

Private Financing of Public Infrastructure through PPPs in Latin America and the Caribbean

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Acronyms

4G	Fourth Generation
AEs	Advanced Economies
ANI	Agencia Nacional de Infraestructura
AUM	Assets under Management
BANCOMEXT	Banco Nacional de Comercio Exterior (Mexico)
BANOBRAS	Banco Nacional de Obras y Servicios Públicos
BBVA	Banco Bilbao Vizcaya Argentaria
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
BNDES	Banco Nacional do Desenvolvimento
CAF	Corporación Andina de Fomento
CAR	Capital Adequacy Ratio
CDPQ	Caisse de Dépôt de Québec
CEPAL	Comisión Económica para América Latina y el Caribe
CKD	Certificado de Capital de Desarrollo (publicly listed private equity fund specific to Mexico)
CerPI	Certificados de Proyectos de Inversión (publicly listed private equity fund specific to Mexico)
COFIDE	Corporación Financiera de Desarrollo
CRPAO	Certificados de Reconocimiento de Derechos del Pago Anual por Obras (Perú)
DB	Defined Benefit
DC	Defined Contribution
DFI	Development Finance Institution
DNB	Den Norske Bank
ECA	Export Credit Agency
EIB	European Investment Bank

EIU	Economist Intelligence Unit
EMDEs	Emerging Markets and Developing Economies
EME	Emerging Market Economy
EPC	Engineering, Procurement, and Construction
FDN	Financiera de Desarrollo Nacional (Colombia)
FDP	Fund for Financing Disaster Prevention
FIBRA E	Fideicomiso de Bienes Raíces para el Sector Energético (publicly listed REIT-type fund for equity investments in mature infrastructure assets)
FIRII	Fund for Integration Infrastructure
FONADIN	Fondo Nacional de Infraestructura (Mexico)
GDP	Gross Domestic Product
GIF	Global Infrastructure Facility
GP	General Partner
HQLAs	High-Quality Liquid Assets
IADB	Inter-American Development Bank
IFC	International Finance Corporation
IISS	International Infrastructure Support System
IMF	International Monetary Fund
IPSAS	International Public Sector Accounting Standards
IRB	Internal Ratings Based
LAC	Latin America and the Caribbean
LCR	Liquidity Coverage Ratio
LGD	Loss Given Default
MDB	Multilateral Development Bank
MENA	Middle East and North Africa
MLA	Mandated Lead Arranger
NAFIN	Nacional Financiera (Mexico)
NSFR	Net Stable Funding Ratio
OECD	Organisation for Economic Co-operation and Development
O&M	Operation and Maintenance
PBCE	Project Bond Credit Enhancement Initiative
PD	Probability of Default
PE	Private Equity
PPA	Power Purchase Agreement
PPF	Project Preparation Facility
PPI	Private Participation in Infrastructure
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	Public-Private Partnership

PROPEF	Project Preparation and Execution Facility
REIT	Real Estate Investment Trust
RFP	Request for Proposal
RPICAO	Remuneración por Inversiones según Certificado de Avance de Obra (Peru)
SAR	South Asia Region
SME	Small and Medium Size Enterprise
SMF	Subordinated Multipurpose Facility
SPV	Special Purpose Vehicle
TIFIA	Transportation Infrastructure Finance and Innovation Act
UF	Unidad de Fomento (unit value of the Chilean peso indexed to inflation)
UF	Unidades Funcionales (independent segment in Colombian projects)
USP	Unsolicited Proposal
VFM	Value for Money
WBG	World Bank Group
WPA	Water Purchase Agreements
WSS	Water, Sewerage, and Sanitation



Executive Summary

Financing public infrastructure is an important challenge in the growth agenda of the Latin America and the Caribbean (LAC) region. Subject to fiscal constraints, many countries in the LAC region have been looking at private sector financing as an alternative for financing public investment. With different degrees of success, countries in the region have been using Public-Private Partnerships (PPPs) since the late 1980s. Although the needs of investments in public infrastructure vary by country and by sector,¹ it is clear that public resources might not be enough. While public infrastructure will continue to be largely financed by the public sector in the LAC region, significant room still exists for private sector financing of public infrastructure. In Advanced Economies (AEs), such as Australia, and the United Kingdom, PPP projects account for 10 to 15 percent of overall infrastructure investments.²

This report analyzes the challenges and policy options to increase private sector financing in public infrastructure in the LAC region through PPPs. Given the diversity of LAC countries, the report takes a conceptual approach and analyzes the different alternatives of private sector financing of public investments that different groups of countries can utilize. This approach also takes stock of the different status and degree of institutional and financial development in LAC countries in light of

ongoing promising legal reforms and financial innovations for infrastructure finance in the LAC region, as well as in AEs and other regions.

Only a few countries in the region have financial sectors and capital markets with the level of maturity to support the financing of PPP programs. Only large- and medium-sized countries with a minimum level of financial development would be able to afford PPP programs broad in scope and in local currency. This situation contrasts with other smaller countries of the LAC region, where the financial sector and capital market might have only the capacity to finance some flagship infrastructure projects, at the most. The problem is not only the size of the local financial markets, but also their level of sophistication and the structure of incentives to invest in long-term assets.

International financing and development finance institutions (DFIs) are important complements to domestic markets. PPP projects benefit not only from the resources that international banks bring, but also from the technological transfer, especially in the area of project finance. The report highlights that domestic banks in most of the countries in the region have deficiencies in this area, and partnerships with international institutions are a good way of improving the standards and bringing efficiency to the cost of funding. In addition, DFIs may play an important role in countries with smaller financial sectors and unsophisticated capital markets. Far

¹ See Fay and Andres (2017).

² See McKinsey Global Institute (2016).

from becoming the sole lender of PPP projects, the role of DFIs is to help address market failures and provide a catalytic role that may enhance participation of domestic and international investors in the financing of domestic public infrastructure.

A solid infrastructure finance agenda in LAC is dependent on a decoupling from the political cycle and creating strong PPP institutional and financial governance arrangements. This agenda requires reforms on five critical areas: (1) reinforcing ongoing reforms in PPP legislation and institutions to ensure a pipeline of bankable and fiscally sustainable projects; (2) leveraging on a greater role for project finance from domestic and global banks; (3) developing a flexible and suitable menu of capital market vehicles and instruments; (4) addressing incentives leading domestic pension funds to invest with short-term horizons; and (5) introducing a change of mandate for national DFIs so they shift from direct investments to catalytic interventions addressing market failures. Additionally, multilateral DFIs can play an important role in supporting governments in these reforms and with financial products to crowd in the private sector, such as credit enhancements and co-investments.

Macroeconomic and Financial Context of PPPs

Greater efficiency in resource allocation is at the core of the use of PPPs. Although the possibility of doing off-balance-sheet accounting of public investments is perceived by policy makers as an attractive incentive for financing infrastructure via PPPs, their main benefit is in their capacity to diversify risks among stakeholders and take advantage of greater efficiencies and innovations in the private sector. While in traditional public provision of infrastructure, most risks are taken by the taxpayers, in the PPP framework these risks are diversified among different agents under the criterion of allocating them to the party with the greater capacity to manage it. Compared to public provision where governments in the region have seldom conducted

risk assessments, the main risks in well-designed PPP frameworks should be properly identified and priced.

The higher cost of financing PPP projects compared to public provision reflects a mechanism of financing based upon the strength of the project cash flows and a more complete financing structure, where risks are priced and diversified. Conceptually, the all-in economic cost, given a certain quality of service and risk allocation, should be lower as a result of efficiency gains in the construction and operation of the service. While in public provision, infrastructure is funded at the cost of funding by the government, in a PPP scheme, the cost of funding reflects the private sector's assessment of risks of the project, the sponsor's credit rating, and the cost of credit enhancement if required. Although the latter might be more expensive than the first, taxpayers do not typically bear commercial risks, such as construction and maintenance of the project. Performance standards, including quality of service, are defined so that the private sector sponsor is responsible for managing those risks. Risk diversification, efficiency gains, and lower fiscal costs, in exchange for a higher cost of financing may provide significant added value compared to traditional public provision of infrastructure.

However, not all infrastructure projects are eligible for PPPs. The transport sector is one of the preferred sectors for PPP due to (1) the presence of economies of scale, (2) the possibility of charging fees, and (3) the possibility of enforcing quality of service. PPPs compete with other forms of private sector participation, including privatizations. PPP frameworks offer significant flexibility in terms of planning and changes in future demand, compared to privatizations. In addition, because each concession has a term and new auctions will need to be conducted in the future for each project, the nature of the sector needs to ensure symmetric information for potential participants in order to make the competitive process efficient. To the extent that the incumbent can retain relevant information—due to the complexity of the task—and consequently may win

future auctions, it may be better to move to privatization or other forms of private sector participation.

The financial sector in the PPP structure may add value in screening viable projects when a “user fee” model is selected. Although selecting PPP projects based on their social and economic benefits is the role of the government, the financial sector could also play a role in assessing the financial viability of projects and deciding what projects receive financing and move forward and what projects not to develop. For this framework to work, it is essential to present projects with a high level of preparation so financiers can assess and price the main risks of the project, including construction and revenues. The financial sector can conduct this financial assessment using market criteria to the extent that projects are not fully supported with government guarantees and government payments to the concessionary company. Depending on the context, in some countries this could be a way of preventing the development of politically motivated projects with low social returns. In other countries with strong institutions and governance frameworks, availability payments could be a relevant model to support projects with high economic and social returns or to lower the cost of financing.

PPP Institutional and Regulatory Framework

Governments in the LAC region have been using PPPs as a procurement method since the late 1980s, but the evolution and level of sophistication of the various PPP markets have not been uniform. Chile and Mexico are considered the most successful programs in the region, especially in the transport sector. Brazil, Colombia, and Peru also have an extensive track record on PPP projects. However, all of these markets have issues to be solved to create a competitive bidding environment and finance projects using project finance. Argentina has seen renewed interest in PPPs albeit with no successful projects having been awarded yet. The Dominican Republic and Jamaica

are the leading markets in the Caribbean and are now revising their PPP frameworks. Other countries such as Bolivia, Ecuador, Nicaragua, and Venezuela, have not developed viable PPP initiatives.

Over the past two decades, most countries in the LAC region have improved their legal and policy PPP frameworks. Nineteen countries have enacted PPP legislation, and their PPP frameworks have consistently been revised and improved. For example, over the years, Brazil, Chile, Colombia, Mexico, and Peru have revised their strategies regarding financial guarantees, unsolicited proposals, risk allocation, governance and project selection, accounting and management of contingent liabilities, conflict resolution, and contract renegotiation. Although 17 countries have in place some form of PPP unit, significant challenges remain to address the high potential demand for PPP projects.

In addition, governments in many LAC countries have put in place comprehensive financial management schemes for assessing contingent liabilities and fiscal commitments. Chile, Colombia, and Peru, for example, have mechanisms in place to evaluate and account for the fiscal commitments related to PPP projects. For example, Peru has expanded business case requirements to include ceilings on government financial commitments, either funding or contingent liabilities. Since 2000, Chile’s government has put in place a sophisticated model for valuing contingent liabilities of PPP projects. At the subnational level, the state of São Paulo in Brazil has created the São Paulo Partnerships Corporation to provide and account for fiduciary guarantees to PPP projects. Moreover, new accounting standards for PPPs and concession arrangements (IPSAS 32) are starting to be adopted within the region.

Despite initiatives to improve PPP frameworks, challenges remain particularly in the areas of infrastructure planning and project preparation. Only a few countries in the region have developed project pipelines based on socioeconomic cost-benefit assessments, reflecting political priorities

before a decision is made on whether to procure through public works or through PPPs. Additionally, in many countries, projects tend to be launched into procurement without adequate project preparation because of (1) the desire to accelerate project delivery and (2) the lack of internal capacity and budget. The lack of information, particularly detailed engineering studies defining scope and performance specifications, as well as short timeframes for participants to prepare for the bidding processes have resulted in low competitive processes, with participants bidding with wide margins to hedge for unmeasured risks, and incentives to renegotiate contracts. These efficiency losses have also resulted in costly delays in reaching financial closing, and ultimately project delivery.

Improving project preparation and allocating risks properly are essential steps to bring efficiency to the PPP process. In the presence of low-level project preparation, public authorities in many countries in the region struggle to structure and present to the market bankable PPP projects that can attract sufficient interest among sponsors. A common response for governments in LAC countries to offset the lack of bankable projects, characterized by low-level proper project preparation, is to accept more risk than standard and less favorable contractual terms in the PPP contracts. Although these risk allocations have enabled many PPP projects to move forward, such measures ultimately undermine the potential “value for money” (VFM) for these projects, reduce efficiency, shift back risks to taxpayers, and lead to increased project costs.

In the LAC region, many sponsors originate from the national construction industry, with limited expertise in the long-term financial business of PPPs. In many countries, markets are characterized by a shallow pool of local sponsor competitors, who are relatively inexperienced with PPP delivery. A weak capital base of these companies, together with limited or no experience in the concession business, has contributed to the high rate of contract renegotiation and delay in reaching financial closing. The evidence suggests that the presence of international concessionary companies

with experience in the PPP business has a positive effect on the programs’ credibility and brings in financiers with expertise in project finance.

Banks and Infrastructure Finance

While banks are the main private sector financiers of public infrastructure in AEs, domestic banks in the LAC region have little exposure to infrastructure finance. Banks provide debt financing for projects under several ownership models: purely private sector ownership, PPPs, and projects developed by state-owned enterprises. In the past few years, most infrastructure projects developed in LAC countries have been financed by international banks. Brazilian banks play the largest role of any LAC banks in infrastructure finance, both in Brazil and throughout the region. Brazil is the only LAC country that has a bank ranked among the 100 initial mandated lead arrangers (MLA) in 2015.

The project finance market in the LAC region has had the strongest recovery among Emerging Market Economies (EMEs) after the global financial crisis. After a 42 percent annual drop in 2009, the region’s volumes have had a fast recovery, doubling the precrisis market share in project finance in the period to 28 percent at 2015 levels. Also as in other regions, banks have been the main suppliers of financing in infrastructure projects in LAC countries in the last five years.

Strengthening the capacity of domestic banks to become more active in project finance is essential to increase private financing for infrastructure in the LAC region. With the exception of Chile and Mexico, project finance has been relatively scarce in the region. Several preconditions need to be in place for project finance to become relevant, beyond sporadic projects: (1) PPP frameworks and well-structured projects with a risk allocation matrix that the private sector is able to manage; (2) quality project sponsors with financial solvency and credibility; and (3) regulations and supervisors sensitive to project finance-specific

features in relation to corporate lending. In addition, the presence of international banks with expertise in the area of project finance can help in enhancing competition and transferring these skills to domestic banks. DFIs can also play an active role in supporting these policies.

Even in the best scenarios, domestic banks will not be able to finance the public infrastructure needs of the region by themselves. Because the capital base of domestic banks is significantly smaller than the one in AEs, their capacity to finance public infrastructure is limited. Project finance in international banks is rarely above 3 percent of their assets. With a 3 percent ratio applied to domestic banks, the needs of LAC public infrastructure is unlikely to be fulfilled. However, the role of banks would still be central in project structuring and financing certain segments of projects (e.g., tranches of the construction phase) that would be necessary to attract financing from domestic and international institutional investors.

International banks have an important role to play both as providers of financing and in transferring project finance skills to domestic banks. Since the evidence suggests that international banks get involved in project finance mostly following their clients' demands, it is important to attract quality international sponsors. The fact that international banks lend in hard currency, typically limits their eligibility of projects to those in the tradable sector, in particular, projects that generate hard currency revenues, including ports and airports. In the absence of long-term markets, governments may consider the possibility of currency swaps to projects that generate revenues only in local currency. Alternatively, governments may create the conditions for facilitating local currency funding to international banks by allowing them to issue long-term debt domestically or through lending from domestic DFIs.

While banks have been the main providers of lending to PPP projects, the implementation of Basel III imposes some questions for the future. Although Basel III represents a challenge

for the banking industry and capital and liquidity requirements will be tightening, there is not enough information or evidence for assessing the impact of Basel III on the participation of local banks in project finance. However, four risk measures of the agreement have a potential impact infrastructure financing as already experienced in some AEs. The first one is the liquidity coverage ratio (LCR), which will be more stringent with contractual "committed facilities" granted to project finance than for other types of financing. The second one is the net stable funding ratio (NSFR), which restricts the maturity mismatch for lending in tenors above one year. Under this provision, banks with limited access to medium- or long-term funding would face strong restrictions to participate in project finance requiring long tenors. The third risk indicator relates to tighter limits for large exposures, which may limit the participation of relatively small banks in project finance, as projects are generally large. The fourth risk indicator is in the possible elimination of internal risk-based (IRB) models for project finance. Since external ratings may not be allowed or not be available, a more conservative capital provisioning may be applied.

Capital Markets and Infrastructure Finance

Since the 2008 financial crisis, governments increasingly have been looking to institutional investors to assist in financing public infrastructure. While banks are expected to continue as the largest private sector financiers of PPP projects, Basel III might restrict their capacity to lend in long tenors. Therefore, attention has turned to institutional investors to complement volumes, provide competition, and particularly help fill the gap in the longer tenors. Such investing is expected to grow substantially in the future as institutional investor assets are increasing rapid in LAC countries. Globally, new instruments are being developed that will make these investments more attractive to institutional investors, and governments are modifying

regulatory guidelines for institutional investors to make it easier for them to invest in infrastructure.

Long-term investors should be seen as complements, not substitutes, to traditional sources of financing from banks and sponsors. Although long-term investors can contribute to infrastructure financing with substantial volumes and debt holdings with long tenors, financing becomes more sustainable when they partner with qualified banks and professional sponsors. Banks and other partners may provide: (1) highly specialized knowledge in project finance and infrastructure; (2) higher risk appetite and capacity to manage certain risks that long-term investors might not be comfortable with (i.e., construction risk); and (3) more flexibility in reacting to project contingencies that may lead into debt restructuring (e.g., delays, cost overruns).

Features of infrastructure assets delivered through PPPs are generally misaligned with investment rules in the LAC region requiring in most countries listed capital market instruments. The most important misalignments are: (1) low liquidity; (2) low degree of standardization; (3) lack of performance and valuation benchmarks; (4) the need for partial drawdowns of funds during the construction phase of projects; and (5) a high probability of project contingencies that lead to renegotiating project covenants. All these features are obstacles to institutional investors, particularly pension funds that, in most countries, are required by law to invest in listed instruments subject to mark-to-market valuation and that lack the skills and institutional structure to negotiate with project sponsors.

Capital markets' financing solutions need to be flexible and open to a range of instruments matching project needs and the different risk-return profiles of investors. A global trend is blurring the dividing line between banking and pure capital market instruments to finance infrastructure. Hybrid financing structures mixing bank and capital market financing, particularly in greenfield projects, are able to address some of the challenges

faced by pure capital markets solutions. Through these structures, banks can provide financing in the shorter tenors and assume the function of controlling creditor, while institutional investors can take the longer tenors and rely, in part, on banks' greater expertise in infrastructure finance. Projects in the less risky operation and maintenance (O&M) phase with stable cash flows can be more easily financed with capital markets instruments only.

The challenge in the LAC region is to explore in a more systematic way new unlisted capital markets instruments as an alternative to traditional listed instruments. These instruments would be more suitable for financing infrastructure projects and be able to attract foreign institutional investors and banks. There is already a growing offshore private placement market for international investors' financing infrastructure projects in the region. Instruments with the most promising results include project bonds, equity, and debt funds, although in some special cases direct investments may be the best option. Project bonds are gradually developing in the LAC region, although they are still facing the challenge of evolving into standardized structures and credit risk levels acceptable to a broader investor base. The availability of credit enhancement instruments provided by development banks or multilaterals is important in the initial stages of project bond innovations. Infrastructure debt funds are showing promising prospects in the LAC region to attract domestic investors and to provide long-term financing along with banks from the construction phase. Infrastructure equity funds are already present in the region but could be further developed to provide capital to domestic sponsors.

Robust PPP and project finance frameworks are a critical precondition for the success of capital markets' financing solutions. With some exceptions, both frameworks have been missing across the LAC region. In their absence, financing infrastructure through capital markets instruments has been either sporadic or concentrated in offshore instruments or in structured government bonds that are fiscally unsustainable.

Only a few countries in the region can be expected to mobilize financing for infrastructure through capital markets in a systematic way.

Prerequisites include the existence of long-term domestic institutional investors and a minimum depth of their government debt market providing price benchmarks. Additional enabling conditions include quality credit rating agencies, a supportive framework for institutional investors on both the issuance side and the investment regulations, and availability of credit enhancement options to support the initial stages of capital market innovations.

Institutional Investors and Infrastructure Finance

The significant infrastructure gap in the region contrasts with the portfolio structures of their pension funds, which remain highly invested in government securities and bank deposits.

Although the lack of diversification is partially a problem of lack of financial instruments, the regulatory issues tend to bias pension fund investments toward shorter term securities.

Defined contribution (DC) open pension funds are the predominant pension fund model in the LAC region. These systems exist in Chile, Colombia, Costa Rica, the Dominican Republic, El Salvador, Mexico, Panama, Peru, and Uruguay. Pension funds are managed by pension fund management companies (PFMCs), whose only objective is to manage pension funds. Contributions are mandatory for all dependent employees, and they may shift PFMCs more or less at any time. In addition, legislation in most of the countries allows PFMCs to offer different pension portfolios (*multifunds*), whose investment regulation is well defined and structured by type of instruments and exposure. In the DC pension system, pensions are calculated as a function of the value of the assets accumulated up to retirement. With the exception of Chile, which has a developed annuity market, retirement options in the rest of the countries are subject to transition rules or changes, including the case of Peru, which recently

allowed contributors to withdraw a large majority of their savings at retirement age.

Contrary to common knowledge, DC pension funds are not necessarily long-term investors, and consequently they are not natural buyers of infrastructure bonds. Since the regulatory incentives promote competition on short-term returns, DC pension funds do not necessarily have the incentives for investing in long-term instruments, such as infrastructure bonds, which offer more volatility compared to short-term fixed income instruments. In this regard, the presence of other institutional investors, such as annuity companies, with strong bias toward long-term maturities may help to pull pension funds into a long-term equilibrium. In the case of Chile, the depth of the long-term sovereign bond market and the strong long-term demand from annuity companies helped pension funds to invest in infrastructure bonds. The more cautious approach of DC pension funds in the rest of the LAC region toward infrastructure bonds can be explained not only by the low presence of annuity companies, but also from the mixed quality of the PPP programs during the different stages of implementation.

Regulatory amendments may help to align the investments of DC pension funds with the long-term objectives of contributors. In the absence of long-term liability for pension funds, countries may consider modifications in the investment regulation of the mandatory pension funds, by introducing a minimum duration in the fixed income portfolio for them. This regulation would need to be aligned with the available supply of instruments in a way that would avoid distortions in the yield curve structure. Alternatively, the regulatory framework may consider the use of long-term portfolio benchmarks for pension funds that take into consideration the contributors' long-term objectives.

