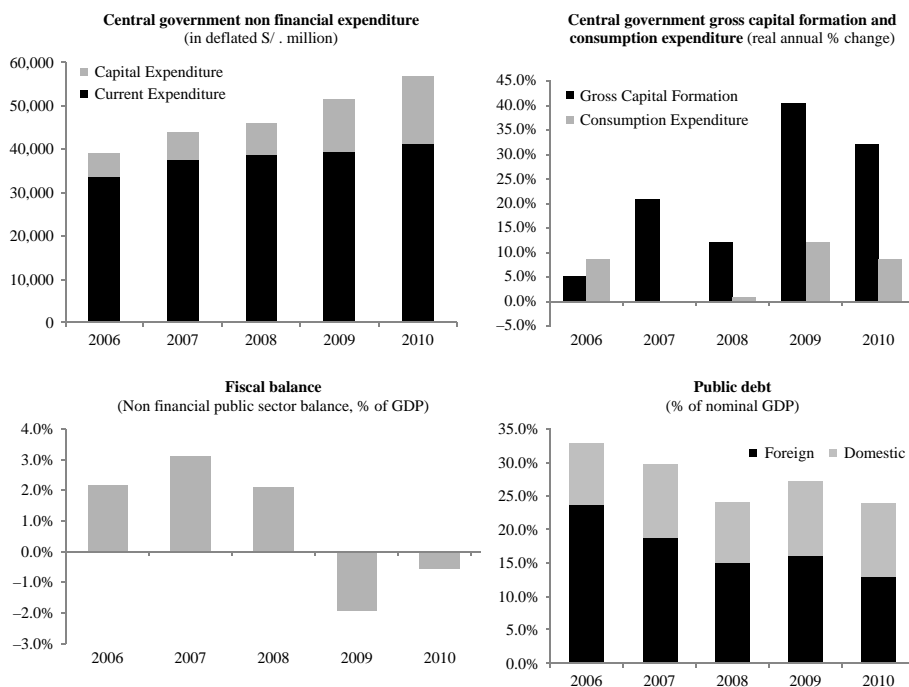
The Fiscal Stabilisation Fund also went through some minor changes. Since 2001, 50 per cent of liquid income from state concessions would go to the Fund, and the cumulative savings of the Fund could not exceed 3 per cent of GDP. Any difference would go to the Pension Reserve Consolidated Fund or should be used to reduce public debt. Since 2003, the Ministry of Economy and Finance would have to publish a detailed balance sheet of the fund in the official newspaper and on electronic public media.

Thus, during the period 2000-2005 fiscal rules had two main achievements: convergence to the fiscal deficit and stabilisation of the debt-to-GDP ratio. However, they failed in limiting public expenditure growth, and Congress always approved waivers solicited by the executive to increase expenditure above the limits established by law. To worsen the situation, the composition of public expenditure privileged growth in current expenditure (public consumption) rather than public investment.

One of the objectives of the Administration entering in July 2006 was to focus on public investment to close the infrastructure gap. But the rules restrained public expenditure in infrastructure as well, so the Fiscal Responsibility Law had to be adapted. At the end of 2006, the non-financial expenditure limit was modified to exclude maintenance expenses from its calculation, the adjustment factor would now be the price index, and the limit was now over the central government rather than the general government. In 2007, the 3 per cent real annual increase limit was now put on consumption expenditure – composed by wages and expenditure in goods and services – and the adjustment factor changed to the inflation target set by the Central Bank. By the end of that same year, the rule was modified again by the 2008 Budget Law, as the ceiling was reset to 4 per cent and consumption expenditure included in addition to wages, expenditure in goods and services also pensions. This way, public investment was not restrained, except for the 1 per cent fiscal deficit ceiling.

From 2006 onwards the trends of capital expenditure and current expenditure of the central government changed. While the first increased, the second declined. Public investment over GDP ratio grew significantly, and consumption expenditure was contained, as real growth was zero in 2007 and 2008 (Figure 9). Moreover, between 2006 and 2008 the fiscal balance was positive. There was a political cost though, as during those years wages in the public sector were frozen; however, it was well handled by giving emphasis to infrastructure and its social benefits.

The international crisis hit Peru slightly later and less severely than more advanced economies. However, an economic stimulus plan was designed under which fiscal rules had to be put aside for the years 2009 and 2010. Congress approved the waiver presented by the executive soliciting a fiscal deficit ceiling of 2 per cent for both years and higher consumption expenditure growth rates. This time the central government's



Source: Author's calculations, based on data from the Peruvian Ministry of Finance and the Central Bank (BCRP)

Figure 9.
Main macroeconomic
and fiscal indicators
in Peru, 2006-2010

consumption expenditure was allowed to grow 10 per cent in 2009 and 8 per cent in 2010, basically in maintenance of roads, schools, and rural infrastructure. The first year the limit was exceeded by 0.2 per cent going up to 10.2 per cent, and the second year expenditure growth was below the limit reaching only 6.4 per cent.

The economic stimulus plan emphasised expenditure in infrastructure mainly for two reasons: first, to encompass a short-term objective of stimulating the economy with a long-term goal of economic and social development by closing the infrastructure gap; and second, because according to studies from the Ministry of Economy and Finance, government expenditure was more effective to stimulate the economy than lowering taxes. Moreover, as it was expenditure in infrastructure, the impact on the output level was permanent and the exit strategy from the stimulus plan was not complicated.