While DB pension funds are also supporters of infrastructure bonds, most of the existing plans in the region are gradually reducing the term of their liabilities. Brazil has the largest DB pension funds in the region, with approximately 80 percent

of the assets of the closed pension funds being DB (approximately US\$160 billion). Since most of these plans have been closed for new entrants for more than a decade and their liabilities are shortening over time, their appetite for investing in long-term bonds is gradually decreasing. Despite this consideration, Brazilian DB pension funds are potentially strong supporters of investments in public infrastructure and have the necessary volume to kick-start a more active role of institutional investors in the financing of infrastructure. The main regulatory challenge is to design investment vehicles that may address their risk appetite, in particular regarding their aversion to construction risk and difficulty in dealing with the J curve.

For institutional investors to participate in the financing of infrastructure, it is essential that financial vehicles reflect acceptable risk-sharing arrangements. The contractual arrangement should specify the type of risks that bondholders are willing to take. For example, pension funds typically are not comfortable with engaging in the construction phase, but they are comfortable in taking operational risks. Liquidity risk is, in most of the cases, a significant risk for DC pension funds.

Standardization of the financial vehicle can facilitate the investment of DC pension funds in infrastructure. Because regulation requires them to take only minority participation in the issuance of shares and bonds, pension funds have a strong preference for instruments that can reach a minimum level of liquidity. To the extent that infrastructure bonds resemble, in structure, other bonds in pension portfolios, including sovereign and corporate, and risks are properly priced, pension funds can add significant demand for these assets. Although the standardization of the instrument may help in increasing volume, it does not imply greater monitoring capacity.

In addition, investments through intermediaries, such as investment funds, may increase the capacity of the institutional investors to monitor the projects. As pure portfolio managers, DC pension funds in general have limited capacity to

monitor each project. Thus, the presence of infrastructure funds with strong managers may help to mitigate project selection and ensure that selected projects follow good practices. However, it is essential to have in place complete collective undertaking agreements, such that the responsibilities of the general partners are properly defined.

The Role of DFIs in Infrastructure Finance

DFIs can play a supplementary role in infrastructure financing.³ DFIs should be able to provide additionality in cases where market failures inhibit financial sector participation, but as enabling conditions improve, they should be prepared to backtrack and let the financial market stand on its own. As a consequence of different circumstances (e.g., degree of development of that particular market or lack of skills), private financiers in some markets might not be prepared to assess or manage the risks involved in a PPP framework. In these circumstances, DFIs may play a catalytic role in bringing private sector financing into infrastructure. In addition, DFIs may support PPP authorities by helping to improve the quality of project preparation. To fulfill these tasks, it is essential for DFIs in the region to align their mandates and governance structures with these objectives to ensure the additionality of their interventions.

The credibility of DFIs needs to be supported on a solid capital structure and adequate governance. The catalytic role of DFIs will be effective only to the extent that it is perceived by the market as an independent institution from the government. Based on arm's length principle, and good governance, DFIs can be instrumental in leveraging private sector participation in cases of market failures. Market

³ With the exception of Chile, most of the other PPP programs in the region have been supported by DFIs. A credible Chilean PPP program with a relatively strong institutional capacity and support from domestic and international financiers helped the country to rely on private sector financing for infrastructure projects.

failures that justify the presence of DFIs in infrastructure financing are limited to a handful of reasons:

- a. Lack of expertise by the domestic financial sector in project financing structures based on no recourse to the sponsor's balance sheet.** This is an area common in many countries in the region, and DFIs can play a role in providing technical capacity to banks and other private financial institutions.
- b. Lack of size, depth, and sophistication of the domestic financial sector.** Because insufficient financial sector development affects the capacity to provide financing to projects with long tenors in the LAC region, DFIs can support the provision of long-term funding to projects through different means: second-tier long-term lending to banks; long-term loans complementing banks shorter term loans; or partial guarantees crowding in institutional investors, rather than providing direct financing to projects.
- c. Asymmetric information in early or revised phases of the PPP framework implementation.** Support from DFIs may help to reinforce credibility in new concessions, considering the less successful experiences of private sector financing in previous PPP programs or projects. DFIs can help to mitigate those risks by providing independent assessments of the new risk framework and by co-investing in public infrastructure with other private sector partners.
- d. Counterparty risk from central or subnational governments with low credit ratings.** Although larger countries in the LAC region with an investment-grade credit rating have counterparty risks that are typically manageable for investors, some of the smaller economies with credit ratings below investment-grade and shallow financial markets may find it difficult to attract international investors in the financing of their PPP program or projects. DFIs can be instrumental in supporting early stages of PPP framework implementation through the use of partial guarantees in all phases of the project

cycle while the PPP framework is tested and consolidated.

- e. Lack of preparedness of the local concessionary companies.** A common feature in the LAC region is the limited capacity of the concessionary companies to deal with sizable PPP programs. Through the provision of technical expertise with the support of strategic partners, and by fostering private capital into these companies, DFIs can play a significant role in preparing local concessionary companies for competitive biddings. Strengthening the technical and financial capacity of local concessionary companies is especially important in cases of limited participation by foreign sponsors.
- f. Lack of a long-term currency hedge market.** Currency risk is one of the most challenging areas in project financing in the region. While participation of foreign financial institutions might be needed, they might be reluctant to finance projects that generate revenue in local currency. Larger markets, such as Brazil and Mexico, might be an exception, but smaller markets are in a difficult position. With the technical support from DFIs, governments' Treasuries might be required to provide hedge products able to address foreign exchange risks, including long-term currency swaps, while markets mature. These products would need to be priced in a way that reflect best estimates of long-term prices.

In addition, DFIs can contribute to support governments in improving project bankability when, for technical reasons, project preparation and information are below marketable standards. Problems in the quality of project preparation are widespread in the LAC region to different degrees depending on the country. Projects are often tendered without a sufficient degree of preparation, even in countries with solid PPP frameworks. Multilateral and domestic DFIs can provide valuable assistance with both funding and expertise. They can also help transfer knowledge about experiences with project preparation among countries,

Table ES.1: Infrastructure Finance in the LAC Region in a Snapshot

Number of LAC countries with a PPP legislation	19
Number of LAC countries with a PPP unit	17
Average period between commercial and financial close (months)	9–12
Awarded contracts that get renegotiated	50–80%
Project finance targeting infrastructure finance (2015)	28%
Commercial bank finance of PPPs	39%
Project finance loans in banks' balance sheet (2015)	0.74%
International project finance bank flows received by top three countries (1997–2015)	73%
Number of countries with no project financing from international banks	12
Project bonds in total project finance debt in LAC countries (2013–2016)	19%
Infrastructure finance provided by DFIs (2011–2015)	30%

Note: Data for 2016 unless otherwise noted. Percentages relate to totals under each item.

recommend best practices, and help to standardize procedures for appraising and structuring PPPs and concessions in LAC countries.

This report is divided into six chapters. The first chapter provides a macroeconomic and financial context for the PPP schemes. Contrary to common belief that PPP schemes are simply a mechanism for government to off-balance the investments in infrastructure, this chapter argues that efficiency is the most valuable outcome of PPP, given an adequate risk allocation. Chapter 2 provides an institutional and regulatory framework of the PPP in the region and benchmarks the region against AEs. Chapter 3 provides an analysis of the strengths and weaknesses of the banking sector in the region and its ability to provide funding to PPP projects. Chapter 4 analyzes the domestic capital markets and the instruments and financial vehicles that can facilitate nonbank financing. Chapter 5 analyzes the role of

domestic institutional investors, their constraints, and incentives for investing in public infrastructure. The last chapter analyzes the role of development finance institutions, their role in addressing market failures, and their upstream contribution in project preparation, when needed. Table ES.1 provides a snapshot of some basic indicators of infrastructure finance in the region. These indicators are further elaborated in Appendix 1.

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Key Conclusions

While PPPs are typically perceived as an off-balance-sheet mechanism for public investments, their main advantage is to attain higher efficiency and quality through risk allocation to public and private stakeholders.

While financing costs might look higher compared with pure public financing of infrastructure, the PPP premium reflects the risk transfer away from taxpayers, including construction, performance, and revenue risk, among others. In exchange, PPPs are expected to offer better quality of service and overall lower all-in cost compared to public provision.

PPPs are not for all countries and all sectors. Only large- and medium-sized countries with a minimum development of financial development would be able to afford PPP programs broad in scope and in local currency. Other countries in the LAC region may use PPP for financing flagship projects.

Improving project preparation and allocating risks properly are essential steps to bring efficiency to the PPP process in the LAC region. It is essential to avoid practices that offset a low level of project preparation with riskier and less favorable contractual PPP terms for the public sector.

The risk allocation of PPP projects should create the incentives for the financial sector to assess the financial viability of projects in both user-fee and availability payment models. Depending on the country and project context each model would have

different trade-offs. User-fee models, when appropriate, can prevent the implementation of politically driven projects with low social returns.

Large foreign concessionary companies might be instrumental in bringing financing from international banks. These institutions might play an important role in transferring project finance technologies to local financial institutions.

Currency risk is a major constraint for international banks to participate in financing of public infrastructure projects. Under certain circumstances, the provision of long-term currency hedges by the government might be justified. Alternatively, countries may aim for the provision of local currency funding to international banks via the capital market or by domestic DFIs.

While banks have been the main private sector financier of infrastructure, the introduction of the Basel III agreement opens questions about the capacity of banks to continue providing long-term financing.

Capital markets, through a range of instruments, can play a significant role in complementing the financing from banks, by channeling investments into longer tenors. Hybrid financing structures are being instrumental in attracting financing from some domestic and international institutional investors into greenfield projects.

Institutional investors in the LAC region are mostly defined contribution pension funds. Because they compete on short-term returns, they may not necessarily behave like long-term investors.

Natural long-term investors, (i.e., defined benefit pension funds), such as the one present in Brazil, and annuity companies, such as the one present in Chile, can be catalytic in bringing other institutional investors into long-term financing.

Standardized investment vehicles that can benchmark against long-term Treasury bonds could make infrastructure bonds a core asset of the defined contribution pension industry.

By addressing market failures, development finance institutions can be instrumental in bringing private sector financiers into infrastructure.

Development finance institutions may also play an important role, as an independent advisor, in supporting the government in project preparation, when needed.

The credibility of development finance institutions needs to be supported on strong governance standards and clear objectives.



Key Recommendations

PPP Institutional and Regulatory Frameworks

- ❖ Comprehensive programs of well-prepared public infrastructure projects, accompanied with solid PPP frameworks offering an efficient risk allocation among stakeholders, are key for attracting the attention of financiers.
- ❖ Strengthen project preparation with adequate and symmetric levels of information to stakeholders, complete PPP contracts, and set in place transparent procurement processes that allow sufficient time for preparing quality bids and competition from international sponsors.
- ❖ Standardize PPP contracts to facilitate private sector participation and lower transaction costs.
- ❖ Ensure that the provision of availability payments and public guarantees are not substitutes to deficiencies in project preparation.
- ❖ Assess in each country and project context which risk allocation matrix, including the revenue model “user-fee” or “availability payments” would create the best incentives for the private sector to deliver the best quality service, assess the financial viability of the project, and proceed at the lowest possible financing cost.

Banks and Infrastructure Finance

- ❖ Create the conditions to attract competition from foreign concessionaries and foreign banks in PPP programs.
- ❖ Equalize the regulatory framework for banks on project finance vis-à-vis traditional mechanisms of financing (corporate financing).
- ❖ Monitor the potential impact of the implementation of Basel III on project financing.

Capital Markets and Infrastructure Finance

- ❖ Capital markets solutions (such as hybrid financing structures) need to be flexible and open to a broad range of instruments matching project needs and the risk-return profile of investors.
- ❖ Explore in a more systematic way new vehicles and instruments as alternatives to traditional listed capital market instruments: project bonds, equity, and debt funds.
- ❖ A parallel agenda on the capital markets—enabling environment is required, including a reliable government bond long-term yield curve

to be used as benchmark, domestic institutional investors, and issuance and investment regulations supportive of infrastructure finance.

Institutional Investors and Infrastructure Finance

- ❖ Amend regulation aimed at incentivizing long-term investments, including minimum duration of fixed income portfolios in DC pension schemes, to help channel long-term investments of pension funds toward infrastructure.
- ❖ Overcome regulatory barriers to develop the annuity market.
- ❖ Develop standardized financial vehicles that reflect acceptable risk-sharing arrangements to attract pension fund investments.

Market Failures and the Role of DFIs in Infrastructure Finance

- ❖ Align mandates and governance structures with market failure justifications to ensure the additionality of DFI interventions.
- ❖ Ensure DFIs have the capacity to provide a menu of financial products (e.g., partial guarantees, co-investment, standardized investment vehicles) to crowd in private financiers and ideally offer at market rates.
- ❖ DFIs can play an important role in supporting PPP authorities to improve the quality of project preparation.

The Macroeconomic and Financial Context of Public-Private Partnerships

Chapter

1

1.1 Introduction

The success of PPP programs is highly dependent on the macroeconomic and financial context. The Latin American and the Caribbean (LAC) region has been engaged in Public-Private Partnerships (PPP) for the past three decades with different degrees of success. Misunderstandings about the motivation and implementation of PPP programs might help to explain some of the less successful experiences in the region. Although it is common to measure success of PPP programs in terms of their capacity to reaching completion of the construction of infrastructure, from an economic perspective, PPP schemes should be able to be measured in terms of their contribution to efficiency. This chapter discusses the macroeconomic and financial context, which makes desirable and feasible long-term financing of infrastructure.

In the presence of other modalities for public infrastructure financing, including public provision and privatization, PPPs are potentially more relevant in some specific sectors. PPPs are not the panacea for financing public infrastructure, and only a few sectors may take full advantage of the benefits of the PPP model. For example, it is common knowledge that the transport sector is a preferred sector for PPP financing, but various features make this sector attractive for PPPs. However, some countries in the region have also financed utility companies through PPPs. This chapter provides

a basic conceptual framework to explain why some sectors are preferable to others.⁴

1.2 Fiscal Constraint and Efficiency

Although some governments have found the PPP to be attractive when faced with the possibility of conducting off-balance-sheet accounting of public investments, this feature should not be the main motivation. The possibility of increasing investments in public infrastructure using private sector financing is a proposal attractive to most governments. Through this mechanism, they deliver progress to the country without apparently compromising their fiscal balance. While current accounting rules have created incentives to move in the direction of PPPs, it is not evident that these rules will remain unchanged. In addition, governments may take advantage of the different perception of markets regarding debt and contingent liabilities. Governments incur in public sector debt when they finance infrastructure with public resources, but they incur only in contingent liabilities, for example, when they offer minimum income guarantees and availability payments. While proper accounting of contingent liabilities is always needed, credit ratings have a different perception of implicit and explicit debt.

⁴ This framework does not replace the need of conducting value-for-money methodologies in cases of innovative projects.

The issue of accounting of PPP investments is still under consideration in the international debate. For example, Eurostat rules allow governments to take PPPs off-balance sheets in cases where fees are the main revenue sources of PPPs, and in cases where most of the revenues come from government sources, the classification of assets depends on who bears construction, availability, and demand risk.⁵ This approach gives governments some level of discretion. Engel et al. (2014) argue that because PPPs simply substitute debt from the concessionaire for standard public debt, the debt of the concessionaire should be treated as public debt. The main difference between Engel's and the Eurostat approach is that the first one takes a dynamic view of risk allocation, while the second takes a static one. The International Monetary Fund (IMF) follows a criterion that accounts for assets and liabilities in the government balance sheet if the government bears most of the risks and rewards. This discussion is likely to evolve in the future, and it cannot be discouraged that accounting rules move in the direction of a more dynamic perception of risk allocation.

In practice, PPPs offer the possibility of increasing the tax burden and consequently allow governments to focus their budget into other priorities. In the case of fee-based PPPs, the government might be able to indirectly increase the tax burden on individuals, in exchange for a better quality of service. For example, the construction of a toll road through a PPP would require users to start paying for use of the road. Although these tolls are paid to the concessionary company, the user will see an increase in disbursements, which is equivalent to a tax. Thus, in the absence of the need for using a government budget for building the road, the government can reshuffle resources to other priority projects.⁶ From the political perspective, these (indirect) tax increases might take place without getting the approval of the congress (or parliament) for each new project approved. From

the resource allocation perspective, infrastructure development may have significant externalities for economic growth, the decisions for financing PPPs, in particular the role of user fees versus tax financing programs, need to take into consideration these externalities, as well as the practical possibilities of charging the users directly.

However, the main attractiveness of PPPs is the possibility of reaching efficiency. Taking advantage of the presence of multiple stakeholders, including the state, the concessionary company, users, financiers, and insurers, PPP schemes find efficiency by allocating different risks to the parties with more capacity to manage or diversify them. Thus, the PPP framework offers a product where risks become accounted, properly priced, and effectively distributed among stakeholders. The overall framework of risk allocation should result in an efficient outcome.

The issue of accountability of risks is a relevant one at the time of evaluating the efficiency of PPP schemes. Based on a simple comparison of the cost of funding of the government with the cost of floating an infrastructure bond, some literature argues that PPPs are intrinsically more expensive compared to public provision. The argument follows that because investors are paying a higher premium in the case of infrastructure bonds, which may account for a couple of hundred basis points (depending on the risk of the project) over the cost of funding by the government, PPPs offer an inefficient proposal. However, this argument fails to take into consideration the benefits of a contractual agreement that specifies the risk allocation framework.

To the extent that different parties take contractual responsibility of the risks allocated to them, PPPs might charge a premium compared with traditional public provision of infrastructure. The "PPP premium" reflects the cost of moving away from allocating risks to taxpayers, the fact that projects are financed based on projections of their own future cash flows and not sovereign risk, and the fact that PPPs often are able to offer a better quality of service compared to public provision. While

⁵ See Eurostat (2010).

⁶ Note that the costs associated to project preparation and project monitoring should be taken into consideration.

taxpayers take most of the risks in cases of public provision, they are diversified, are made explicit, and are properly priced within the PPP framework. For example, in public provision, construction risk is typically shared between construction companies and taxpayers. In the case of PPP, under proper PPP contracts, this risk is directly allocated to the concessionary company.

However, not any “PPP premium” is acceptable. The PPP contract needs to ensure a proper risk allocation among stakeholders. To the extent that PPP contracts do not define and allocate risks properly, efficiency of the PPP framework might be called into question. For example, projects that are granted with an insufficient level of specification are likely to become relatively more expensive. In these cases, the spread for the private financiers may reflect not only the proper allocation of risks, but also a suboptimal contract.⁷ Under these circumstances, payment of a “PPP premium” is unjustifiable, and PPPs run the risk of offering a suboptimal outcome.

A PPP premium is minimized in the presence of optimal contracts that offer proper risk allocation among stakeholders. Because the concessionary company manages the construction of the infrastructure, construction risk (including design flaws, delays, and cost overruns) is expected to be managed by them.⁸ In addition, the bundling of the construction and maintenance of the infrastructure is an essential part of the contract, because it creates the incentives for the concessionaire to apply high standards in the construction and consequently to minimize the maintenance costs. Because they are responsible for building the infrastructure, the concessionary company is also the best prepared to manage the maintenance risk.

⁷ De la Torre and Rudolph (2015) explain that inappropriate contract design may imply cases where the government takes the main risks and the private sector takes the benefits.

⁸ An exception is the case of complex projects, such as tunnels, where the government may consider some risk sharing with the objective of keeping the costs low. The model is Colombia, which in the case of tunnels, the government shares costs overruns above a threshold, which might be desirable to keep the costs low.

Contract renegotiation is one of the main risks faced by governments and has the potential to jeopardize PPPs’ efficiency gains. Lack of proper project preparation is frequently at the root of renegotiation risk. While PPPs involve long-term contracts and consequently some differences between the concessionary company and the government may arise over time, the evidence suggests that these risks can be mitigated with proper project preparation. Institutional capacity on the side of the government and sufficient time to prepare documentation are essential risk mitigation factors for the government. As explained in Chapter 2, time preparation typically plays against political timing for project inauguration. Poor project preparation not only creates a bias toward greater interest in concessionaries with more interest in litigation, but also discourages the participation of financiers that are more interested in the long-term financing business. These deficiencies typically result in a higher cost of financing for the projects.

1.3 PPP Eligibility Framework

Not all public infrastructure projects are suitable for PPPs. While value-for-money methodologies are increasingly being used in the region to evaluate the different modalities for financing infrastructure, this section offers a conceptual framework for analyzing the modalities associated with different sectors.⁹ The conceptual framework is based on the characteristics of the projects:

- a. The presence of economies of scale
- b. The possibility of charging fees
- c. The possibility of contracting and enforcing the quality of service

In the case of projects with increasing returns (no economies of scale) and where it is possible to charge fees, other forms of private sector

⁹ The criteria are based on the one proposed by Engel and others (2014).

financing are better placed than PPPs. These companies should be able to compete in the market with other players. Although it is becoming increasingly rare, governments in some Central and Eastern Asian countries own restaurants or stores in urban areas that sell goods and groceries. Because the presence of the public sector is difficult to justify in these type of businesses, PPP concessions do not offer a valuable service.

One of the advantages of PPPs compared to privatizations is the flexibility to operate by either charging fees to final users or receiving government payments. For example, while PPPs have the possibility of operating under availability payments, privatized companies tend only to operate in the presence of fee-based remuneration.¹⁰ Private companies want to have a diversified client base, and consequently it is better for them to be able to charge fees directly to users.

The possibility of conducting planning is also an important factor in guiding the decision between privatization and PPP. In cases where the project is part of a network that requires planning and where needs may evolve in the future, PPPs might be a better fit. Roads, tunnels, bridges, ports, airports, and railways are part of networks that require planning and may change according to evaluation of population movements and changes in business locations. These movements are typically gradual, which allow planning changes from the medium-term perspective. As the residual asset, after the end of the concession period, goes back to the government, the PPP framework allows a better management of these resources.

In sectors where the quality of service is contractible, PPPs allow an effective alignment of incentives. In cases where the contract may specify the standards and enforce them, the concessionary has the incentives to operate at low cost to increase their operational margin. This feature

explains why the transport sector is one of the leading sectors for the use of PPPs. On the other hand, in cases where the quality is not contractible, the concessionary has incentives to reduce the quality of service in order to maximize their operational margin. Specifying the standards for the inputs is a suboptimal solution, because concessionaries may choose combinations that offer cost savings and low quality to optimize their operational margin. This is, for example, the case of concessions in the education sector. Defining (and enforcing) quality of service in education can be challenging, and simply defining the minimum inputs creates incentives for profit maximization that might not be conducive to a desirable level of education. Successful models of private education typically include sponsors whose objectives are aligned with a certain set of values, which contrasts with pure profit maximization institutions. The PPP framework is not optimal in those cases.

Fair competition in successive auctions is another element to take into consideration at the time of selecting the modality for private sector participation. Because PPPs are granted for a term, the government is expected to conduct successive auctions when each period of the concession expires. To the extent that one of the parties, for example the incumbent, has more information than the rest of the competitors about the quality of the infrastructure, the competitive auction may not result in a welfare-improving solution.

Symmetric information is a precondition for a welfare-improving competitive process. While in the case of a highway or a bridge, it is technically possible—at a reasonable cost—to have an assessment of the quality of the infrastructure, such that it is sufficient enough to mitigate the risk of asymmetric information, it is costlier to achieve that level in more complex industries, such as water and electricity distribution companies. For example, given the complexity of the network, it is likely for the incumbent to have better information than potential competitors about the quality of the pipes, in the case of a water distribution company. Because the asymmetry of this information would

¹⁰ While shadow tolls are a possibility in the case of PPPs, they have the disadvantage of shifting demand risk to the concessionary company.

create significant distortions in a competitive process, the scheme of repetitive auctions becomes less efficient. If the same company is likely to win the auction (supported by insider information), the privatization model or public provision might be more efficient than PPPs.¹¹

1.4 The Role of the Financial Sector

The financial sector may play an important role in screening financially viable projects in the PPP framework provided risks have been properly allocated. Depending on the country and project context, user fee or availability payment revenue models have different trade-offs. For example, PPPs based on availability payments can work in contexts of quality PPP institutions and governance frameworks. User fee based PPPs may offer value added in filtering politically motivated infrastructure projects with low social returns. Private sector financiers are unlikely to finance projects that are not viable from the financial point of view. To the extent that projected cash flows including subsidies are insufficient to cover initial investments, investors are unlikely to fund these projects.

Demand risk is a sensitive topic for the financial sector. An extensive track record of poor estimates of future demand, particularly in the road sector, in PPP projects have created controversy about whether revenue risk should be managed by the concessionaire or the government. A number of countries have used this argument to pass demand risk to the government with the objective of reducing the cost of financing from the private sector or potential bailouts with a fiscal cost. Other countries, such as Chile, have designed flexible term contracts, where concessionary companies bet on the present value of revenues and the duration of the concession is flexible and lasts until the concessionary reaches the agreed amount in terms of the present value.

¹¹ Privatization of companies in these sectors also requires a clear tariff system and an adequate institutional and regulatory framework to be successful.

In some cases, user fees are not viable or preferable options, and consequently demand risks might be transferred to the government. Availability payments are a valid vehicle for remunerating concessionaries, especially in cases where cash flows from user fees are insufficient for ensuring an adequate private rate of return. However, to the extent that these cash flows became more certain in the form of government transfers, the incentives for financiers are more focused on the performance indicators agreed upon with the government and less on factors with an impact on project revenues linked to the financial viability of the project. Although, in the case of availability payments, the incentives to the concessionaire for doing proper construction and maintenance of the infrastructure remain intact, the potential role of the private sector for filtering politically driven projects tends to be lower. In the case of large public guarantees, financiers would be more interested in the quality of the guarantees and reducing the contingencies for receiving payments from the government.¹² The intensive use of availability payments has historical reasons in the region. As investors suffered significant losses in the initial PPP projects, including Mexico's experience with the *Programa Nacional de Autopistas*, because of incomplete PPP contracts, investors turned more risk averse and demanded additional government guarantees to support infrastructure financing.

Broader participation of concessionary companies and financiers with expertise in project finance helps to reduce the cost of funding for the project. Deficiencies in project preparation may favor participation of domestic companies and reduce the scope of potential financiers. These features not only increase the cost of funding, but also create delays and bilateral agreements of renegotiations that do not help in the transparency of the process. As discussed in Chapter 2, lack of project preparation is a common theme in the region.

¹² For example, ensure proper maintenance of the infrastructure once in operation.

1.5 Participation of Foreign Investors

In the presence of countries in the region with relatively small financial sectors and capital markets, financing of large public infrastructure projects is a significant challenge. The lack of a long-term domestic capital market is a significant constraint for financing infrastructure. Only a few countries in the region offer the possibility to the public sector and private companies to raise long-term funding in local currency and inflation index instruments. In addition, inexperienced domestic banks in the area of project finance, and shallow bond markets dominated by short-term instruments, make the financing of infrastructure difficult.

The inability to raise long-term funding in local currency is a common problem in emerging economies. Hausmann and Panizza (2003) find weak support for the idea that the level of development, institutional quality, or monetary credibility or fiscal solvency is correlated with the capacity of countries to raise long-term funding in local currencies. Only the absolute size of the economy is robustly correlated. Thus, because most of the countries in the region would face a challenge in raising long-term financing in local currency in large amounts, concessionary companies may need to access foreign markets to finance their projects.

Although international investors are available for financing PPP projects in selected markets in the region, with some exceptions, they are not interested in taking currency risk. Foreign investors have an interest in participating in projects that offer returns in hard currencies, and consequently their appetite for returns in local currencies is low. Passing currency risks to contributors is possible in cases where the infrastructure is linked to the tradable sector, as in the case of ports of airports, but this is a narrow segment of public infrastructure needs. However, some international investors are prepared to take currency risk as long as returns are indexed to inflation.

In most cases, foreign currency financing of public infrastructure projects that belong to the nontradable sector is not a viable option to foreign financiers. For example, in the case of highways, it would be not only politically difficult to increase tolls every time the currency depreciates, but also financially unsustainable. Because users do not generate income in foreign currency, financiers would be reluctant to participate in these deals. This case is equivalent to giving a mortgage loan in Swiss francs to homeowners in Central and Eastern European countries. The experience with this sort of operations turned sour during the financial crisis, as many of these economies saw their currencies depreciated against the Swiss franc. In other words, foreign banks would be reluctant to participate in these operations, and it would be difficult to enforce implementation of the contract in periods of stress.

Some alternatives could be considered for the case of infrastructure projects of the nontradable sector. The long-term nature of these currency hedges makes them a product that is difficult to be offered by the financial institutions at a reasonable cost. Governments would have to decide on the convenience of offering some type of currency hedge to incentivize the participation of foreign investors. Governments, rather than public banks, are typically the parties that are best prepared to offer the currency risk, for several reasons:

- a. Currency risk might be significant, and banks do not have comparative advantages in hedging it. The capital requirements imposed by these operations might take capital for other transactions where they have more value added.
- b. Governments of commodity export countries typically receive revenues in dollar (or other hard currencies) that come either from exports of state-owned companies or from tax revenues from the export sector. The public sector of some countries in the region might be even long in dollars. For these countries, the currency

hedge offered to concessionary companies might have a natural hedge with the public sector revenues coming from the export sector. Government support may also come in the form of contingent liabilities denominated in foreign currency, including guarantees and availability payments.

- c. To the extent that the natural hedge exists, the instrument to be offered to the concessionary companies needs to be simple. As shown in Box 6.2, in the late 1990s Chile offered a “zero cost collar,” based on purchasing power parity. This hedge facilitated the financing of three public infrastructure projects in foreign currencies. This instrument implied payments from the government to the concessionaires in cases of currency depreciation, and payments from the concessionaire to the government in cases of currency appreciation.¹³

However, the commitment from governments to offer these long-term currency hedges should be grounded in solid fiscal and monetary policies. In the absence of firm commitments to keep a sound macroeconomic framework, the provision of currency hedges might result in significant government payments in the future, which once again would erode the possibility of getting efficiency gains of the PPP framework.

A strong demand from domestic institutional investors for infrastructure bonds might be a pulling factor for international investors in the two or three largest LAC economies. Some global portfolio investors that invest in local currencies around the world might be interested in investing in local infrastructure bonds to the extent that some liquidity for these instruments is available in the domestic market, and risks are manageable. For these structures to succeed, risks need to be low (operational phase and specific sectors), volumes

need to be sizable, the instruments well standardized, and the domestic capital market able to offer a minimum level of liquidity. Although liquidity of the financial instruments adds value in terms of financing the project, it does not contribute to project monitoring.¹⁴ Because the volumes are an attractive feature for global investors, this model is unlikely to work in medium-sized and smaller economies and may materialize only in the medium term. There are also other global investors for whom standardized and liquid instruments are not so attractive, because they are more interested in the yield pickup offered by illiquid assets. These investors are likely to invest in LAC infrastructure in local currency as long as the PPP governance arrangements are credible and project revenues and financing instruments are preferably indexed to inflation.

Some international banks might be interested in funding themselves in the local market and to use the proceedings for investing in infrastructure. These operations can be structured in two ways. The first one is applicable to countries with more developed capital markets and offers the possibility to international banks to raise long-term funding in local currency by floating a bond and to use those resources to finance infrastructure. This model has been used by Spanish banks in some countries in the region, including Chile. For this model to work, it is essential to have a relatively active long-term government, corporate, or mortgage bond market. The second alternative, which is more applicable to countries with less developed markets, would require state financial institutions to lend to international borrowers in the local currency at market rates.¹⁵ Because the money will come from state financial institutions, the scope is limited. However, the main challenge would be to determine

¹³ As the period that followed the signature of these deals coincided with a systematic period of local currency appreciation, all concessionary companies decided to unwind the hedge.

¹⁴ This tension comes from the fact that global investors have limited monitoring capacity, versus strategic investors that participate in the control of a concessionary company.

¹⁵ Banobras in Mexico has offered this alternative to foreign financiers.

the long-term interest rate, in case that variable is not available in the market.¹⁶

Still, smaller countries might have difficulty in bringing international investors. To the extent that the government's credit rating is not sufficient for international banks to accept a currency hedge, the possibilities for accessing financing become more limited. In those cases, governments may simply want to prioritize projects, such as airports and ports, where the fees have a significant component of foreign exchange.

1.6 Historical Context

For almost three decades, PPPs have been present in the LAC region. The first PPP concessions in the region took place as early as 1989 in Mexico, and in the 1990s many countries started to experiment with PPP projects. The experience of the region with PPPs has been mixed, with success and failures, but overall a clear trend is seen toward improving practices to reach higher standards.

Transport and energy are the main sectors with participation of PPPs in the region. In the transport sector, the PPP framework has been extensively used to finance highways. Chile, Colombia, and Peru have used it also for airports. Brazil and Chile have used PPPs for urban transport systems in the case of the São Paulo Metro in Brazil and the construction and operation of the transfer stations for public service in Santiago, Chile. In addition, Colombia and Peru have used PPPs to finance freight rail transport to connect some ports with the interior of the country. Chile has also used PPP concessions for ports, hospitals, and jails.

¹⁶ The risk allocation of these financing structures is such that domestic investors (or a state financial institution) get exposure to a low credit risk institution (the international bank that borrows the money), and the international bank takes exposure to construction and operational risk. This risk allocation outcome is better off than simply financing the projects with resources from state financial institutions.

Countries in the region have adopted different approaches toward the government's financial support for PPP projects.¹⁷ In the case of Brazil, practically all PPP projects have received direct financing from public banks. This financing strategy was part of a comprehensive national policy for developing infrastructure. Thus, the tender process of PPP projects typically targeted a certain return on equity for the concessionary company. The only way for the concessionary company to achieve a market equity return was to access funds offered by public banks at concessional rates (TJLP). The current management of the largest public bank in Brazil (BNDES) is planning to change this practice and to play a more catalytic role in the financing of projects and to bring to an end the use of concessional rates for infrastructure financing.¹⁸ Peru, on the other hand, has relied heavily on public guarantees to raise funds from the private sector. Colombia and Mexico have gone through various stages in their PPP programs, but more recently they have been able to reach a critical mass of projects and quality investors that are promising for the future. The size of these two markets and infrastructure needs are very attractive for international investors.

Mexico, as one of the pioneers in the region with the *Programa Nacional de Concesiones de Autopistas*, which started in the late 1980s, has gone a long way. The initial program was entirely financed with resources from the domestic financial sector, but some risks were misallocated, and some parties took excessive risk, for example, reflected in concessions with terms of up to 12 years.¹⁹ Since then, other tools have been used to support the PPP infrastructure program, including public guarantees and partial support from development finance institutions and other public endowments

¹⁷ Chile is the only exception in terms of limited use of public guarantees and 100 percent private sector financing.

¹⁸ https://www.griclub.org/news/view/infra/maria-silvia-bastos-marques-conta-como-vai-ser-a-atuacao-do-bndes-agora-sob-seu-comando-e-tendo-a-infraestrutura-como-prioridade_131.html

¹⁹ While today for any practitioner it seems impossible to finance a large PPP infrastructure project in the transport sector within a timeframe of 12 years, 25 years ago the knowledge of PPP structures and contractual incentives was not as developed as today.

(e.g., FINFRA). Regulatory changes have also allowed the creation of financial vehicles for pension funds to invest in infrastructure, including CKDs and other recent financial innovations.

Colombia is currently in the fourth generation of PPP concessions of highways. Colombia started their concession program without a specific supporting law for PPPs or regulation associated with the concession contract. Contractual differences and overoptimistic estimates created renegotiations of the first generation of projects that implied strong increases in the costs of the infrastructure. The third generation of projects introduced more clarity in the risk allocation, and the fourth generation of concessions of highways presents a more developed strategy for presenting the projects and reaching potential financiers. A stronger government counterpart, the use of government guarantees, and complementary support from state financial institutions supports the fourth generation of projects. It also offers a better risk allocation, which helps to align the interest of investors, sponsors, and the government. Domestic and international institutional investors are for the first time participating in the financing of public infrastructure projects in Colombia.

In the 1990s, Chile was able to mobilize a significant amount of domestic resources to the financing of PPP projects. The regulatory framework was instrumental for an active participation of banks, annuity providers, and pension funds in the financing of infrastructure. The early successes in the Chilean concession program of highways allowed the country to take advantage of the presence of monolines, which offered an attractive financial vehicle for institutional investors. The concession program suffered a sudden halt in 2003, when the corruption episode involving paying illegal compensation to employees of the PPP office was revealed. The PPP program started to regain momentum again after the crisis, but the focus shifted toward smaller scale projects, including hospitals and jails, in addition to a handful of projects in the transport sector. Financing of infrastructure has turned dynamic, and collective undertakings

have taken a more active role, while the amounts are relatively small. While infrastructure needs are significant, the challenge will be to have the institutional capacity to grant concessions to projects whose terms are coming to an end and to plan the new pipeline of projects accordingly.

Despite some success in PPP developments in these economies, countries such as Argentina, Ecuador, and Venezuela have had limited progress. Argentina is currently building up institutional framework and capacity for greater participation of private sector financing in public infrastructure.

While private financing of public infrastructure through PPPs has come a long way since the first pilot projects, many challenges remain.

Without pretending to be exhaustive, policy makers may want to address four elements described below, which are common to most of the countries in the region and are further elaborated in Chapter 2:

- a. Institutional capacity
- b. Project preparation and the political cycle
- c. Know your client (investor base)
- d. Allocation of the demand risk

1.7 Main Conclusions

While almost three decades have passed since the first concessions in Latin America, the region is still in the learning phase, although producing promising approaches to PPPs and their financing instruments. Improving project preparation and providing complete contracts is the best way of moving the PPP discussion from an off-balance-sheet mechanism of public investments to a mechanism that looks for efficiency in the provision of public infrastructure.

The main challenge is to continue searching for efficiency and structuring PPP contracts that can allocate risk properly among stakeholders. The next

phase for the region would require strengthening the institutional capacity of the public sector in the area of PPPs to ring-fence this model with strong governance arrangements, continue attracting quality concessionaries with expertise in PPPs, and keep building capacity in the area of project financing in the domestic banking system.

Countries might also want to be selective on the sectors where PPPs are more suitable, and

consider other options for the rest of the sectors of the economy.

Because the development of financial markets in most of the countries in the region might be insufficient to finance their public infrastructure, some of them may need to consider the provision of currency hedges or other facilities of long-term funding in local currency for international investors.

PPP Institutional and Regulatory Frameworks

2.1 Introduction

Most governments in the LAC region are seeking to reduce the infrastructure gap by increasing reliance on PPPs. An essential requirement for a successful PPP initiative that delivers affordable public service to users is an effective enabling environment that identifies appropriate PPP projects, effectively structures the procurement process, ensures balanced and bankable PPP contracts, and provides for oversight during project delivery.

Some countries implemented PPP frameworks almost three decades ago and have achieved relatively sophisticated PPP frameworks, but significant challenges remain for engaging private sector financing. Nineteen LAC countries have implemented PPP legislation (including 17 with some form of PPP unit), and many frameworks have consistently been revised and improved. Nevertheless, in many countries projects tend to be rushed into the procurement phase without adequate preparation. This has led to counterproductive and costly delays in reaching financial closing and works delivery and to a high rate of contract renegotiation. In addition, public authorities struggle to identify and structure bankable PPP projects that attract sufficient interest among sponsors and lenders and generate competition.

These challenges result from a lack of (a) systematic and coherent investment planning; (b) long-term policy and credible government commitments; (c) internal capacity and budgets; and (d) a sufficient number of private sector market participants (sponsors, investors, and lenders). These implementation issues contrast with developed markets, which are characterized by comprehensive project preparation and a correctly managed tender process. These elements can reduce the time between PPP contract signing and financial close, increase participation and competition among sponsors and financiers, and ultimately deliver better value-for-money to the final users.

A common response in LAC countries to a lack of a pipeline of bankable projects is for governments to provide additional support to the transaction. This support can be in the form of viability gap funding and financial guarantees and/or by assuming increased commercial risk by offering generous payment mechanisms and accepting less favorable contractual terms. In addition, some infrastructure PPP projects have relied on support from development banks (which is a limited source of financing) and on corporate lending (Brazil and Mexico). Even if these forms of support have enabled many PPP projects to move forward, they undermine value-for-money for the public authority and create incentives for renegotiations.

A critical lack of effective project financing remains²⁰ and is fundamental to the ability of governments to achieve the best deals possible.

Effective project financing that is nonrecourse to the project owners is critical to achieving cost-effective risk transfer of commercial risks to the private partner. A lack of private financing, or reliance on corporate, recourse private lending, will limit the use of financial incentives to achieve performance in the partnership arrangement and thereby reduce the effectiveness of risk transfer.

2.2 Elements of Successful PPP Initiatives

This section compares the enabling PPP frameworks in LAC countries with international best practices in Advanced Economies (AEs) and developed PPP markets.

2.2.1 Best Practices in PPP Frameworks

A PPP initiative is a major public policy initiative, and its success is highly dependent on robust evidence of a government’s commitment to it. One of the main objectives of a sound, transparent, and predictable PPP enabling environment (comprising the policy, procedures, institutions, and rules) is to communicate the government’s commitment to PPPs. Such an initiative defines how PPPs will be implemented—that is, how PPP projects will be identified, selected, budgeted for, procured, monitored, and audited.

Participation of the private sector in the elaboration of the PPP framework may help to increase ownership of the program by both private and

²⁰ According to Inderst (2013), Inderst and Stewart (2014), and data from the Infrastructure Journal Database, the composition of debt financing for infrastructure in LAC in 2004–14 is as follows: Bank debt represents 89.5 percent (through corporate loans for 85 percent and project loans for 4.5 percent), and capital market debt represents 10.5 percent (project bonds for 9 percent and corporate/government bonds for 1.5 percent). Details on the composition of the sample can be found in Serebrisky et al. (2015).

public sector participants. Private sponsors and financiers that have choices where to invest their resources will assess the enabling environment of the PPP framework, the perceived bankability of projects, and the capacity of the authorities to launch those projects within a certain timeframe. An effective PPP framework will attract competitive bidding and private financing to allow the transfer of appropriate risk through a performance-based approach and lead to value-for-money for government.

When considering a PPP initiative, some governments have looked for support from a “political champion.” The role of this person is to assist the public authority throughout the process of implementing a PPP framework, building necessary consensus among stakeholders.

The PPP legal framework sets out the rules for how PPPs should be implemented; hence, it should be coherent, unambiguous, predictable, and stable. The PPP legal framework can include specific PPP legislation,²¹ which sets the rights and obligations throughout the PPP project cycle. Having in place PPP-specific laws helps to demonstrate political commitment to the PPP initiative.²²

An effective framework also requires governments to make and implement policy decisions that influence PPP projects. The range of policy decisions includes (1) risk allocation and payment mechanisms in PPP contracts; (2) procurement processes including evaluation criteria; (3) unsolicited

²¹ In its broad and comprehensive meaning, the PPP legal framework can include procurement law, public financial management law, sector laws and regulatory frameworks, and other laws affecting the operation of private firms such as environmental law and regulations and licensing requirements.

²² As long as the PPP project’s contract and tendering process are legal in a given country, the possibility exists to move ahead without having a dedicated PPP legislation or policy and/or other legal framework components in place. Some critical issues (tariff adjustments, for instance) can then be dealt with at the contract level if the enabling framework is not in place. This should nevertheless be considered as an exception (ideally temporary) to jump-start the program, given the importance and advantages of establishing an effective PPP framework.

proposals (if any); (4) renegotiations; (5) land expropriations and rights of way; (6) environmental and social issues; (7) government support; (8) oversight; (9) conflict resolution; and (10) treatment and management of contingent liabilities. The government can decide how to incorporate them into the PPP framework; however, given the relevance of these issues to the PPP project cycle, they are often incorporated into the PPP legislation/policies and/or related regulations.²³

The government's internal capacity to implement PPP projects is considered a critical factor for the success of a PPP initiative. More than 120 jurisdictions (at the national or subnational levels) globally have created PPP units as a form of aggregating staff with specific knowledge on PPPs. These agencies can assume different functions depending on the government's preference, typically at least one of the following: policy guidance and capacity building, PPP promotion, technical support, and quality control.²⁴

The location of the PPP unit also depends on its functions. In the cases where the PPP unit is responsible for structuring and marketing specific PPP projects, those technical support units are better located centrally or at the subnational or sector level with significant PPP initiative. The creation of a PPP unit with a clear mandate, adequate resources, and qualified staff sends a powerful signal of government's commitment to the PPP initiative. It also provides a clear point of contact for the private sector interested in engaging on PPP projects.

A well-designed PPP project screening saves government time and money because it helps to objectively discard bad projects or projects that are not suitable to PPPs. The prescreening exercise should ensure that identified and selected projects are, first, highly rated through cost-benefit

analysis in meeting the government's socio-economic, fiscal, and environmental priorities and, second, are technically and legally feasible. Once the prescreening is done, a more detailed analysis is carried out to ensure the project's affordability, viability as a PPP in terms of bankability, and whether the PPP model generates value-for-money in comparison to traditional procurement.

To assess the public sector's affordability, the full range of the transaction's financial and fiscal impacts are considered under the public financial management system. The analysis comments on both project funding and any contingent liabilities of government, whether or not such commitments are consolidated into the public entity's financial statements.

In many developed markets, the business case planning stage is where an assessment is made to optimize the combination of the use of public funds with private financing. The optimal combination can reduce overall project costs and ensures that no justifiable "viability gap" blocks the bankability of private financing. The "optimal" amount of private financing is that minimum amount required to secure bankability of the project under the appropriate risk allocation while maximizing value-for-money to the government. Credit enhancements might or might not be needed, depending on the context. They also rely on the extent and availability of direct government credit or grants, which can be raised using very high credit ratings.

Affordability and fiscal impact should be determined in the early stages and then again at the commencement of the competitive selection process.²⁵ Fiscal impact should be a key component in the evaluation of a PPP project. This task should be performed by a Cabinet committee or the Ministry of Finance on both occasions. Any additional approval requirements at the end of the selection process are typically too late to be effective. Lack of timely approvals put the credibility of the PPP program at risk.

²³ It is worth noting that for civil law countries, when including those policy decisions in any laws or regulations, the legislature should focus on concepts and guiding principles as a way to maintain flexibility at the level of the law allowing different types of PPP structuring and contracting.

²⁴ For more details, see, for instance, Istrate and Puentes (2011).