Some caveats remain. The multiyear macroeconomic framework (and consequently the budget planning) is undertaken within the Ministry of Economy and Finance. But the ministry is also the actor charged with designing and implementing the fiscal policies supposedly regulated by the multiyear framework and the budget planning. Thus, there is room for further strengthening of external formal checks-and-balances (The Central Bank assessment is not binding and the Budget Committee ultimately rely on minister's experts[11]). Additionally, improvements are needed in the formal infrastructure policy cycle, ranging from planning and prioritisation stages to investment execution, operation and maintenance, and monitoring and evaluation.

All in all, in the Peruvian case, fiscal rules have been effective in imposing discipline upon governments. However, they had to be fine-tuned along the years, and it is clear sometimes making exceptions and having escape clauses is necessary. Recovering credibility among economic agents and mainly investors was crucial for Peruvian successful economic performance during the last decade – a remarkable one in terms of growth-, and fiscal rules contributed significantly to this purpose.

IV. Conclusions and policy recommendations

In this paper we documented the size of fiscal consolidation needed in six of the main economies in Latin America, and the infrastructure gaps in the region, based on original research. We took stock of the debate on second-generation reforms of the fiscal rules and frameworks existing in Latin America, with a particular focus on their treatment of public infrastructure investment in Argentina, Brazil, Chile, Colombia, Mexico, and especially in Peru.

We argued that fiscal exit strategies already debated and in many cases under implementation, should incorporate not only a sizable fiscal retrenchment, but also a fiscal framework favourable to public infrastructure investment. Specifically, the case of Peru was chosen as a potential good practice for the region and even for developed economies, since the establishment of a simple fiscal rule that combines deficit and current expenditure ceilings seems to be behind the public investment boom in the last five years.

The analysis focused on fiscal rules, but the effectiveness of fiscal consolidation would be eased by a combination of rules, institutions (from fiscal councils to independent fiscal agencies), and better budgetary procedures. Needless to say, higher infrastructure investment, thanks to more fiscal space, should be accompanied by better spending processes.

Several lines for future research are opened. First, a disaggregated analysis of the different types of infrastructure may shed some light on their relationship with budget balance developments (especially for the telecommunications sector vs electricity and land transportation). Second, depending on data availability, it would be interesting to include more years (in particular the last business cycle) and more countries (notably incorporating good practices from emerging Europe and Asia). Finally, the descriptive analysis could be complemented by a simple modelling of the trade-offs between public deficits to close infrastructure gaps, and higher interest expenses with imperfect capital markets which would allow understanding the optimal path to close the infrastructure gaps.

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Notes

1. The region's experience of the crisis is summarised and analysed in OECD (2009). Was this success due to greater policy space that allowed the use of effective countercyclical fiscal policy? The limited information on the actual implemented packages, the uncertainty on the size of fiscal multipliers, and the combined effects of other favourable external factors involved make it difficult to provide a clear answer. Moreover, the debate on the cyclical or structural nature of fiscal improvements in several Latin American economies in recent years remains somewhat polarised (ranging from the more pessimistic views in Izquierdo and Talvi (2008), to the more positive ones in Vladkova-Hollar and Zettelmeyer (2008), and Daude *et al.* (2011)).
2. This discussion ignores for now the possibility that fiscal consolidations have expansionary effects in and of themselves.
3. For a comprehensive qualitative and quantitative revision for an extended G20 group, see Bornhorst *et al.* (2010).
4. It is important to note that significant heterogeneity is also evident among different infrastructures. The described general trends are dominated by the performance in the electricity and land transportation sectors. By contrast, private investment in telecommunications has more than compensated public investment retrenchment. Finally, public investment in the water sector has been fairly stable, with only marginal contributions from private initiatives. Series and analysis are available upon request.
5. Similar results are obtained analysing just the episodes of fiscal improvement and investment reduction (first quadrant of these figures). Additionally, results are robust to the definition of the GDP in trends.
6. Of course, initial debt-to-GDP ratios differ significantly across countries in the region. For example, debt levels in Chile in 2009 were around 13 per cent of GDP, while in Brazil it was around 48 per cent of GDP.
7. Fiscal frameworks, oftentimes regulated through fiscal responsibility laws take into account not only numerical goals, but also procedures, jurisdictional coverage sanctions, escape clauses, and cyclical considerations (see Corbacho and Schwartz (2007) for a survey). Theoretical and empirical analysis of fiscal rules can be found in Kopits and Symansky (1998) and Kopits (2001). For a recent overview of the experience with independent fiscal councils see Debrun *et al.* (2009) and Hagemann (2010). The relationship between budgetary institutions and fiscal performance in Latin America and OECD countries can be found in Boyer *et al.* (2011). In all cases, the authors stress that each component is necessary but not sufficient conditions for a better fiscal policy, and highlight the need of strong political commitment.
8. For a framework that deals with these trade-offs for resource rich countries see van der Ploeg and Venables (2011).
9. A variation of this rule, also discussed and dismissed for practical problems in Martner and Tromben (2005), would consist in changing the public accounting principles, and record investment as an increase in non-financial assets.
10. For an analysis of the different options to increase public investment in Brazil, Chile, Colombia and Peru, see IMF (2004).
11. See Carranza *et al.* (2009) and Carranza (2012) for a detailed political economy analysis of the Peruvian budget process and tax reform.

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