²⁵ At the time of launching of the call for bids.

2.2.2 PPP Frameworks in the LAC Region

LAC countries have made progress in different ways on PPP initiatives. The first nations to use the PPP model were Argentina and Mexico in the late 1980s. They were followed by Brazil, Chile, Colombia, Costa Rica, and Peru in the early 1990s. Since then, various countries in the region, such as Costa Rica, the Dominican Republic, El Salvador, Guatemala, Honduras, Jamaica, Panama, Paraguay, and Uruguay, have utilized the PPP model to stimulate infrastructure and to accommodate fiscal constraints.

Although many countries in the region have some PPP-related experience, the evolution and level of sophistication of the various PPP markets in the region have not been uniform. Chile, for example, is considered to be the most successful case, especially for PPPs in the transport sector. Mexico has been able to develop a good PPP program in the transport sector, after several innovations in the PPP framework. More recently, Colombia and Peru have made significant innovations in their PPP frameworks, increasing the appeal of these markets for private sector financing. After almost two decades, Argentina is also evaluating a comeback to the use of the PPP framework. In the Caribbean, the Dominican Republic and Jamaica are the leading markets and are now revising their PPP frameworks. In contrast, other countries such as Bolivia, Ecuador, Nicaragua, and Venezuela have not developed PPP initiatives.

Development of PPP frameworks in the LAC region has taken into account differences in legal traditions across the region. English-speaking Caribbean countries have common law legal systems, and accordingly the PPP frameworks rely more on policy documents and administrative guidance materials, whereas the rest of LAC countries have civil law systems, and, accordingly, PPP frameworks rely more on laws and regulations. Although the legal foundations differ, both systems can enable effective PPP frameworks and project delivery. For examples of characteristics of PPP frameworks in the LAC region, refer to Appendix 1.

The ongoing deal flow of projects is a critical success factor in PPP initiatives. International stakeholders are attracted not only by the quality of the regulatory framework, but also by the number of deals in which they can participate. Participation in infrastructure imposes significant economies of scale to sponsors and financiers in a way that makes more sense for them to enter markets that can offer a program of several projects within a certain timeframe.

Larger economies, including Brazil, Colombia, and Mexico, with bigger potential project portfolios have an advantage compared to smaller economies in attracting the interest of foreign investors. Countries with a small PPP pipeline are more likely to concentrate on signature deals and standalone transactions. Convincing potential sponsors and financiers to participate in these projects will require strong structuring and marketing efforts.

In various LAC countries, the incompleteness of the PPP enabling environment is perceived as the most significant impediment to private sector participation in the delivery of infrastructure.²⁶ A poor enabling environment is characterized by poor government policy, bureaucracy, lack of planning, corruption, and absence of rule of law. These shortcomings are seen by the private sector as indications of government's lack of commitment to PPP initiatives, and they result in reduced market appeal. Although most LAC countries have enacted specific PPP legislation as a key component of

²⁶ Based on BNamericas's poll on the question "What is the principal barrier for the execution of infrastructure projects in the country where you operate?" in both 2015 and 2016, the main answers (more than 20 percent) are (1) the legal framework; (2) excessive bureaucracy; and (3) lack of planning and of government support. In the 2016 poll, corruption comes as the fourth reason (18 percent), lack of financing as fifth (15 percent), and lack of qualified staff as sixth (2.5 percent). The question was asked of 48 directors, general managers, commercial managers, country managers, consultants, specialists, economists, and academics representing construction companies, engineering firms, technology solutions providers, government institutions and NGOs, consultancy firms, service providers, finance companies, and universities with operations and/or focus in Argentina, Brazil, Chile, Colombia, Brazil, Mexico, and Peru.

their PPP framework, in most cases implementation issues remain, including coherence with other pieces of legislation, enforceability, lack of secondary regulations, insufficient budget, and weak institutional framework.

A positive trend has been the continuous improvement of legal and policy PPP frameworks in the LAC region. Many countries (including Brazil, Chile, Colombia, Mexico, and Peru) have revised their legal and/or policy frameworks to refine their positions in such areas as financial guarantees, unsolicited proposals' framework, risk allocation, governance and project selection, registry and managing of contingent liabilities, conflict resolution framework, and approach to renegotiation. This is an iterative process in which laws are improved over time, learning from projects as they are implemented.

Although many LAC countries have operating PPP units, some larger countries still do not have them. Although countries such as Chile, Colombia, and Peru have functioning PPP units in the government that coordinate the work inside the government and serve as a point of contact with other stakeholders, Brazil and Mexico do not have such facilities on a centralized basis. The creation of a PPP unit in Brazil and Mexico would facilitate the involvement of private stakeholders. The situation at the level of subnational governments in federal countries is uneven; only exceptional cases have proper PPP units in place. For example, the state of Minas Gerais in Brazil has a well-staffed and credible PPP unit.

PPP units are critical to developing a credible PPP market and for attracting reliable sponsors and investors. The PPP unit can develop the capacity and expertise critical to managing a sophisticated PPP program. The unit can make this capacity available across government by participating in procurements as advisors to line ministries, by maintaining a “knowledge bank” of previous transactions, and by standardizing the planning and evaluation process for the PPP pipeline. The existence of a capable PPP unit has become one of

the first measures of the appeal of a PPP initiative to international proponents and financiers.

For jurisdictions with smaller PPP programs, developing internal capacity is more challenging because creating a dedicated PPP unit might not be affordable or justifiable. For subnational governments, an alternative solution can be to rely on the national PPP unit, or to create a regional PPP initiative with other subnational governments. In the case of the Caribbean countries, constrained by the size of their economies, a regional PPP effort could standardize the approach across the region, which would “widen” the market from the private sector’s perspective and lead to reduced transaction costs for both the public authorities and the private sector as well as to increased competition.

Although specific projects are expected to be selected for delivery according to an extended infrastructure plan, such plans in LAC countries often fall short of best practices. Plans often lack consistency, fail to account for the complementarities across projects, and fail to set out a coherent vision for sectors and policy priorities (such as employment, trade, impact on small- and medium-sized enterprises, productivity, poverty, connectivity, and environment). Cost-benefit analysis of project proposals typically does not take into account broader government priorities, and value-for-money assessment of procurement alternatives is often not conducted (or happens too late in the process, at a moment when the political willingness to go ahead is difficult to reverse). Such shortcomings in conducting the appropriate selection analyses can lead to biased selections and inefficient results.

Chile and Peru provide good examples of countries that provide tools for the assessment of project priorities. Chile has developed a strong approach to screening projects depending on the type of PPPs. For economic PPPs, a cost-benefit analysis is used; social PPPs are screened through cost-efficiency criteria that measure the social return of a project. Peru has implemented policies that require sectoral public authorities and subnational governments to adopt and make selection decisions

based upon a multiyear infrastructure plan and request a business case study for each project.

PPP frameworks in some LAC countries would benefit from more comprehensive procurement options analysis (POA). The use of POA assists in determining whether a PPP arrangement is expected to deliver value-for-money in comparison to public works. It also assists in selecting the commercial risks which can cost-effectively be transferred to the private partner. Comprehensive POA will ensure that the projects selected for PPP procurement will be well-structured and financially viable for private sector investors.

LAC countries have been moving toward more comprehensive public financial management of PPP projects. Chile, Colombia, and Peru, for example, evaluate and register the fiscal commitments of PPP projects. In Peru, in addition, expanded business case study requirements include ceilings on government financial commitments, either funding or contingent liabilities. In Chile, the Ministry of Finance has developed a sophisticated model for valuing contingent liabilities, including those derived from PPPs, with the use of stress testing scenarios.

In the state of São Paulo, Brazil has created the São Paulo Partnerships Corporation to provide and account for fiduciary guarantees to PPP projects. Moreover, new accounting standards for PPPs and concession arrangements (IPSAS 32)²⁷ are starting to be adopted in the region: Chile, Colombia, and Peru are leading examples with their recent accounting revisions. Jamaica in particular has made progress in revising its accounting practices to increase its capacity to implement project delivery using PPP methods.

²⁷ IPSAS 32 follows the Control Criterion (and not Eurostat's Risks & Rewards Criterion). This model has three main benefits: (1) it mirrors the private sector accounting rules; (2) it avoids all the inconsistencies that come with risks and rewards; and (3) it is less prone to manipulation.

2.3 Procurement Process and Competitive Selection

2.3.1 Best Practices in Procurement and Competitive Selection Process

A critical prerequisite to successful delivery of a PPP project is a fair, clear, and transparent procurement process for a well-structured project that attracts strong competition of sponsors.

Selection processes are clear in that bidders understand the project objectives and are provided a reasonable “road map” to developing a winning proposal. On the basis of the procurement process and other information provided about the structure of the project, potential bidders will decide whether to commit financial resources to prepare an offer. The resulting competitive aggressiveness will determine whether the process will provide value-for-money to the public authority.

It is common in the LAC region that only a few participants participate in the tenders. This low turnaround might be a consequence of several factors, including lack of project preparation, insufficient technical studies that support the transaction, and in general the transaction's lack of credibility. Unfortunately, these factors might also create adverse selection problems, where the actual participants may have interests other than fulfilling the contract. An adverse selection process typically results in PPP contract renegotiations.

A procurement process that attracts strong competition between sponsors will have characteristics common to many mature PPP markets.

Key common ingredients include the following:

- ❖ *Prequalification:* A prequalification phase narrows and motivates the candidates for the request for proposals (RFP) phase (to a short list of three or four proponents).
- ❖ *Level of detail of the studies:* Bidders are given a functional plan for the project, an indicative design, and associated cost estimates.

❖ *Evaluation criteria:* Evaluation criteria and the evaluation process are objective. This refers to pass/fail criteria based upon performance rather than input specifications (in recent years, to encourage innovation, some public authorities have developed mechanisms to offer bidders evaluation credits for exceeding the public authority's expectations in priority areas). This also refers to a single economic parameter to select the winning sponsor, rather than scoring functions, where evaluation is more subjective and arbitrary. The economic parameter can be price (as measured by the present value of availability payments) or a risk-sharing parameter such as the minimum present value of revenues, as has been used in Chile since the late 1990s.

❖ *Duration of the procurement process:* Generally, in mature markets and for projects of average complexity, projects require 6 to 12 months of preparation (including technical studies, financial planning, approvals, and preparing tender documents) and 13 to 18 months for the full procurement process from launch through financial close. This includes two or three months for prequalification, 9 to 12 months for RFP responses, plus two or three months for closing. Public authorities avoid scope changes and place a high priority on maintaining the schedule, which builds in sufficient time for proponents to prepare their RFP responses and to cope with unanticipated developments.

Acceleration of this schedule, to realize political project delivery objectives or other factors, often results in less aggressive bidding (due to lack of information or time to prepare responses), delays in reaching financial closing, and/or increased pressure to renegotiate once the contract has been executed.

❖ *Interaction between the public authority and the bidders:* Over a considerable period, collaborative processes have been designed in developed markets that encourage bidders to make constructive, win-win suggestions to the public

authority to improve the project and/or the procurement process, while still maintaining the transparency and integrity of the procurement process. The ultimate objective of collaboration is to create a draft PPP contract that all prequalified bidders agree to in submitting their bids, and that does not require subsequent negotiation with the preferred proponent.

This development has several advantages, such as fostering competition. It can enable a dramatic shortening of the time gap between selection of the preferred proponent and financial closing (in some jurisdictions to as few as 60 to 90 days), which in turn accelerates the commencement of construction. Collaboration meetings with all prequalified bidders and written comments submitted and circulated to all bidders are concepts utilized in developed markets.

❖ *Presence of international bidders:* As part of the effort to increase competition, well-structured and marketed projects will attract international competitors in addition to local players. Winning sponsor partnerships are often created by combinations between international market participants and local players, for example, where local construction companies provide knowledge of local conditions, cost effectiveness, and on-the-ground execution, utilizing international experience with design and PPP practices.

❖ *Presence of qualified sponsors:* The trend in developed markets has been for construction companies or engineering, procurement, and construction (EPC) contractors to transform their business models to become bidding sponsors.²⁸ Trying to replicate this model can be cumbersome in countries characterized by

²⁸ As a way of ensuring long-term commitment from partners (rather than having the EPC firms construct and disappear), the trend has also been to lock the original partners into the project until 12 to 48 months after construction completion, so as to further integrate construction activities with ongoing operations and maintenance.

construction companies with limited capital and insufficient financial skills.²⁹ The capacity to finance large infrastructure projects with future demand flows is one of a qualified sponsor's key skills.

- ❖ *Appropriately managed unsolicited proposals:* A common argument used in favor of allowing unsolicited proposals (USPs) is that such proposals encourage innovation and private sector participation, including private sector investment, and offset a lack of internal capacity to undertake the delivery of major projects. USPs may also be more appropriate for scope increases in existing contracts. However, USPs as a procurement method have a heightened risk profile for government in that there is reduced competition and increased vulnerability to inadequate or overly profitable bids. Therefore, USPs must be managed within a formal policy context.

However, in the context of limited institutional capacity of the PPP units to analyze new projects, USP projects deviate resources from those prioritized in the government agenda. Each USP project would need be carefully assessed by the public authority and fit within the government's infrastructure plan, which might be costly. PPP agencies need to balance the innovation capacity of USP with the capacity to deliver the agenda of projects prioritized by the government. In addition, USP impose an additional challenge in terms of ensuring a transparent competition going forward. Some countries, including Chile, offer an incentive at the moment of the bid in terms of choosing the proponent of the project if the offer is not more than 5 or 10 percent of the best bid. Other countries give the proponent the possibility of matching the best offer, but this scheme reduces the incentives of the rest of the proponents to participate in the bid. Engel and others (2014) propose for governments to

select a reduced number of projects every year, and offer a fixed prize in an amount sufficiently attractive to attract innovation.

- ❖ *Consistent regulatory framework:* Changes in the regulatory framework are a significant risk for concessionary companies. Consequently, rule of law and a fair system of dispute resolution are essential. While changes in regulatory framework may change over time, changes in regulations that affect the rights and obligations of the concessionaries would need fair compensation. Finding fair compensations in the context of bilateral agreements might be cumbersome, but transparency and competition, when possible, can help.

2.3.2 Procurement Processes and Competitive Selection in LAC Countries

Although prequalification is a useful first step in a PPP procurement process, LAC countries seldom use it. Prequalification motivates the short-listed bidders. It enables formal identification of bidders by the public authority and facilitates focus on a short list of proponents during the RFP stage. The extreme case where there are only one or two interested bidders is a signal that needs to be carefully analyzed. It most likely means that (1) the structuring or scope of the project needs to be reviewed and adjusted; or that (2) adequate minimum technical and financial capacity criteria are needed that are aligned with the requirements of the project.

The selection criteria in prequalification must carefully balance qualifications based upon international experience with those based upon "local experience and familiarity." As well, the criteria have to balance the attributes of a sponsor that can "self-perform" with the attributes of private partnerships formed for the particular project. In the region, Colombia and Mexico introduced prequalification, but Mexico needs further improvements in the framework to become effective.

²⁹ Colombia's FDN has a program to bring expertise and capital to domestic construction companies.

Governments in many LAC countries have launched and awarded projects without sufficient technical information. This lack of information, particularly detailed engineering studies defining scope and performance specifications and associated technical studies, increases the uncertainties associated with estimating construction costs and risks. As a result, PPP contracts experience a high incidence of renegotiation to implement scope and service-delivery changes.

In addition, from a bankability perspective, uncertainties regarding performance and technical specifications can lead to delays in arranging committed financing. This may also include requests from lenders for additional credit enhancement (such as more equity contributions from the sponsors or larger reserve accounts or coverage ratios), which will result in the need to renegotiate contracts, and ultimately to increased project costs. Table 2.1 illustrates the importance of renegotiations in some PPP programs in the region. Fortunately, several countries, including Colombia and Peru,

have made significant improvements in technical preparation in recent concessions.

In the LAC region, procurement processes allow significantly less time for the submission of bids than best practices would recommend. As shown in Table 2.2, LAC countries typically allocate an unrealistically short time for the preparation of bids. These timeframes discourage serious bidders from participating, because they typically reflect the lack of properly prepared information for the bidders to consider. This practice also indicates that innovation is not a priority for the public authority and can even create an impression that the results of the competition may be biased.

Unrealistic timeframes create adverse selection incentives and potentially increase the cost of the projects. In the presence of short timeframes, risk-taker bidders might be willing to participate. Some of them may bet at low prices, with the expectation of renegotiating the contracts.

Table 2.1: Renegotiation of PPP Transport Contracts in Chile, Colombia, and Peru, 2000–2010

Indicator	Chile	Colombia	Peru
Total road concessions	21	25	15
Mean initial value of contract (constant USD Dec 2009, million)	246	263	166
Mean initial term (years)	25.2	16.7	22.1
Mean concession length (Kms)	114	195	383
Mean concession years elapsed	12.5	9.0	4.6
Renegotiated road concessions	18	21	11
Total number of renegotiations	60	430	53
Mean number of renegotiations per concession	3.3	20.5	4.8
Mean time of first renegotiation (years)	2.7	1.0	1.4
Mean fiscal cost of renegotiations (constant USD Dec. 2009, million)	47.2	266.8	28.9
Mean fiscal costs/initial value (percentage)	17.4	282.8	13.4
Mean added term (year)	0.9	6.3	0.8
Mean added length (Kms)	0	54.6	0
Number of renegotiations/concession years elapsed	0.2	1.9	0.9

Source: Bitran et al. 2013.

Table 2.2: Timeframes for Procurement Processes in the LAC Region

	Brazil	Colombia	Peru	Jamaica	Chile	Honduras
Average number of calendar days that the procuring authority spends on conducting the required assessments	180	240	237	No data	364	190
Average number of calendar days necessary to obtain the required approvals from other relevant authorities	160	180	112	37	270	90
Average number of calendar days for preparing the draft PPP contract	105	194	144	64	180	30
Average number of calendar days required to obtain any permits, land and/or right of way that the procuring authority must provide according to the regulatory framework	152	331	186	No data	400	75
Minimal amount of time granted for potential bidders to submit their bids	45 calendar days	No specific number of days	90 days	Does not apply	90 days	17 days
Average number of days (in practice) between the initial publication of the PPP public procurement notice and the PPP award	180	210	345	365	225	241

Source: World Bank, "Benchmarking PPP Procurement 2017," forthcoming.

A collaborative process during the proposal development stage involving the public authority and sponsor bidders can lead to "win-win" improvements in project structure, risk allocation, and pricing. This can thus reduce the incidence of contract renegotiation. However, in the LAC region, despite a very high level of transparency in procurement that likely exceeds standards in Europe or the United States, interaction with bidders can be perceived by the public as a lack of transparency and fairness in the procurement process.

In developed markets, these issues are dealt with by implementing a disclosure policy that protects all bidders from the release of commercially sensitive information. Several LAC countries (for example, Chile, Colombia, and Peru) are moving in this direction and allow collaboration. Because of procurement regulation, these

interactions in Brazil are restricted, which makes fruitful dialogue extremely difficult. The motivations of these regulations are grounded in historical developments.

In the LAC market, the competitive landscape shows that many sponsors come from the national construction industry, in which the construction dimension—which is short-term oriented—remains the priority. As governments place increasing priority on PPPs, more and more diverse international players are joining the competition. Nevertheless, the shift from favoring local construction companies to considering long-term investors is still an ongoing effort.

In a PPP context, milestone payments must be balanced with private financing to achieve the desired enforceability of the transfer of

commercial risks to the sponsor and lenders. In some countries, such as Colombia and Peru, the shift to PPPs in the LAC region has been further complicated by the history of providing “milestone” payments to local construction companies as construction progresses, to compensate the construction companies for their lack of access to cheap construction financing.

Governments in the LAC region are starting to address this issue. For instance, Colombia prohibited upfront payments in its 2012 PPP law. Previously, upfront payments were one of the reasons undermining performance in the delivery of many projects by previous generations of road concessions, because they created the possibility for bidders to use these resources for other corporate purposes instead of for the project. As another example, Peru is now reconsidering the use of the “CRPAO” and “RPICAO”³⁰ tools, which in effect guaranteed milestone payments during construction.

In the LAC region, the key bidding criterion remains the financial proposal, even though the pricing proposals are not supported by committed financing. As indicated above, interaction during the tender process can be very limited, leading to a lack of flexibility in the contracts (through a “take it or leave it” approach). Bidders responding at the proposal stage are typically requested to submit two proposals, one to meet technical specifications and the second a pricing proposal, although it is very important to note that the pricing proposals, while firm, are not supported by letters of credit and committed debt financing.

The common approach to evaluation is to assess the technical submission on a pass/fail basis and then the financial proposal as a single-price best offer. This can possibly be done on the basis of such pricing parameters as the

largest transfer value to the government or minimum subsidy required, or as lowest tariff or minimum present value of revenues.

The result can be unrealistically aggressive price proposals and a high rate of proposal renegotiation. The introduction of concessions based on minimum net present value of revenues, instead of prices, mitigates the incentives for renegotiation, by transferring the demand risks to the users. This issue has led to the introduction of policies, such as in Colombia, where a proposal is rejected if it is under a certain percentage of the average price proposals of all bidders.

In other countries, such as Paraguay, aggressive prices are allowed but require additional financial guarantees. An alternative approach, utilized in Mexico and Peru, requires a financial model to be submitted with the price proposal as a test of reasonableness. Other jurisdictions have implemented renegotiation frameworks to limit the scope of discussion.

Most LAC governments accept unsolicited proposals. In fact, the LAC regional experience has been more oriented toward using USPs for repeated projects and for extensions of existing projects (in the road sector, for instance) than focusing on unique and innovative concepts. A few examples of innovative cases include the Costanera Center–Ciudad Empresarial aerial tramway in Chile and the Taboada water treatment plant in Peru.

Projects initiated as USPs raise many risk issues for governments. These include suspicion of misused or corrupted public resources, poorly defined projects because the government has not “defined its needs,” and higher cost and/or poor quality of the infrastructure due to a lack of competition (or, if there is competition, to a limited interest from third parties to compete). To mitigate these risks, various LAC countries (for example, Chile, Colombia, Brazil, Mexico, and Peru) are revising or have revised their USP framework, essentially to increase the government’s ability to guide and challenge the USPs before moving forward.

³⁰ Certificate of Recognition of Annual Payment for Completed Work (*Certificado de Reconocimiento del Pago Anual por Obras*) and Remuneration for the Investments Done Based on Certificates for Completed Works (*Remuneración por Inversiones según Certificado de Avance de Obra*).

USPs also need, as much as possible, to consider two things. First, potentially viable proposals should be steamed into the same competitive process as in a solicitation (providing at least three months, and more for complex projects for third parties to prepare competitive bids). Second, they should limit or eliminate premiums or bid discounts for the proponents or the use of Swiss Challenge mechanisms.

2.4 PPP Contracts and Risk Allocation

2.4.1 Best Practices on Risk Allocation, Bankability, and Project Finance

The allocation and transfer of risk to a private partner is critical to achieving value-for-money using a PPP model in contrast to public works. Risk allocation must be accurately aligned with the payment mechanisms in the PPP contract to ensure that the timing and extent of payments correctly reflect the concessionaire's performance. This provides a powerful incentive to the sponsor to deliver quality assets and services as specified in the PPP contract. Risk allocation in the PPP structure is critical to the viability of the partnership itself because it will determine the availability of project financing, which in turn is critical to achieving the enforceability of the PPP contract.

The allocation of risk among the members of the private partnership must also be effectively balanced to maximize creditworthiness and minimize the cost of project finance. Risks that are transferred³¹ from the sponsor to subcontractors such as EPC contractors or operations and maintenance providers must be done on the basis that each risk is managed or mitigated by the most capable partner. Also, each stage of the PPP project

³¹ In project finance, risks need to be not only allocated between the public and the private partners, but also transferred through the contractual structure on the private side. For instance, construction risk is typically transferred "back-to-back" from the special purpose vehicle to the EPC contractor, in what can also be called a "drop-down" approach.

delivery process implies different types of risk, such as the following:

- a. Preconstruction (approvals of various levels of government, land and right-of-way acquisitions, environmental approvals);
- b. Design and construction (design flaws, construction delays, cost escalation, scope changes by the public authority);
- c. Geotechnical risks (omissions and estimating errors); and
- d. In the operating period, failure to meet performance standards and failure to meet hand-back requirements at the end of the contract term.

These risks are typically transferred in varying degrees to the sponsoring partner in a PPP and then shared among the members of the private partnership. Typically, the more commercial in nature the risk, the higher the probability that it can be transferred cost-effectively to the sponsor. The basic principle to be followed in allocating risks is that risk transfer generates value-for-money when the cost of transferring all or part of a risk is less than the expected cost of retaining it.

While most of the contracts allocate risks on a fairly uniform basis, some differences persist. Along the years, PPPs stakeholders have developed clearer policies, based upon competition and willingness to share certain risks. Risk allocation tends to follow the following format:³²

- ❖ *Commercial risks:* Sponsoring partners are "in the business" of managing commercial risks (such as schedule, construction cost, design and constructability, geotechnical, technology, maintenance costs, financial closure, and long-term asset management) and will typically take these risks in the PPP contract, with some

³² This risk matrix that has been integrated as part of Peru's "Green Book" on PPPs includes comments on how to mitigate the risks.

protections for “force majeure” events and events caused by the public authority.

When certain commercial risks become too extreme for the sponsors and cannot be mitigated (for example, geotechnical risk in a tunnel project), aspects of these risks can be shared and can be increasingly considered as a bid issue, where proponents are invited to bid for the share of a specified risk that they will assume.

- ❖ *Demand risk:* Demand risk is a major consideration in structuring PPP contracts. Typically, users or the government are better prepared to assume or manage this risk. In recent years, developed markets have increasingly used availability-type PPPs, even when projects have user fees. This option is generally taken when information on projected demand is limited or the sponsor is unable to estimate it or to manage the risk (particularly when tolling policy or regulation is controlled by the government). The rationale for this option is that transferring this risk to the private sector is translated into higher costs to the public sector. Another option is the use of flexible term contracts allows transferring risk to users, and the payments to the concessionary through availability payments allows transferring risks back to the government. There are successful experiences of flexible term contracts in the transport sector, based on bidding that considers the present value of revenues (PVRs).³³ For these contracts to work, it is essential that the actions of the concessionary may not affect or manipulate the demand. While the cost of funding of concessions based on PVR might be more expensive than those based on availability payments, this cost reflects the risk allocation from a fee-based

scheme instead of a framework where payments are supported by sovereign risk.

- ❖ *Noncommercial risks:* Risks that are more non-commercial in nature (environmental approvals, land acquisition, stakeholder support, management of utilities, change orders, inflation, and change of law) are typically best retained and managed or mitigated by the public authority. High premiums would have to be paid to the private sector to assume such risks. These premiums are higher than the “self-insurance” cost of retaining the risk. Also, government can mitigate many such risks by treating the risk as a precondition to be resolved before commencing procurement.

The lenders and the public authorities ultimately have an alignment of interest in that they both seek to ensure that the project is appropriately structured and managed, and that the sponsor is incentivized to fulfill its contractual obligations and deliver good quality services. This is understandable: Project finance puts a tremendous focus on the risk allocation between the parties, which is a fundamental distinction between project finance and either public finance or corporate finance. PPPs are financed with debt and equity, and when the debt portion is in the form of project finance, the lenders of this debt financing have recourse only to the cash flow of the project and the terms of the PPP contract. As a result, lenders will commit financing only when they have completed sufficient due diligence on the project and when they have an acceptable risk allocation and security package from the sponsors, including the required amount of equity.

In project financing of PPP projects, the “security package” typically required by lenders includes their assessment that the risk allocations in the PPP contract and in all the “drop-down” agreements with subcontractors are creditworthy and appropriate. This package includes various clauses in the PPP agreement that protect lenders, such as step-in rights in the event of certain types of default, standard force majeure and compensation events,

³³ Flexible term contracts, which have been implemented in Chile, Colombia, and Peru, are based on tenders of the concession where participants compete on the PVR. The duration of the contracts is flexible and depends on when the agreed PVR is effectively reached. See Engel, Fisher, and Galetovic (2014).

priorities in cash flow distributions, and protection that excess cash is not inappropriately distributed and that debt service and other financial coverage ratios and required reserves are maintained.

Lenders will also want comfort that payments to the sponsor (either availability payments or user fees) have some inflation protection. They will also seek assurance that the sponsors will mitigate, through hedging, certain financial risks that could materialize with currency and interest rate volatility, and that sponsors will receive liquidated damages in the event of a lack of performance of subcontractors. A key requirement of international lenders is the presence of some sort of international dispute resolution process.

2.4.2 Risk Allocation and Bankability in the LAC Region

2.4.2.1 A Greater Private Sponsor Risk Exposure in LAC Transactions during the Preconstruction Period

PPP financing in the LAC region is characterized by very significant delays (9 to 12 months) between commercial close (signature of the PPP contract) and financial close (signature of the credit agreement between the sponsor and its lenders, and commitment of the lenders to disburse the funds as needed by the project). This is a common problem with PPPs in developing countries, as opposed to countries with developed markets, where typically commercial close and financial close are simultaneous.³⁴ Not only do these delays slow the project delivery, but they also imply that sponsors need to take more equity risk before financial close is reached. This feature exposes them to uncertainty much more than in more developed markets. It also leaves public authorities exposed to the risks of cost escalation due to high-risk premiums built into the bids, plus the risk of renegotiation after selection in a noncompetitive environment. In addition, many potential

lenders will not participate in a procurement process with these types of delays.

Common factors underlying this delay include the following:

- ❖ Inadequate project information (such as design, cost, and geotechnical baseline information) is available at the time of commercial close to enable lenders to make firm commitments.
- ❖ Noncommercial risks have not been managed in advance either because they have been allocated to the sponsor or, more typically, because the public authorities have not managed the issues as retained risks. Even when these risks are shared, such as in the 4G Program in Colombia, the challenge remains.
- ❖ As a consequence of these two factors and because of the lack of project finance expertise, commercial banks often ask for collateral, which can contribute to additional costs and delays before reaching financial close.

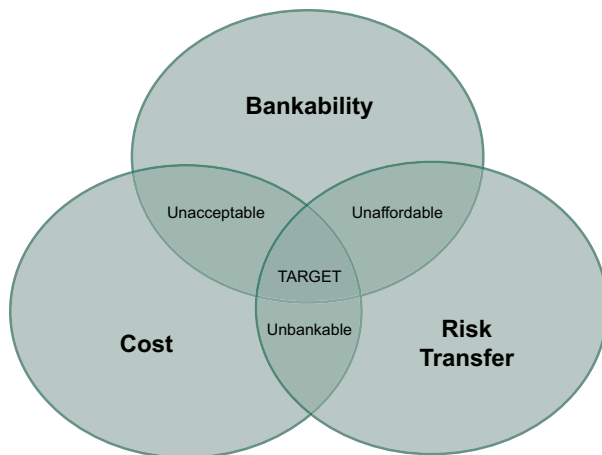
2.4.2.2 Project Finance: A Gradual Learning-by-Doing

To move to more effective project finance in the LAC region may require a number of deliberate steps, to be made by different actors. When sponsors have been used to construction-oriented approaches and commercial banks asking for guarantees and collaterals, shifting to a limited/nonrecourse finance mindset must be learned by all players. Implementation of a PPP program and the experience gained from actual project delivery is invaluable to improving the bankability of projects. This is particularly true as knowledge is gained through interaction with international market participants, as is clearly the case with the 4G Program. The capacity of local commercial banks to gain this expertise is critical (even more so in today's market where solutions like monolines are no more available) before PPPs can be facilitated to other financiers.

Bankability of projects is undermined in the LAC region by misallocation of commercial risks.

³⁴ Although in some cases flexibility conditions are attached.

Figure 2.1: Illustration of the Nexus and Tensions in a PPP Project between Bankability, Risk Transfer, and Affordability



The balance between bankability and risk transfer to obtain value-for-money in the LAC region (see Figure 2.1,³⁵ where value-for-money is the central target) requires a detailed clarification of the obligations and risks of the PPP contract parties. For instance, the common use of contract clauses such as the “economic and financial equilibrium of the contract,” when they are vague, favors the sponsor and opens the door for claims and requests to renegotiate. This can also blur the definition of roles and risk allocations within the private partnership. Such clauses can also discourage the availability of project finance, as investors and lenders face increased uncertainties as to project returns and creditworthiness. In Brazil, for example, uncertainties created by contract language (for instance, contract general equilibrium, with implications for construction cost overruns) have been identified as one of the limitations for engaging private sector financing in infrastructure.³⁶

Various LAC countries have taken different approaches for supporting project bankability.

Project bankability has been a challenge in the region. Chile was able to migrate from PPP projects supported by minimum demand guarantees

to projects based on minimum present value of revenues, without the support of any type of guarantees. Peru, for example, supported bankability by transferring risk through irrevocable government support for debt instruments (RPIs, CRPAOs) that essentially transferred all relevant risks back to the government.³⁷

Payments to lenders include government-backed, milestone-linked payment obligations where the milestones reflect physical construction expenditures, rather than availability of service. These are not subject to project risks, thereby undermining the potential risk-transfer benefits of a PPP. Colombia, in its 4G Program, has built strong performance-based criteria into the PPP contracts, providing financial incentives to the sponsor to provide good service commensurate with the terms of the contract. With such incentives, lenders require full due diligence, a strong security package, and close project monitoring. Although this is a positive outcome, implementation has been complex, leading to delays between commercial and financial closing.

In the past, Brazil has made funding available, at concessional rates, from Development Finance Institutions (DFIs) to concessionary companies participating in government-sponsored PPP projects. Many LAC governments also provide credit enhancements in the form of additional support for guarantees and other contingent liabilities. In Colombia³⁸ and Mexico,³⁹ for example, contingency funds have been created, or the use of multiannual budgets (now being implemented in Chile

³⁷ Payments to lenders include government-backed, milestone-linked payment obligations where the milestones reflect physical construction expenditures, rather than availability of service. They are not subject to project risks, thereby undermining the potential risk-transfer benefits of a PPP.

³⁸ For more details, see p. 59 of the World Bank Institute’s “Best Practices in Public-Private Partnerships Financing in Latin America: The Role of Subsidy Mechanisms,” <http://www.ppiaf.org/sites/ppiaf.org/files/publication/BestPracticesroleofsubsidiesmechanisms.pdf>

³⁹ Mexico has an account used to fund unexpected expenses across government institutions. The multiannual budget aims at providing a referential budget in five-year intervals to allow more effective investment planning.

³⁵ Derived from the diagram used in Bull et al. (forthcoming).

³⁶ See Filho et al. (2015).

and Peru) enables more comprehensive planning of capital and asset management budgets. Best practice is to create a fund exclusively for PPPs that has dedicated accounts for each PPP project.

In developed markets, success in avoiding renegotiation of the basic terms of contracts is typically facilitated by guiding provisions in the contracts and by ensuring that transactions are sufficiently prepared.⁴⁰ Parties to long-term contracts, such as PPP contracts, require the ability to open renegotiation to facilitate changes in scope or service level that result from unpredictable policy changes and innovations over time. Because renegotiations typically lack competition and transparency, the enabling provisions in PPP contracts require that no party can refuse to renegotiate insofar as the economic balance in the contract is not upset by the results of the negotiation. Requests to reopen negotiations in the early stages of the contract, particularly during construction, are minimized by a collaborative procurement process and prenegotiated terms of sources of financing, leading to a limited gap between commercial and financial closing. Also, taking such steps to avoid renegotiations reduces expectations of the possibility of renegotiation in future deals and thereby enhances the credibility of the whole PPP initiative.

The LAC region has a strong tradition of renegotiating PPP contracts, to which the lengthy gap between commercial and financial close contributes. It is true that renegotiations can be necessary in all long-term contracts, as is the case for PPPs, where not all events can be predicted. Because it typically lacks competition and transparency, renegotiation conveys many risks and opportunities for abuse and corruption and tends to increase project costs and reduce project benefits. It also leads to expectations of renegotiation in future deals and the credibility of the whole PPP initiative.

After more than 25 years and more than 7,000 PPPs awarded in LAC countries, the incidence

of renegotiation remains very high, in the range of 50 to 80 percent. Peru, for example, over the 1998–2012 period, had an incidence of 69 percent for all sectors (84 percent for the transport sector); the average number of renegotiations for each concession/PPP contract was 2.3 times (Guasch 2015). This very high incidence in the region reflects the fact that governments are open to renegotiate rather than cancel projects (less than 3 percent of PPP projects in LAC countries have been canceled). The high frequency of renegotiations in the region has led some countries (Chile, 2010; Colombia, 2011; Mexico, 2012; Peru, 2008) to implement legislation to provide a framework and controls to limit the negative impacts of renegotiation on LAC governments and to establish measures to control the negative impact of renegotiation on public authorities. Key elements of these “renegotiation platforms” include the following:

- ❖ Establishing by law or regulation that the matrix of risks allocation cannot be modified by renegotiation;
- ❖ Requiring the winning sponsor to provide its financial model to the public authority;
- ❖ Establishing in the procurement process the right to evaluate and reject overly aggressive bids (as defined by the difference between the highest bid and the second highest and the average bid), supported by instruments such as a performance bond that can be adjusted upwards as required;
- ❖ Establishing a transparent framework of conflict resolution (including a panel of experts and arbitration) to deal with aggressive bidding, renegotiation requests, arbitration process, and tariff setting.

2.5 Conclusion and Policy Recommendations

Properly implemented PPP initiatives may help boost productivity and economic growth in the LAC region. The use of PPPs is being extended

⁴⁰ While in lower scale, renegotiations have also been common in PPP schemes in countries such as France and the Republic of Korea.

to new sectors (prisons, cemeteries, logistic zones, solid waste, administrative buildings, sport and cultural centers, street lighting, security, etc.). Concurrently, many countries (Brazil, Chile, Colombia, Mexico, and Peru) have been revising and improving their PPP-enabling frameworks, based upon their own experiences and increasing contact with international market participants. Local development institutions have been created or restructured. PPP legislation has been implemented or amended, and PPP contracts are better structured and tendered. Processes, procedures, and contracts are being standardized, and firm and contingent liabilities are being managed and aligned with fiscal constraints. Significant efforts have been taken to take a programmatic approach to PPP initiatives, by improving analysis to identify projects for procurement, and to build and present a portfolio of bankable projects.

PPP initiatives in LAC region would gain credibility through an increase in transparency. As a track record of successful PPP transactions is accumulated in the region, it would be helpful to make public the expected benefits of the use of the PPP model in comparison to public works. Also, full disclosure of fiscal impacts and contingent liabilities would add to the credibility of the program.

A regional challenge is clearly to attract a wider set of sponsor investors and lenders and to move toward more effective project finance. This implies that all players gain more project finance culture, with limited or no recourse outside of the project itself and its cash flows. Today lenders still have recourse to the parent owners of the sponsor partnership through corporate finance approaches. This will require the participation of international as well as local market participants and will probably have to follow a sequential path, in which public authorities and sponsors have an initial role to play (in shaping bankable contracts with appropriate incentives and risk allocation). The local banking sector (in providing nonrecourse finance) will follow, which will then facilitate infrastructure sector access to capital markets and institutional lenders.

Although this culture is evolving, a major barrier to the expansion of project financing is the

incomplete maturation of PPP enabling frameworks, in particular regarding project preparedness. The lack of project preparedness before the launch of procurement is a major limitation in LAC markets. This contributes to the very high incidence of contract renegotiation and to delays in project delivery—factors that increase project costs and reduce value-for-money. It also leads to a lack of committed financing at the time of commercial closing: potential lenders must be provided sufficient technical information to conduct due diligence on the project, the risk allocation, and the payment mechanisms. Lenders also must be confident that the public authorities have delivered on all approvals and preconditions to enable the project to move forward. In addition, contract language and risk allocation that are more aligned with international best practices could increase the number of international sponsors and lenders that are interested in participating in PPP projects in the region. The presence of such players would have a strong leadership and educational impact on local market participants. Greater use of PPP units would create capacity with expertise to assist in project planning and preparation, and in marketing the program to the private sector.

As the PPP markets evolve and mature, project finance may need to be encouraged by government support and the intervention of local development institutions to improve the creditworthiness of senior debt in project financing. This is critical for both “pioneer” LAC countries in the use of PPP as well as more recent entrants. For the former, the challenge is to extend the PPP market into unchartered sectors and to prepare for the extension or relaunching of existing PPPs that are nearing contract maturity. The significant residual value of these concluding contracts raises a public policy question as to the allocation of residual value between government and users—and whether the residual value can be used to boost financial capacity and fiscal space and thereby facilitate an expanded infrastructure and PPP program in the future. This issue is particularly relevant because most of the upcoming PPPs in the pioneer countries will likely be structured as availability deals because they are probably not financially self-sustainable through user fees.

Banks and Infrastructure Finance

3.1 Global Banks and Infrastructure Finance: The LAC Region in Context

International banks, given their size, technical expertise, and track record in the LAC region, can play a critical role in financing infrastructure. Their potential impact can be both direct and indirect, the latter through co-financing arrangements with domestic banks and institutional investors, which would also benefit from valuable knowledge transfer in project risk assessment and monitoring. This section describes the role, global trends, and patterns of flows of international banks into infrastructure financing in emerging markets with emphasis in the Latin American region. The analysis will identify challenges and policy opportunities to promote increased external financing and its potential to mobilize domestic banks and capital markets for infrastructure finance.

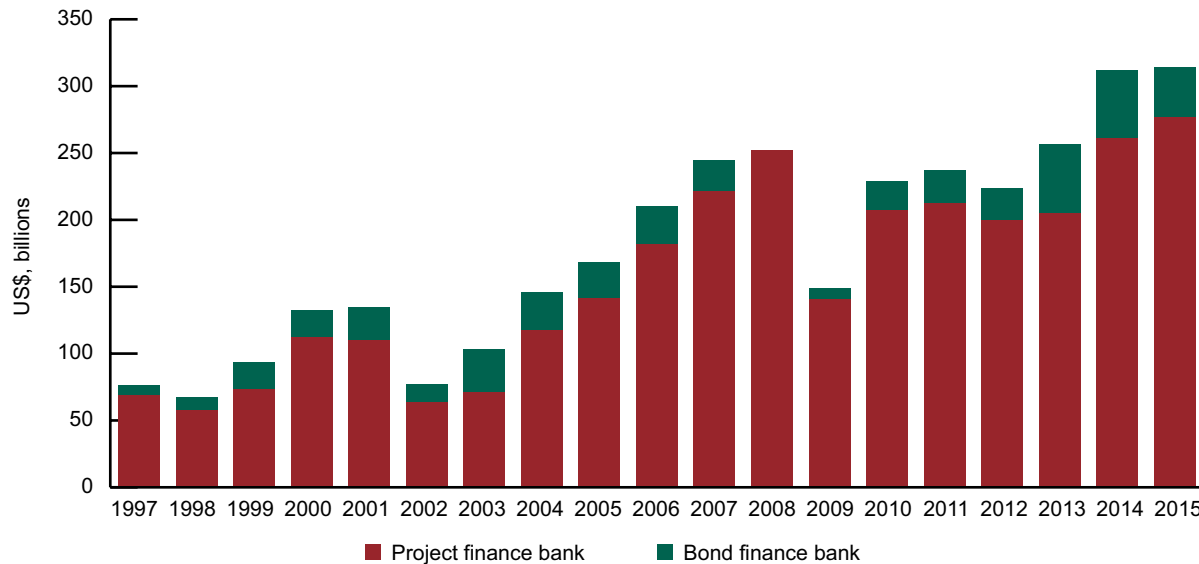
The project finance bank market is the most important source of financing for infrastructure in AEs and Emerging Market Economies (EMEs) after government financing. Banks provide debt financing for projects under several ownership models: purely private sector ownership, public-private partnerships, and projects developed by state-owned enterprises. In spite of volatility of flows during different financial crisis (e.g., 2002 and 2008), financing from banks into project finance, including infrastructure, has grown steadily. Global volumes

reached an all-time high in 2015 (see Figure 3.1). In the case of EMEs, project financing from banks has grown since the crisis, but it is still below precrisis levels (see Figure 3.2).

The project finance market in the LAC region has had the strongest recovery among EMEs after the 2008 financial crisis. After a 42 percent annual drop in 2009 in the region, volumes have doubled the precrisis levels (see Figure 3.3). Also, as in other regions, banks have been the main suppliers of financing in infrastructure projects in LAC countries in the last five years, covering almost 40 percent of the market (see Figure 3.4).

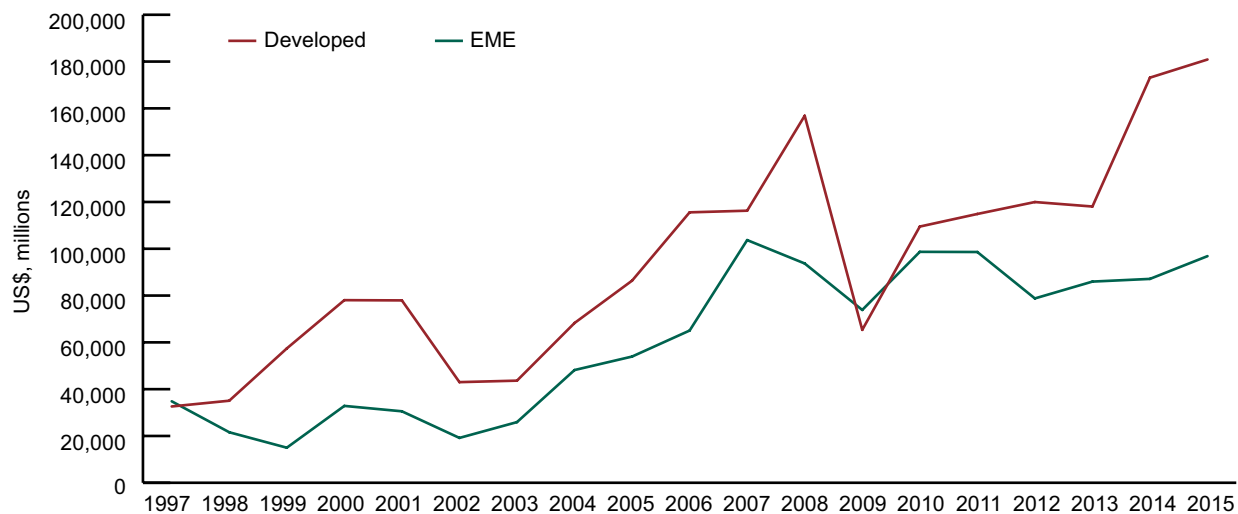
International bank flows into infrastructure finance are concentrated in a few countries across all EME regions. In general, about three countries per region receive two-thirds of flows with little variation in the countries (see Table 3.1). In the case of the LAC region, Brazil, Chile, and Mexico received around 73 percent of flows in the period 1997–2015. Features of these EMEs that may be attracting international banks are the existence of large oil deposits, an investment-grade rating on their foreign currency sovereign debt, and relatively large domestic financial sectors. Conversely, some countries have remained off the radar screen of international banks. In the case of the LAC region, 12 out of 38 countries have not received any project financing from international banks. While they are active in infrastructure financing in other regions, some international banks with branches and

Figure 3.1: Global Project Finance Bank Loans and Bond Project Finance (US\$, billions)



Source: Project Finance International.

Figure 3.2: Project Finance Lending to Developed Economies and Emerging Markets (US\$, billions)



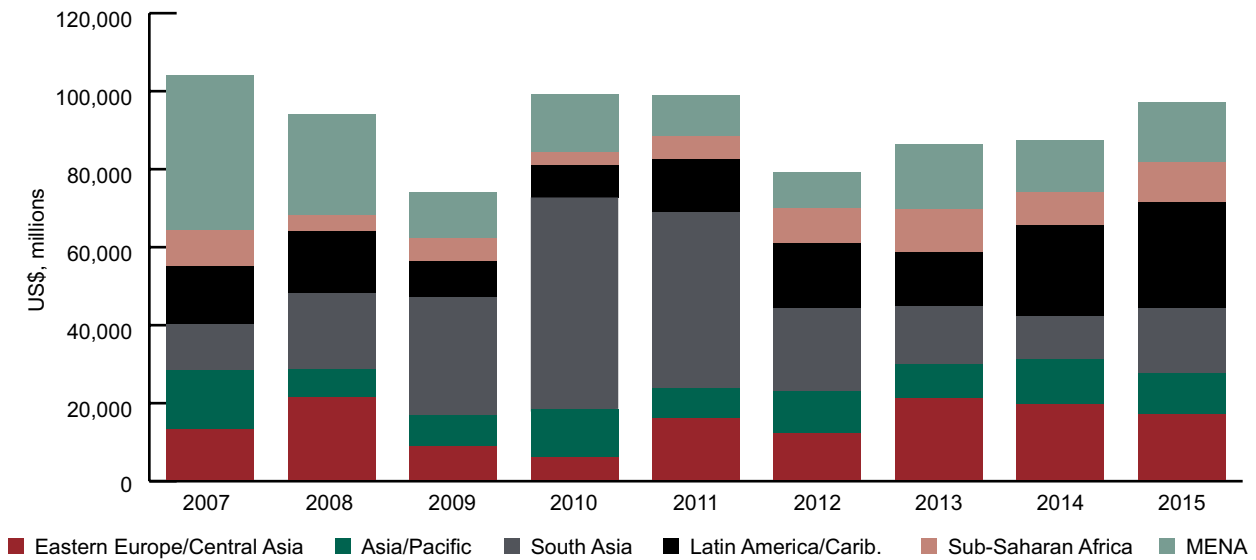
Source: Project Finance International.

subsidiaries in the LAC region are not offering infrastructure financing products in LAC. Depending on the country, absence of flows to these countries could be explained by economic and political instability, the lack of a quality PPP framework with credible procurement processes, and the lack of bankable projects.

With global flows into project finance growing, important structural changes have been seen since 2002 in the number of banks and country

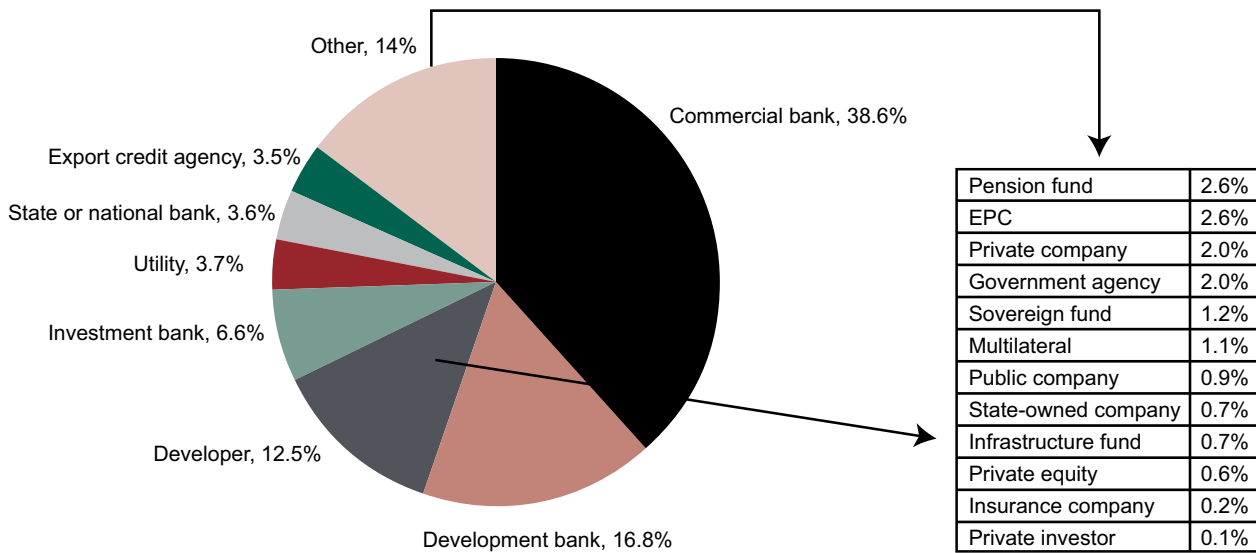
of origin that have not reversed after the crisis. The top 10 percent of banks in project finance have continued to provide above 50 percent of total financing; however, its composition has changed and numbers have increased. The upward trend of a growing number of banks providing global project finance since 2002 continued after the crisis, reaching a peak of 270 in 2014 versus 151 in 2002. The country of origin of lead banks also started to shift before the crisis and was reinforced after

Figure 3.3: Project Finance Loans, EMEs (US\$, millions)



Source: Project Finance International, annual league table issues.

Figure 3.4: Suppliers of Capital to Infrastructure Projects in the LAC Region (2011–2015)



Source: Authors; elaboration based on *Project Finance and Infrastructure Journal* as of May 5, 2016.

Table 3.1: International Bank Flows in Project Finance 1997–2016

Region	Top Three Countries	Percentage of Top Three
LAC Region	Brazil, Mexico, Chile	72.6
Asia/Pacific	China, Thailand, Indonesia	64.9
South Asia	India, Pakistan, Bangladesh	99.8
Eastern Europe/Central Asia	Turkey, Russia, Hungary	67.6
MENA	Saudi Arabia, Qatar, UAE	68.9
Sub-Saharan Africa	Nigeria, Ghana, South Africa	64.4

Source: Project Finance International.

Table 3.2: Market Shares of Banks in Project Finance

Market % of Top 10%	1997	2002	2007	2009	2014	2015
US	50.2%	18.8%	3.7%	0.0%	6.8%	4.2%
Canadian	0.0%	0.0%	0.0%	0.0%	6.9%	4.8%
European	49.8%	66.4%	75.9%	49.9%	41.6%	41.8%
Japanese	0.0%	11.6%	13.8%	12.4%	25.5%	24.5%
Australian	0.0%	3.1%	0.0%	4.9%	12.7%	4.3%
Developing Country	0.0%	0.0%	6.6%	32.8%	6.4%	20.3%

Source: Project Finance International.

2007. U.S. banks fell to a very small market share, whereas European and Japanese banks dominated with market shares of 42 percent and 25 percent, respectively, in 2015, followed by EME, Canadian, and Australian banks (see Table 3.2).

The LAC region has faced a similar structural shift in the composition of international banks financing, although with some differences.

U.S. banks' share of financing dropped by more than one-quarter to less than 5 percent on average between 2013 and 2015, European banks kept a dominant market share at 48 percent, and Japanese banks almost doubled their market share over the period to 16 percent. European banks include not only Spanish and Portuguese banks with cultural affinities, but also banks from France, Germany, and other European countries, which reflect the potential for the region in attracting capital, at least for the target countries. Additionally, the share of LAC banks increased to an average of 28 percent, which is associated with domestic and cross-regional financing from Brazilian and Colombian banks.

The recent growth of the global project finance market is related mostly to the combined effect of demands from bank clients seeking investment opportunities. Banks' main motivation to engage in project finance is to address clients' needs for this type of financing. Project finance requires very different technical skills and approach to risk than corporate financing, which is the core business of banks. Therefore, only large banks that have a significant number of clients requesting

project financing can afford to have a dedicated project finance team. Other large banks with less pressure from their clients and that do not seek a leadership position allocate project finance responsibilities to very small teams or to their industry group with clients generating most of the financing demands. For other smaller banks, pressure from their clients results in their participation in a smaller number of transactions that are developed by their clients in the bank's home country. Additionally, the low interest rate environment has also had an effect to push banks into infrastructure finance, as is the case with Japanese banks.

The impact of Basel III prudential regulations on infrastructure finance is still unknown.

Although preliminary conceptual analysis indicated that it could reduce lending volumes and shorten maturities, preliminary data and surveys to date indicate that the impact of Basel III on long-term loans might be in pricing. If this trend continues, several outcomes can develop. A first outcome is that infrastructure finance becomes more expensive and impacts directly the number of projects to be financed. Provided the presence of fiscal space, some projects will need subsidies to become financially viable. Another potential outcome is that institutional investors may become more active in infrastructure finance, attracted by higher returns. This is what started to happen in Europe in 2012, when banks and institutional investors started to compete in the infrastructure finance space. Another outcome would be a greater role of DFIs to bridge the potential financing gaps. A combination of all three outcomes may also be possible.

The impact of international banks on infrastructure finance in the LAC region could be strengthened through several lines of policy work in domestic markets:

- ❖ *Engaging international banks:* As mentioned above, most banks are motivated to participate in infrastructure finance after receiving pressure from their clients. Under this assumption, the country of origin and quality of sponsors attracted by PPP programs in the LAC region would be critical to mobilizing international financing. Some large domestic LAC companies also are likely to have relationships with U.S. and European banks that will provide the financing. International financiers would bring competition and project-financing skills that could improve the quality of domestic financiers. Therefore, PPP frameworks and practices that are able to attract high-quality sponsors should be one of the starting points to improve the quality and volumes of private sector financing for infrastructure.
- ❖ *Engaging domestic banks:* Domestic banks have an important role to play in financing infrastructure in projects with revenues in local currencies, especially during the construction phase. Engaging domestic banks in project finance helps to ensure the continuity of the PPP programs by reducing currency mismatches and providing a stable source of financing. It is essential to explore options for creating an enabling environment for domestic banks to participate in loan syndications together with international banks so they can acquire the necessary project finance skills.
- ❖ *Engaging domestic capital markets:* Currently international banks, in spite of growing lending volumes to project finance, are less prone to lend in long maturities than before the crisis. International banks would be more prone to participate in the financing of infrastructure to the extent that the projects have possibilities of refinancing via the capital market once the project reaches the operational phase. This option

is available only to those countries with sizeable long-term institutional investors. However, even in the more mature LAC economies, a more systematic effort needs to be made to create the conditions for effective refinancing via capital market (see Chapters 4 and 5).

3.2 Domestic Banks in LAC and Infrastructure Finance

Domestic banks in the LAC region have in general little exposure to infrastructure finance, but exposure varies broadly depending on the country. Banks in the larger economies, such as Brazil, Colombia, Mexico, and Peru have higher concentrations of investments in infrastructure. With few exceptions,⁴¹ most of the Chilean banks have offloaded their infrastructure assets toward domestic institutional investors. A number of features of LAC banks and financial sectors may support or become an obstacle for infrastructure finance depending on the country. This section profiles the most important features of LAC domestic banking sectors and their potential impact on supporting or impeding their role as financiers of infrastructure. This analysis could guide the design of policies that can promote a more active role of domestic banks in infrastructure finance.

3.2.1 Project Finance Skills Are Scarce

The majority of domestic banks in the LAC region have limited experience in infrastructure project finance. In general, banks do not have staff with specific knowledge in project finance. This is due to the fact that only a few infrastructure projects have been financed through the modality of project finance. Currently, infrastructure finance is dominated by different mechanisms other than project finance (such as direct equity investment, government financing, and on-balance-sheet corporate bank lending). In the past few years, the few

⁴¹ See Box 3.1 on the financing experience of the San Cristóbal Tunnel.

infrastructure projects that have been developed in LAC countries have been financed by international banks. Brazilian banks play the largest role of any LAC banks in infrastructure finance, both in Brazil and throughout the region. Brazil is the only LAC country that has a bank ranked among the 100 initial mandated lead arrangers in 2015. Still, banking financing for recent projects relies on a corporate finance type of financing. While Colombia's 4G toll road program was expected to rely on project financing, there is a certain inertia by banks in using corporate finance, characterized by a high reliance on guarantees that go beyond what is usual in project finance.

Currently, infrastructure project finance is small in the asset portfolio of LAC banks, and its growth potential is limited. Mexico and Uruguay present the largest share of project finance as percentage of banks assets with very small amounts, 1.45 and 1.53 percent, respectively (see Table 3.3). Even assuming an optimistic scenario of very fast growth of project finance assets, it is difficult to foresee that project finance would become more than 5 percent of banking assets in any LAC country. Banks probably will allocate only a fraction of their credit to project finance and keep the rest

Table 3.3: Project Finance Loans in 2015 as Percentage of Banking Assets

Country	2015 PF Loans (million USD)	Bank Assets (million USD)	PF Loans as % of Bank Assets
Brazil	9,437	2,100,654	0.45%
Mexico	7,911	546,395	1.45%
Chile	3,373	292,040	1.15%
Colombia	2,041	174,578	1.17%
Peru	1,501	121,969	1.23%
Uruguay	569	37,286	1.53%
Argentina	520	132,447	0.39%

Source: Authors' elaboration.

Note: Data of bank assets are based on data published on websites of Bank Superintendences and central banks. Data as of January 2016. Data of PF loans are from PFI Thomson Reuters, Financial League Tables 2015.

of the portfolio allocated to their core business. It is unlikely for medium-sized and smaller banks to engage in project finance.

It is essential to have in place a regulatory framework for banks, where risks associated to project finance are treated fairly. An inappropriate regulation could result in excessive requirements of capital or provisions that may hinder the development of project finance. For instance, inappropriate regulation on credit evaluation and provisioning could require banks to make large provisions even in projects with a good performance. Regulation and supervision processes must be able to take into account the particularities of project finance. Many countries in the LAC region would need to upgrade their regulatory framework of project finance.

3.2.2 Financial Sector Depth and Size Matters

Banking sector depth in some LAC countries is limited. The capacity of a country's banking sector country to finance infrastructure projects (or any other economic activity) is related to its depth. Using domestic banks' credit to the private sector as a percentage of GDP as the main measure shows that some countries in the LAC region have limited capacity to provide credit. Although a large disparity is seen among countries, banking depth in the region on average is only 44 percent, compared to 109 percent in OECD countries.⁴² A relevant feature is that even in some of the large countries, Argentina and Mexico, their banking systems are smaller than peer countries of equivalent size in other EMEs regions. This apparent inconsistency reflects

⁴² Data from World Development Indicators (domestic credit to private sector by banks, percentage of GDP). Latest data available are for 2014. Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations. Financial corporations include monetary authorities and deposit money banks, as well as other financial corporations where data are available; examples of other financial corporations are finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies. OECD data are an aggregate of all OECD members (including developing countries).

the lingering effects of severe financial crises over the past decade or so, as well as a relatively large informal economy.

Countries in the LAC region could be classified in three categories depending on the size of their banking sector in relation to GDP.

Above 60 percent may be considered deep banking sectors, as in countries such as Brazil, Chile, and Panama. Between 40 and 60 percent could be categorized as medium, a category including countries such as Colombia, Costa Rica, and El Salvador. Below 40 percent would be the category of shallow banking sectors with countries such as Argentina, the Dominican Republic, and Mexico (see Figure 3.5).

Countries with a shallow banking sector need to rely on other sources for financing infrastructure.

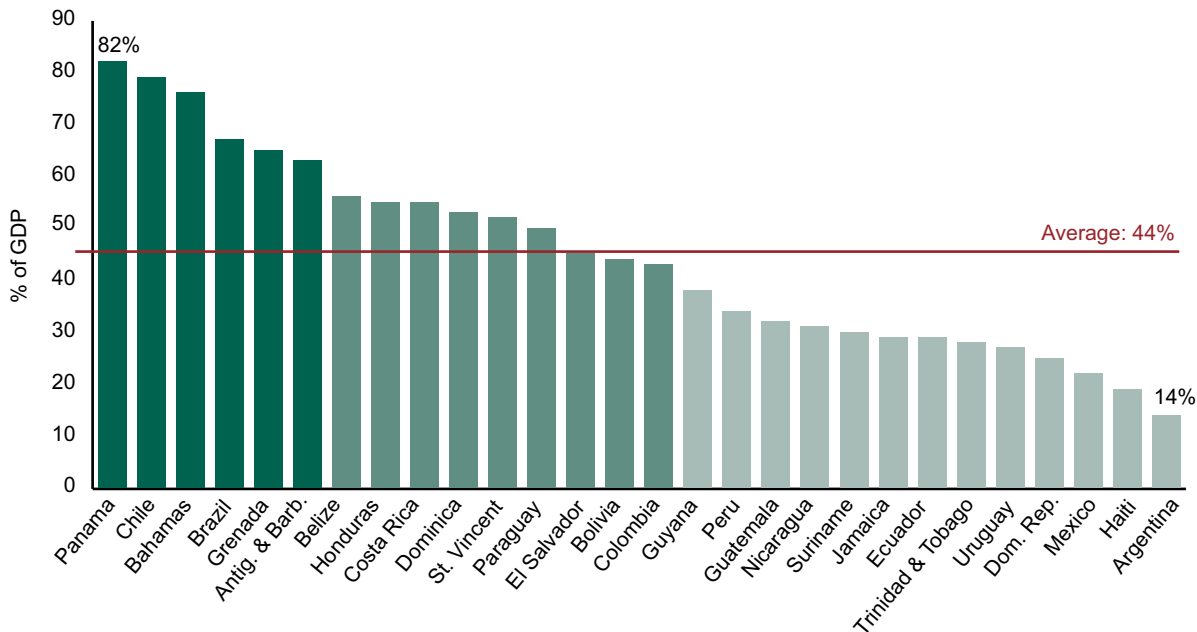
Other types of participants complementing domestic commercial banks for infrastructure financing include international banks, insurance and pension funds, development banks, and governments.

Some basic simulations may help give an order of magnitude of the relative size of the banking sector compared to a benchmark of infrastructure needs.

Although infrastructure needs vary by country and by sector, a conservative estimation may suggest that LAC countries may need to invest about 5 percent of GDP for five years to shorten the infrastructure gap.⁴³ Based on this assumption, it is possible to roughly estimate the amount of money that each country needs to invest in infrastructure in

⁴³ While some authors believe that the LAC region should spend around 5 percent of GDP on infrastructure to bridge the infrastructure gap and achieve that of other countries, this report takes the 5 percent only as a reference. See, e.g., D. Perotti and R. Sánchez, "La brecha de infraestructura en América Latina y el Caribe," CEPAL (July 2011). Other authors estimate that the region requires an annual investment on infrastructure of 3.6 percent of GDP (e.g., F. Ruiz Nunez and Z. Wei, "Infrastructure Investment Demands in Emerging Markets and Developing Economies," Policy Research Working Paper no. WPS 7414 [World Bank Group, Washington, DC, 2015]), while others estimate that this percentage should grow to 4 percent (H. Kohli and P. Basil, "Requirements for Infrastructure Investment in Latin America under Alternate Growth Scenarios 2011–2040," *Global Journal of Emerging Market Economies* [2011]).

Figure 3.5: LAC Banking System Depth: Domestic Credit to Private Sector by Banks (% of GDP)



Source: Authors' elaboration based on data from World Development Indicators. Latest data available are for 2014.

the next five years to close the gap.⁴⁴ Assuming that 25 percent of projects are financed through equity, only 75 percent of bank financing would be needed to finance the infrastructure gap. If this amount were relatively small in relation to the size of the banking sector, then banks would have the capacity to provide a large share of infrastructure project finance.

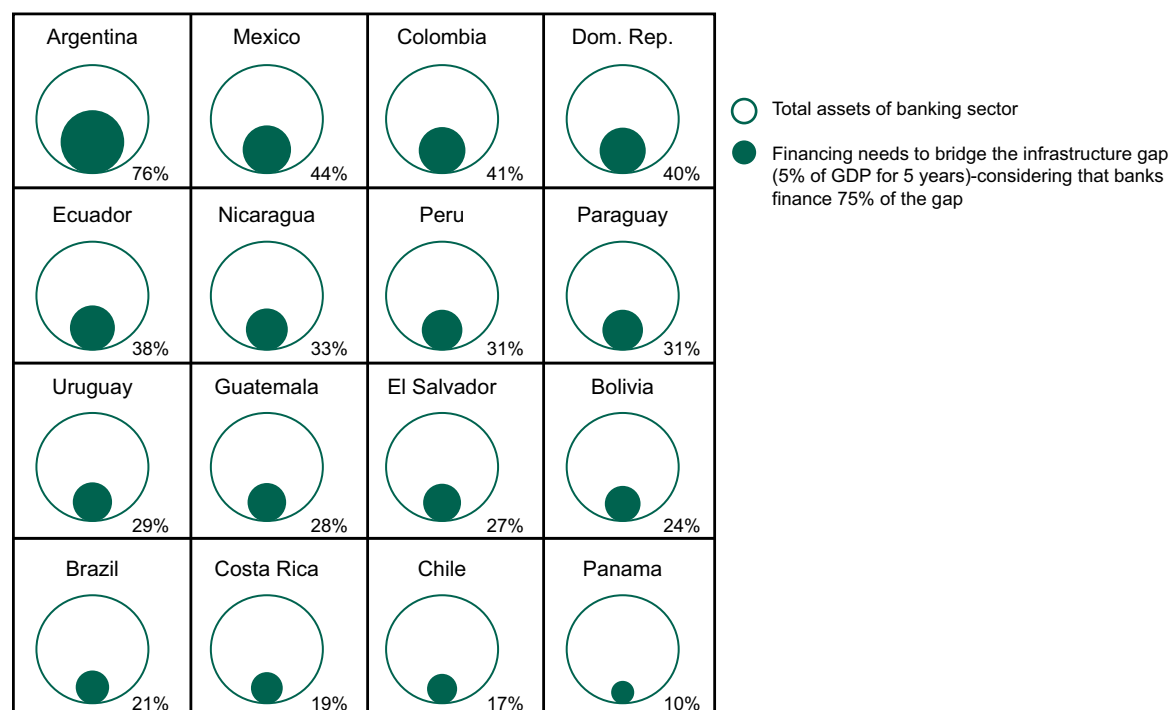
Although the banking sector in some countries is well positioned to finance a hypothetical infrastructure gap, others may need other sources of financing. In some countries, such as Colombia, the Dominican Republic, and Mexico, the amount needed to reduce the infrastructure gap (considering that 25 percent of the projects are already financed through equity) represents more than 40 percent of total assets of the banking sector (see Figure 3.6). In this group of countries, the banking sector might not be large enough to

address infrastructure project finance needs. On the other hand, in Chile, Costa Rica, and Panama, the amount needed to bridge the hypothetical infrastructure gap is less than 20 percent of total assets of the banking system. Even though there is still a challenge, in this group of countries the banking sector has a chance to play a relevant role in financing some infrastructure projects.

Although in AEs with large financial sectors single-limit exposures are not binding for banks participating in project finance, in some LAC countries this limit is one of the main constraints. In some Latin American countries, single borrower limits are easily reached, given the smaller size and capital of banks in relation to the funding needs of projects. Because credit limits to single projects (concentration) depend on the banks' capital, concentration limits in LAC become binding in relatively lower thresholds compared with banks in Europe and the United States. An added obstacle is the low number and size of local sponsors, and the fact that the same shareholders may be behind

⁴⁴ For analytical purposes, any other figure could be taken as infrastructure investment needs. This will not change the main conclusion of the analysis.

Figure 3.6: Financing Needs to Bridge the Infrastructure Gap in the LAC Region



Source: Authors' elaboration based on data published on websites of Bank Superintendences and Central Banks. Data as of January 2016.

the sponsor and the EPC company. Thus, because a bank financing equity for the sponsor may be also financing the EPC contractor, LAC banks might have the capacity only to finance relatively small projects. Although syndication could help to alleviate this constraint, smaller banks do not always have the appetite for this type of risk and do not add much financing given the industry structure in Latin America characterized by a few large banks.

Some countries in the region have been proactive in addressing the limitations for project financing of the single-limit exposure. In Colombia, the association of banks identified limits to large exposures as one of the most critical issues regarding the 4G toll road program. This constraint was partially alleviated by an increase of single obligor limits from 10 to 25 percent for the 4G program. In the 1990s, and as a part of a reform package to facilitate infrastructure financing, the single-limit exposure for Chilean banks infrastructure projects was also increased.

3.2.3 Long-term Financing Is Rare

Although project finance requires long-term financing,⁴⁵ long-term credit is very limited in many LAC countries. This is due to several reasons, but usually it starts with the lack of government capacity to access long-term financing in local currency. Tenors of project finance could be as long as 25 years and usually start from seven to ten years; longer tenors are available only in the more sophisticated markets in the region. Chile and Mexico are among countries where long-term financing is available from domestic privately owned banks. The lack of long-term financing is one of the biggest challenges to obtain resources for project finance from banks. In their absence, some countries in the LAC region have relied on DFIs (see Chapter 6).

⁴⁵ There is no single definition of what is considered long-term in project finance, but because “mini-perm” goes up to seven years, long-term could be eight or more years. Usually infrastructure project finance requires terms of 10, 15, 20, and 25 years.

3.2.4 High Concentration of Banks and Financial and Economic Conglomerates

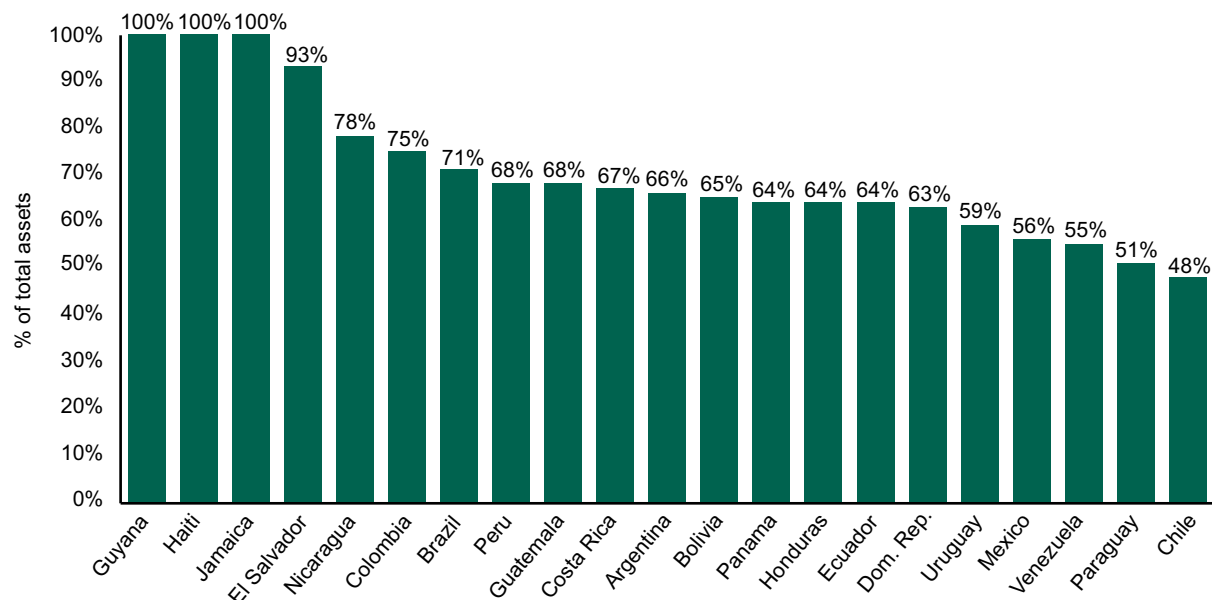
The banking sector in the LAC region is concentrated, with the three largest institutions accounting for between around 50 percent and 100 percent of total commercial banking assets in each country (Figure 3.7).⁴⁶ In every country in the region, the three largest institutions represent at least half of the system. Consolidation involving both domestic and foreign banks in recent years has led to a reduction in the number of banks in the largest LAC countries.⁴⁷

Large banks in the region are typically part of financial conglomerates and in some cases economic conglomerates that hold ownership of companies in the real sector, including infrastructure sponsor companies. The presence of financial conglomerates that comprise banks, pension fund management companies, insurance companies, and other intermediaries create incentives to maintain the best businesses within the conglomerate, and to transfer the riskier and less profitable parts of the business to clients or partners. The presence of economic groups, which also involve infrastructure sponsors, may create misalignment of incentives. The incentives are focused on maximizing the ROE of shareholders rather than on ensuring the proper functioning of the infrastructure project. These situations may reduce competition, by limiting the ability of different financiers (banks, pension funds, insurance companies, etc.) to participate independently in project financing. In countries such as Colombia and El Salvador, pension fund management companies are owned by the largest banks within the financial system (see Chapter 5).

⁴⁶ Data from the World Bank Global Financial Development Database (bank concentration, percentage). Latest data available are for 2013.

⁴⁷ BIS, “Evolving Banking Systems in Latin America and the Caribbean: Challenges and Implications for Monetary Policy and Financial Stability,” BIS Papers no. 33 (February 2007).

Figure 3.7: LAC Banking System Concentration: Assets of Three Largest Commercial Banks as Share of Total Assets



Source: Authors' elaboration based on data from the World Bank Global Financial Development Database (Bank Concentration, %). Latest data available are for 2013.

Note: Data from Chile correspond to information published by the Superintendencia de Bancos e Instituciones Financieras de Chile (SBIF), and data from Nicaragua correspond to information published by the Superintendencia de Bancos e Instituciones Financieras de Nicaragua (SIBOIF), as of January 2016.

3.2.5 High Presence of State-Owned Institutions

State financial institutions are relatively common in the LAC region. Although assets from state financial institutions represent a significant proportion of the assets of the financial system, only a few state financial institutions participate in the financing of infrastructure (see Chapter 6). As shown in Figure 3.8, Costa Rica stands out as the country with the largest presence of public entities, where state banks account for 51 percent of total assets of the banking system. Argentina, Brazil, and Uruguay also have an important part of the system in the hands of state banks. On the other hand, Nicaragua is a case of a banking system integrated only by private banks.

3.2.6 The Level of Capitalization

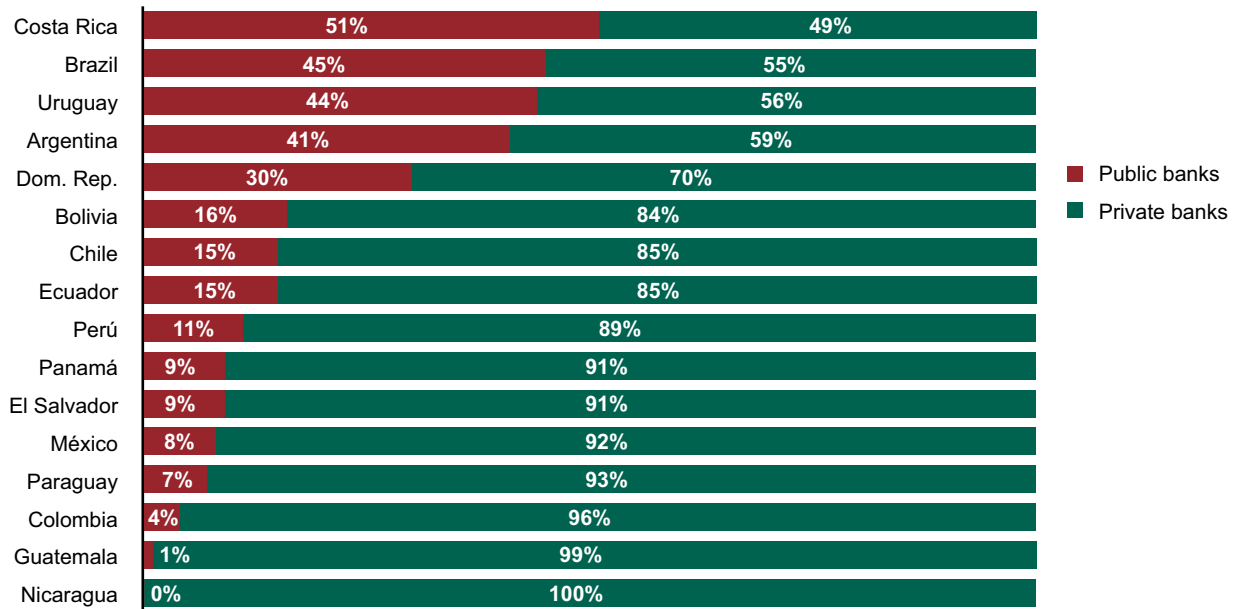
Although average capital adequacy ratios in the LAC region seem to show no major problems of solvency, challenges remain if banks engage

in project finance. As shown in Figure 3.9, capital adequacy ratios in countries of the region are between 14 percent and 17 percent. While these figures provide a broad overview, many countries in the region are in the process of implementing the core principles for effective banking supervision. The implementation of Basel III requirements is still in early stages, except in the cases of Argentina, Brazil, and Mexico, which are members of the G20. To accompany an increase of project financing, without reducing other types of loans, banks will need to increase their capital to maintain current levels of capital adequacy ratios.

3.2.7 Public Debt May Crowd Out Infrastructure Finance

The size of domestic public debt with respect to total assets of the banking system, together with the cost of funding of the government, may be an indicator of potential crowding out of project

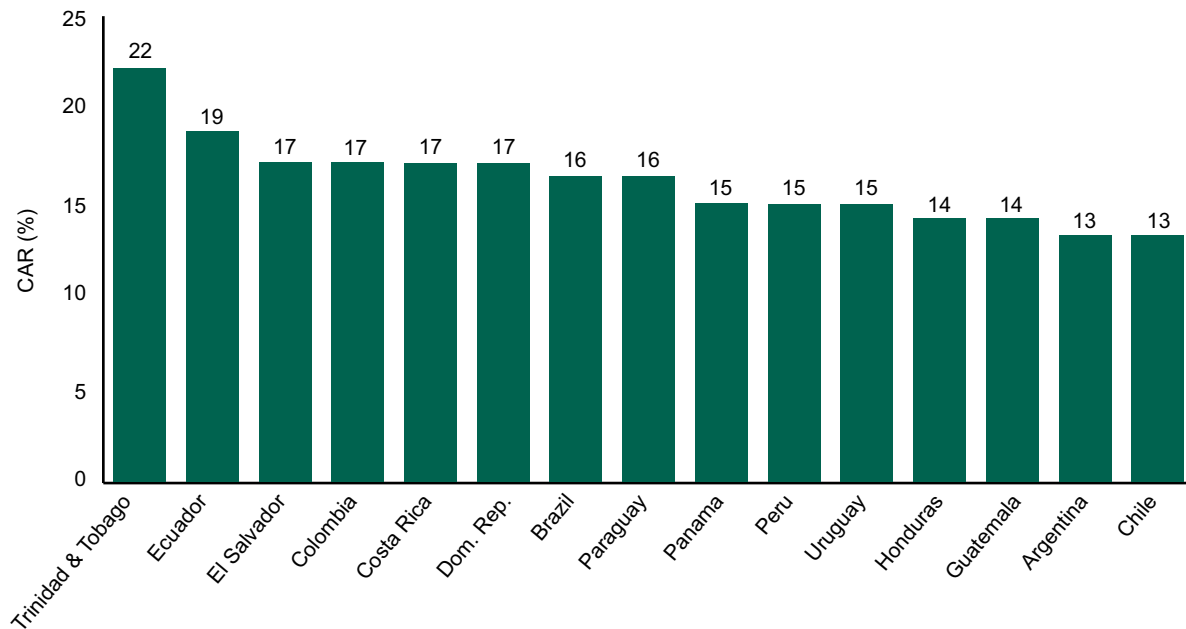
Figure 3.8: Composition of the LAC Banking System (public vs. private banks): Assets as Percentage of Total Banking Assets



Source: Authors' elaboration based on data published on websites of Bank Superintendences and Central Banks.

Note: Data as of January 2016 (data of Colombia, Mexico, and Panama are as of December 2015, and data from Brazil as of September 2015).

Figure 3.9: Capital Adequacy Ratio (CAR): Regulatory Capital to Risk-Weighted Assets



Source: Authors' elaboration based on data from IMF Financial Soundness Indicators. Latest data available for each country (2015 or 2016).

finance. The largest countries in the region, like Brazil and Mexico, have more capacity to absorb public debt because of the broader investor base, which includes not only banks, but also institutional investors and foreign institutions. For example, in 2015, foreign entities held 36 percent of Mexico's public debt. The level of development of the domestic capital market can mitigate the direct effect of public debt on interest rates. The high yield offered by public bonds in countries such as Brazil will discourage investors from taking additional credit risk.

The size of the public debt is very heterogeneous among LAC countries. In some countries public debt represents a high percentage of total assets of the banking system. This is the case of Argentina (176%), the Dominican Republic (79%), and Mexico (71%), for instance (see Figure 3.10). However, crowding out by public debt may be mitigated by a diversified financial sector with other relevant government bond investors such as pension funds and foreign investors.

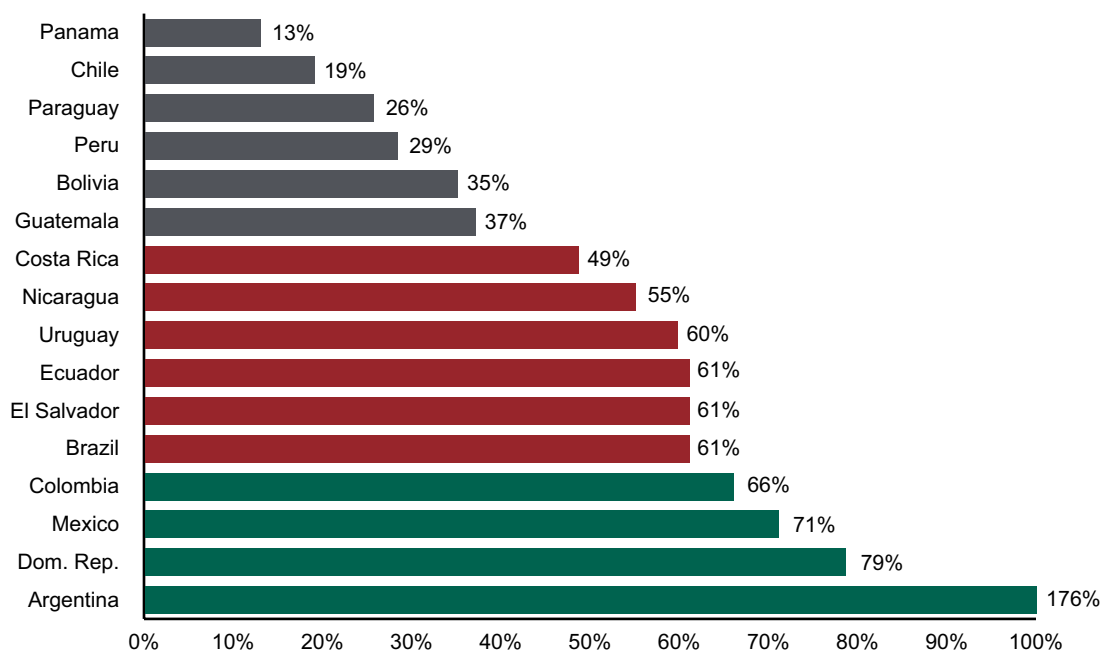
3.3 Potential Roles for LAC Domestic Banks in Infrastructure Finance

Domestic banks in the LAC region are below their potential in financing infrastructure. This section discusses potential roles that domestic banks can take using as a reference roles played by banks in AEs, as well as the regional context. Two caveats need to be taken into account in the discussion. Possible roles presented do not necessarily apply to all countries given the diversity of domestic financial sectors. Also, depending on the country, banks would need to acquire certain skills or different policies, or regulations would need to be revised.

3.3.1 Direct Lending under Project Finance

Financing the construction phase and early years of operations of projects is a traditional

Figure 3.10: Public Debt (percentage assets of banking system)



Source: Authors' elaboration.

Note: Data of assets correspond to information published on websites of Bank Superintendences and central banks of each country as of January 2016 (data of Colombia, Mexico, and Panama are as of December 2015 and data from Brazil as of September 2015). Data of total central government gross debt corresponds to data published by the LAC Debt Group from IADB for the year 2014.

function banks could take. This is generally the riskier and shorter-term phase of projects that fits better the risk-return profile of banks. It would need to be matched with the availability of long-term financing from institutional investors or temporary take-out facilities from DFIs for the less risky operational phase. Historically, project finance has been provided substantially through the use of bank loans, because they have several competitive advantages over other instruments such as project bonds. Banks generally have had the in-house expertise to assess project risks and monitor progress. They also have the flexibility and capacity to renegotiate and restructure as the project circumstances unfold and are able to gradually draw down funds during construction. All these aspects are more difficult to address through capital markets instruments, though some solutions are being developed in both AEs and EMEs (see Chapter 4).

In countries without long-term institutional investors, concessionary companies cannot count on the option of refinancing during the operational phase. In these cases, banks are expected to finance projects in both phases.⁴⁸ Alternatively, concessionary companies may try to refinance partially with other sources of financing, including private equity funds or development financial institutions.

The availability of funds for refinancing is an important factor affecting the willingness of banks to provide funding in the construction phase. Although some banks feel confident about their capacity to manage construction risks, they are less confident about running refinancing risks and maintaining an evergreen asset in their portfolios. The absence of vehicles for refinancing bank loans at the end of the construction phase would make banks more reluctant to provide lending for the construction phase. The provision of public guarantees in the operational phase, which makes it immediately attractive for institutional investors to participate in refinancing, may facilitate the participation of banks in the construction phase (see Chapter 6).

⁴⁸ See the discussion above about Basel III implementation.

The experience of banks financing the construction phase in the region is still mixed. Although in the case of Chile local banks have been financing large infrastructure projects for the past two decades, the issue is relatively new for Colombian banks with the introduction of the 4G projects. Brazil and Mexico also have a long tradition of financing the construction phase with banks, but public institutions have dominated financing. In other LAC countries, the experience of local banks in financing infrastructure is limited. Still, many local banks in the region rely on corporate finance instead of project finance for financing infrastructure.

3.3.2 Promoting Syndicated Loans or Club Deals for Infrastructure Project Financing

A common role for larger banks is to syndicate a project finance loan by bringing together a group of like-minded banks and/or institutions under a single loan.⁴⁹ The lead banks that arrange the loan may or may not act as an underwriter for the syndication. One example of a syndicated loan in the LAC region is the loan between *Corporación Andina de Fomento* (CAF)⁵⁰ and Den Norske Bank (DNB) Group (Chile Branch) for the financing of a wind farm in Uruguay in 2014. Private infrastructure finance through syndicated loans has picked up considerably in emerging markets since the global financial crises and has surpassed the levels of AEs.⁵¹ There are further opportunities in the LAC region for syndications led by either international or the larger local banks.

Club deals are an alternative to syndicated loans that have equal flexibility in cases of loan renegotiations. Syndicated loans are common for the debt financing of larger projects, as they allow the diversification of risks of a single project across a group of banks. However, the loan syndication

⁴⁹ International Development Finance Club, "Financing Sustainable Infrastructure" (October 2014).

⁵⁰ Development Bank of Latin America.

⁵¹ T. Ehlers, "Understanding the Challenges for Infrastructure Finance," BIS Working Papers no. 454 (August 2014).

market does not have the depth that it once did. As a result, many project financings are done as “club deals,” where each bank commits the amount that it is willing to hold, and this amount is not reduced by syndicating the loan to banks that were not engaged in its structuring. Nevertheless, because loan syndicates and club deals have concentrated creditors as opposed to diffuse bond holders, debt restructuring can be cheaper and quicker than with a bond financing.⁵²

⁵² OECD, “Mapping of Instruments and Incentives for Infrastructure Financing: A Taxonomy” (September 2015).

In some markets in the region, projects have achieved a significant degree of sophistication.

The use of multiple bank instruments and refinancing via institutional investors have helped to finance infrastructure projects. The “Pacifico 3” project in Colombia under the 4G program is an example in which local banks and international bond markets cofinanced the project (see Box 4.3). In this case, local pension funds also participated in the loan syndication via infrastructure debt funds. As shown in Box 3.1, the case of the San Cristóbal Tunnel in Chile also reflects a case of dynamic financing of infrastructure projects with the participation of multiple financiers.

Box 3.1: Dynamic Financing: The Experience of San Cristóbal Tunnel in Chile

The San Cristóbal Tunnel was part of the Chilean infrastructure concessions program developed during the 1990–2007 period. This project required an investment of UF 2.5 million (US\$100 million) and consisted of a 4.1 kilometer highway that crossed over the San Cristóbal Hill. The project was awarded in 2005 to the consortium *Sociedad Concesionaria Túnel San Cristóbal*, a joint venture between Hochtief (German) and ACS Dragados (Spain). The concession length was 33 years.

The construction began in May 2006 and became fully operational in December 2008. In December 2007, the corporation began funding the construction using UF 330,000 of equity capital and a UF 2.1 million bridge loan provided by the Spanish bank BBVA. This was senior liability, fully guaranteed by Hochtief and ACS Dragados directly. The bridge loan paid the nominal average inter-bank rate published by the Chilean Association of Banks (TAB CLP) plus 20 basis points annually. This credit would be valid until the Concession Holding Company obtained the long-term financing, which was expected during the first half of 2008.

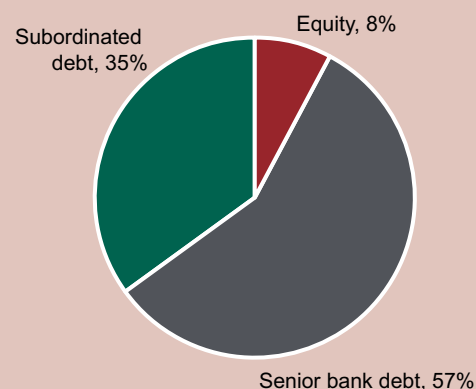
Because of the credit market difficulties derived from the Lehman Brothers collapse, both stockholders, Hochtief and ACS, provided UF 543,000 as subordinated debt. Finally, in 2009 the Concession Holding Company subscribed a 20-year syndicated loan of UF 1.9 million with BBVA and Banco Estado, which paid TAB UF plus a variable spread of 2 to 3.5 percent depending on the year.

In 2011 ACS agreed to sell its holding to the Canadian Brookfield Asset Management (Canada). Currently the project is owned by Hochtief and Brookfield.

This project differentiates itself from the other concession-holding companies by its financial policy structure. In most of the concessions projects that were awarded and funded between 1990 and 2007, institutional investors participated in these projects buying bonds, participations in private equity funds, or asset-backed securities. Nevertheless, because *Sociedad Concesionaria Túnel San Cristóbal* planned to issue debt during one of the most turbulent recent times for financial markets, banks and the equity holders provided senior and subordinated debt, respectively.

In December 2014, the *Sociedad Concesionaria Túnel San Cristóbal* had assets of CLP\$ 64.631 million (US\$106.5). Its financial policy is still dominated by long-term bank debt; specifically *Corpbanca* provided a 19-year loan of UF 2,150,000 at UF 5.25 percent annually. On the other hand, the Concession Holding Company has a long-term subordinated debt with Hochtief and Brookfield that in December 2004 paid an interest rate of UF 8.34 percent.

Túnel San Cristobal—Financial Policy (2014)



3.3.3 Financing or Providing Guarantees to the Sponsor

The solvency and technical capacity of the sponsor is an essential component to ensure bankability of the project. Although concessionary companies are typically special purpose vehicles, they require strong capital support from their sponsors. The critical expertise of these concessionary companies lies not so much in the technical skills to build an infrastructure project, but mostly in the capacity to structure the project financing, where the credibility and technical expertise for leveraging the financing of the project are essential. Since the creation of the concession program in Chile, sponsors have been requested to have both expertise and solvency.

Weaker sponsors affect the capacity to conduct project finance. In a number of countries in the region, sponsors as known in AEs have not developed yet. They are generally relatively small corporations or even physical persons, coming from traditional construction companies. In this regard, banks financing the project rely on letters of credit from other banks as a guarantee for their commitments. In some cases, sponsors need bank loans to fund the initial capital that the project requires.⁵³ In the presence of weak sponsors, banks are unlikely to conduct project finance and tend to request the same guarantees they would ask for under corporate finance. The problem is aggravated when the main shareholder of the sponsor is also the construction company with the EPC contract. In this case, banks would be confronted with choosing between lending to either the sponsor or the EPC company to avoid conflicts of interest. In countries with a small number of banks, this may prevent one of the two parties from obtaining financing because they will quickly fill in concentration limits.

⁵³ A similar situation happens with EPCs that require support or guarantees from banks.

3.3.4 Providing Advisory Services to Investors and Stakeholders

Many commercial banks offer advisory services to investors, sponsors, and public authorities on infrastructure finance. Banks can draw on their experience in feasibility assessment and financial analysis, trade credit, and international finance, as well as project development and management skills (including the negotiation and documentation of increasingly large and complex transactions).

3.3.5 Managing Special Purpose Vehicles (SPVs) or *fideicomisos*

In the LAC region, SPVs operate with a legal structure similar to a trust (*fideicomiso*),⁵⁴ which requires an independent trustee. Some banks may play this role, but in some jurisdictions, another institution may be in a position to be the trustee and to compete with banks. In the last few years, some financial markets have developed SPVs to enable private investors to provide financing for infrastructure and other long-term investments.

The roles listed above require two attributes from banks: “financial capability” and/or “project finance skills.” “Financial capability” refers to the ability of banks to assign a relevant amount of resources and in the appropriate term for project finance; “project finance skills” refers to the ability of banks to evaluate, assess, and monitor the project. Table 3.4 addresses the attributes needed for each potential role, classified in three levels (high, medium, and low). The table also shows what type of bank (according to its size) is more likely to develop each role.

⁵⁴ The *trust* concept derives from common law countries, which is not equivalent to civil code-type vehicles such as the *fideicomisos*. The difference relies on the understanding of fiduciary responsibility, which is a concept that is not legally binding in civil code countries.

Table 3.4: Roles and Attributes Needed and Bank Size

	Role	Attributes Needed		Banks More Likely to Participate	
		Financial Capability	PF Skills	Large	Medium/Small
1	Direct lending under project finance	High	High	■	
2	Promoting syndicated loans	Medium	High	■	
3	Financing or providing guarantees to the sponsor	Medium	Medium	■	■
4	Providing advisory services to investors and stakeholders	Low	High	■	■
5	Managing SPV or “fideicomisos”	Low	Low	■	■

Source: Authors' elaboration.

3.4 Basel III and Project Finance in the LAC Region

The question of the impact of the implementation of Basel III on infrastructure financing remains unanswered. Although Basel III represents a challenge for the banking industry and capital and liquidity requirements will be tightening, there is not enough information or evidence for assessing the impact of Basel III on the participation of local banks in project finance.⁵⁵ The Financial Stability Board report to the G20 in September 2014 highlights that it remains too early to fully assess the impact of regulatory reforms on the provision of long-term finance or changes in market behavior in response to these reforms.⁵⁶ More recently, in March 2017, the Group of Central Bank Governors and Heads of Supervision (GHOS), the oversight body of the Basel Committee on Banking Supervision, released a communication saying that the finalization of Basel III will take longer than originally

expected⁵⁷ Therefore, the revision of Basel III standards remains in process.

Although the impact of Basel III requirements on project finance is still unknown, four risk measures of the agreement have a potential impact on infrastructure financing. The first one is the liquidity coverage ratio (LCR), which will be more stringent with contractual “committed facilities” granted to project finance than for to type of financing. The second one is the net stable funding ratio (NSFR), which restricts the maturity mismatch for lending in tenors above one year. Under this provision, banks with limited access to medium/long-term funding would face strong restrictions to participate in project finance requiring long tenors. The third risk indicator relates to tighter limits for large exposures, which may limit the participation of relatively small banks in project finance, as projects are generally large. The fourth risk indicator is in the possible elimination of internal risk based (IRB) models for project finance. As external ratings may not be allowed or not be available, a more conservative capital provisioning may be applied. Table 3.5 shows in more detail the four principal risk

⁵⁵ See the appendix 2 for a more detailed explanation of the potential impact of Basel III on project financing.

⁵⁶ FSB, “Update on Financial Regulatory Factors Affecting the Supply of Long-Term Investment Finance,” http://www.fsb.org/wp-content/uploads/r_140916.pdf

⁵⁷ Basel documents under consultation are “Revisions to the Standardised Approach for Credit Risk,” second consultative document (Dec. 2015), and “Reducing Variation in Credit Risk-Weighted Assets,” consultative document (Mar. 2016).

Table 3.5: Potential Impact of Basel III on Project Finance

Subject	Related Basel Document	Basel Implementation Schedule	Potential Impact
Liquidity Coverage Ratio (LCR)	“Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools” (January 2013)	Came into effect in January 2015. Transitional arrangement before reaching full implementation in January 2019.	<p>To comply with this ratio, banks need to hold sufficient high-quality liquid assets (HQLAs) to meet anticipated outflows over a 30-day period of acute stress.</p> <p>For the calculation of LCR, contractual loan drawdowns from “committed facilities” to a SPV should be fully reflected as “outflows,” while for other types of credit facilities (such as corporate finance) only a proportion of it is reflected as drawn.</p> <p>Considering the frequent use of SPVs in project finance, it is likely that the LCR framework will have a more significant impact on project finance, compared to other types of financing.</p>
Net Stable Funding Requirement (NSFR)	“Basel III: The Net Stable Funding Ratio” (October 2014)	Will become a minimum standard by January 2018.	<p>NSFR is the ratio between the amount of available stable funding and the amount of required stable funding and should be kept equal or above 100 percent on an ongoing basis.</p> <p>It will have an indirect impact on the ability of banks to hold significant volumes of more than one-year term exposures.</p> <p>Project finance does not seem to be affected differently from any other corporate finance or consumer loans over one-year maturity. However, NSFR may impact negatively the ability of banks to participate in project finance.</p>
Large exposures	“Supervisory Framework for Measuring and Controlling Large Exposures” (April 2014)	Must be implemented in full by January 1, 2019.	<p>The 2014 Basel Large Exposures Framework prescribes a general large exposure limit of a bank at 25 percent of a bank’s Tier 1 capital. A “large exposure” is where the sum of all exposure values of a bank to a counterparty or a group of connected counterparties is equal to or larger than 10 percent of a bank’s Tier 1 capital.</p> <p>Originally, exposure limits were defined based on Basel I capital. In this regard, the new exposure limits are more restrictive, considering that they are set as a percentage of Tier I capital, which represents only a portion of a bank’s total capital. Even though this regulation is not specifically focused on project finance, it can be expected to have a more significant impact on these kinds of projects, given their nature.</p>

Subject	Related Basel Document	Basel Implementation Schedule	Potential Impact
Credit risk	<p>“Revisions to the Standardised Approach for credit risk,” second consultative document (Dec. 2015)</p> <p>“Reducing variation in credit risk-weighted assets,” consultative document (Mar. 2016)</p>	N/A	<p>The document “Revisions to the Standardised Approach for Credit Risk,” second consultative document (Dec 2015) establishes that:</p> <ul style="list-style-type: none"> ❖ When external ratings are available: the applicable risk weight to project finance would be determined as general corporate finance. ❖ When external ratings are not available or not allowed for regulatory purposes: project finance is treated differently (150% weight in the construction phase and 100% weight in the operational phase). <p>The document “Reducing Variation in Credit Risk-Weighted Assets,” consultative document (Mar. 2016) removes the IRB approach for project finance, leaving only the standardized approach and the supervisory slotting approach. In summary, if these proposals become effective, there would be three alternatives:</p> <ul style="list-style-type: none"> ❖ Standardized approach when external ratings are available and allowed: project finance will have the same risk weights as corporate finance. ❖ Standardized approach when external ratings are not allowed or not available: project finance will have higher risk weights than corporate finance (100% and 150%). ❖ Slotting approach: risk weights between 70% and 250%. ❖ The IRB approach will no longer be available. <p>Thus, new Basel standards may affect the participation of international banks in project finance in jurisdictions where external ratings are not allowed or not available, given that project financing may be costlier, especially during the construction phase, resulting in a lower appetite for project finance.</p> <p>However, the exact impact is still unknown, and documents are still under analysis within the BCBS.</p>

measures under Basel III standards that may affect project finance.

Understanding whether the impact of Basel III will shift the traditional way of infrastructure financing remains a relevant topic for designing infrastructure finance strategies in the future.

Although until now most of infrastructure has been supported with bank financing, in both the construction and operational phases, if Basel III makes it too expensive for banks to engage in long-term financing, it will be necessary to shift financing toward capital market financing, including bonds and infrastructure funds.

3.5 Conclusions and Public Policy Recommendations

The region presents in general limitations to have active foreign and domestic banks active in project finance for infrastructure. International banks are important for large projects generating part of their revenues in hard currency (e.g., airports, ports). Domestic banks would be critical to finance the local currency tranches of these projects, as well as to extend PPP programs to smaller national and subnational projects, broaden the range of sectors in the economy (e.g., roads, urban infrastructure), and reduce the currency mismatch of PPPs in certain sectors (e.g., energy). With the exception of Chile and Mexico, project finance has been relatively scarce in the region. Because most international banks provide lending in foreign currency, infrastructure projects from the nontradable sector are unlikely to receive financing from them. It is essential for domestic banks to develop expertise in a way that they can provide funding in domestic currency to PPP projects, whose tariffs are seldom indexed to foreign currencies, such as highways.

A greater presence and broader variety of foreign banks in PPPs in Latin America would have a leverage effect in the quality of financing structures, competition and the engagement of domestic banks. The first step is this

direction would be to have the PPP frameworks that attract high-quality foreign concessionaires (see Chapter 2), as they typically bring foreign banks to finance their projects. The latter, in addition to bringing competition and best practices in project finance, can transfer knowledge through partnerships with domestic banks, which in turn contribute with their experience in the domestic market.

The domestic regulatory framework needs to be prepared to adopt project finance as the main mechanism for infrastructure financing.

The main enabling conditions for project finance to become an effective mechanism for bank financing of infrastructure projects include (1) a solid PPP framework and a program of a well-structured pipeline of projects with fair risk allocation among stakeholders; (2) quality project sponsors with financial solvency and credibility; and (3) a domestic banking regulatory framework sensitive to project finance vis-à-vis corporate financing. As stated above, the presence of international banks can create competition and transfer project finance skills to domestic banks.

Although only large domestic banks would be able to have dedicated project finance operations, they could be critical in attracting other sources of financing. Even if the project finance segment grows significantly, it is unlikely that it will represent a large share of banks' assets. In the case of international banks, project finance represents rarely more than 3 percent of assets. So even in the best scenario, domestic banks financing will fall short of infrastructure needs in LAC countries. However, the role of banks would still be central in project structuring and financing certain segments of projects (e.g., tranches of the construction phase) that would be necessary to attract financing from domestic and international institutional investors.

Supervisors should pay special attention to consolidated supervision. The presence of a few economic conglomerates that control main companies in the productive and financial sector is common in the LAC region. Supervisors should monitor

the solvency of the banking sector, especially in cases where banks and concessionaries are part of the same economic group.

Policy makers should continue monitoring the potential impact of the implementation of Basel III on project financing. Although it has not been possible to fully assess the impact of the implementation of Basel III on long-term financing, policy makers should closely monitor future developments in this area. Considering that banks are the main financiers of infrastructure in the world, it is important to evaluate the scenario of a gradual reduction in the participation of banks in infrastructure financing. An eventual retrenchment of banks from project finance because of regulatory changes may require policy makers to look for alternatives. Some of these alternatives include reducing the portfolio of eligible projects, providing additional government support through subsidies and DFIs, and designing instruments to engage more actively institutional investors in the financing from the construction phase.

The main actions that can be taken by authorities to strengthen the role of banks in infrastructure finance in the LAC region are the following:

- ❖ Strengthen the PPP legal and institutional framework to attract foreign concessionaries and banks that can have a catalytic impact in improving the quality of domestic sponsors and financiers.
- ❖ Focus on comprehensive and well-articulated PPP programs with adequate levels of project preparation, instead of isolated PPP projects. This comprehensive approach may help to build a critical mass of projects for attracting the interest of foreign financiers.
- ❖ Strengthen the bank regulatory framework to encourage and allow banks to increase their commitment to project finance.
- ❖ Increase the capacity of domestic banks to participate in project finance structure for PPP projects. Partnerships of domestic banks with international banks or DFIs may help to foster this knowledge transfer.

Capital Markets and Infrastructure Finance

4.1 Global Trends in Capital Markets and Infrastructure Financing

4.1.1 Added Value of Capital Markets for Infrastructure Finance: Tenors and Competition

Since the 2008 financial crisis, governments have been increasingly looking to institutional investors to assist in financing public infrastructure. The sheer size of financing needed to fill the “infrastructure gap” has outstripped the funds available from commercial banks and sponsors, who have in the past provided most private sector financing. As a result, attention has turned to institutional investors to help fill the gap.⁵⁸ Such investing is expected to grow substantially in the future as institutional investor assets are increasing rapidly in Latin America and globally, new instruments are being developed that will make such investments more attractive to institutional investors, and governments are modifying regulatory guidelines for institutional investors to make it easier for them to invest in infrastructure.

⁵⁸ There is extensive recent literature on how to mobilize institutional investors to help finance public infrastructure. For a summary of how pension funds have invested in infrastructure in Australia, Canada, the European Union, the Republic of Korea, and the United States, see OECD (2011), *Pension Funds Investment in Infrastructure*, pp. 19–21.

However, long-term investors would be able only to complement, not substitute, traditional sources of financing from banks and sponsors. Although long-term investors can provide substantial volumes in long tenors, they are not the silver bullet to bridge the infrastructure financing gap. They can contribute to infrastructure financing in sizable volumes only by partnering with banks and sponsors that provide several skills and features that long-term investors generally lack. These include (1) highly specialized knowledge of project finance and infrastructure; (2) higher risk appetite and capacity to manage it, particularly in the riskier construction phase of projects; and (3) more flexibility in reacting to contingencies that all projects face that may lead to debt restructuring (e.g., delays, cost overruns).

The challenge lies in developing the instruments and vehicles that can lengthen tenors and increase competition at an acceptable risk-return profile for institutional investors. Even within these parameters, institutional investors are not a homogenous group, in both AEs and EMEs in terms of their risk appetite. This is why mobilizing long-term institutional investors requires working on a relatively large range of instruments with different risk, return, and liquidity profiles. These would include equity and debt, as both listed and unlisted instruments. Internationally, the largest share of non-bank financing for infrastructure comes from equity investments. This has been driven by the fact that

those investors attracted to infrastructure have had the highest risk appetite and therefore have sought to invest in equity with higher returns instead of debt. Additionally, before the financial crisis, there was a greater need for sponsors, and not so much from banks, to share the financing burden of projects. Sponsors required additional capital to broaden the number of projects in which they could participate. In the case of long-term debt from banks, it was only after the crisis that it became scarce or more expensive, depending on the region (see Chapter 3), opening up the opportunity to develop debt capital markets instruments in a systematic way. An unexpected turn took place in some AEs after 2012, as financial markets stabilized. When banks returned to lend to infrastructure, they started to compete with nonbank financing instruments, which in turn contributed to lower financing spreads.

4.1.2 Hybrid Capital Markets Instruments and Vehicles for a New Asset Class

The discussion on whether infrastructure can be considered and developed as a single asset class is still open given the diversity of the underlying assets and different risks depending on the phase of the project. However, to put the discussion in perspective, it is important to acknowledge that a unifying element in most infrastructure projects is that they are structured under project finance contractual arrangements. The latter

provides numerous features that make infrastructure an attractive investment for long-term investors. These features include an active, even intrusive, role for lenders in defining the financial structure of the project (e.g., debt-to-equity ratio, debt service coverage ratio), its governance (e.g., step-in rights), and protections (e.g., surety, termination rights). All these typical features of project finance are critical to back the stability of project cash flows that are behind the lower probability of default (PD) and lower loss given default (LGD) in infrastructure investments⁵⁹ (see Table 4.1). This is an important point to make, because project finance is less widely used in the LAC region relative to AEs, which limits important risk mitigation features that make infrastructure attractive to long-term investors. Additionally, long-term investors generally require inflation hedging through inflation-linked instruments, which are also limited to a few countries in LAC countries.

A number of intrinsic features of infrastructure assets are misaligned with traditional characteristics of capital markets instruments, particularly listed ones. The most important ones are (1) low liquidity; (2) lack of performance and valuation benchmarks; (3) the need of partial drawdown of funds in the construction phase of projects; and

⁵⁹ See Moody's report and Frederic Blanc-Brude et al., "Who Is Afraid of Construction Risk?" July 2013, EDHEC-Risk Institute.

Table 4.1: Infrastructure and Project Finance: What Makes It Attractive to Institutional Investors?

Source of Attractive Features for Long-term Investors	Infrastructure	Project Finance
Long-term tenors	✓	
High barriers to entry	✓	
High degree of regulation	✓	
Low correlation with economic cycle and other asset classes	✓	
Hedge against inflation	✓	
Stability of cash flows	✓	✓
Low agency risk		✓
Low probability of default		✓
Low loss given default		✓

Source: Authors' elaboration for illustrative purposes.

(4) a high probability of project contingencies that lead to renegotiate project covenants. All these features are obstacles to institutional investors, particularly pension funds that require mark-to-market valuation and lack the skills and institutional structure to negotiate with project sponsors. Additionally, project sponsors may have difficulty in dealing with the broader lender base resulting from capital market financing, especially when timely consents are needed to make changes in the project.

This may be a restriction for pension funds in the LAC region, because most of them are required by law to invest in listed instruments by regulation. However, market practices are gradually developing second-best solutions that make these problems manageable for investors (see Table 4.2) with two important outcomes. The first one is that investors are becoming more comfortable with lower liquidity as long as it is compensated with a yield premium. On one hand, this puts a limit on how much investors are able to allocate to infrastructure as a result of investment regulations or internal rules. On the other hand, it allows for more flexibility in the range of acceptable instruments for pension funds, including unlisted instruments that are potentially better aligned with the profile of the underlying infrastructure asset. Greater flexibility toward illiquid and unlisted instruments in investment regulations, while keeping prudent

limits, is very relevant for the LAC region, because most markets are still illiquid, particularly nongovernment bond markets. The second outcome is the development of hybrid structures and new players taking different roles to bridge the skills and risk gap institutional investors are facing. These new options are gradually developing in LAC countries with some promising experiences as explained below.

New vehicles and instruments are being developed and tested as alternatives to traditional listed capital markets instruments. A general trend is blurring the dividing line between pure banking and capital markets instruments to finance infrastructure, particularly in the debt tranches. Although listed project bonds are still growing in relevance, unlisted instruments such as private placement bonds and funds are becoming more widespread. There is also a trend among the more sophisticated and larger investors to reduce the degrees of separation between the instruments and the assets they invest in with the objective of increasing returns through lower intermediation costs and higher liquidity premiums. In some cases, this means investing directly in the equity and loans of infrastructure projects. The next section will discuss these instruments in more detail and their potential to become mainstream instruments in the LAC region.

Table 4.2: Challenges in Financing Infrastructure with Capital Markets Instruments

Feature	Possible Solutions/Investor Trade-off
Low liquidity	Yield pickup
Low degree of instrument standardization	Hybrid structures
Voting rights in event of project contingencies	"Deemed consent" to special agent with thresholds
Controlling creditor	Third party agent
Unsuitability of disclosure regime	Creation of a special disclosure regime and role of credit ratings
Low degree of information standardization	Initiatives to standardize information disclosure
Higher than acceptable credit risk	Public and private sector risk mitigation
Lack of market for valuation	Valuation methodology as alternative asset
Lack of performance benchmarks	Development of benchmarks over time

Source: Authors' elaboration for illustrative purposes.

4.2 Capital Markets Instruments for Infrastructure Finance in LAC Countries

Nonbank financing of infrastructure in LAC countries is still very small, reflecting shortcomings of PPP frameworks and of domestic capital markets as a source of long-term financing.

Instruments issued offshore, such as project bonds issued under 144A or as Reg D private placements, are more important than domestic financing. This is a positive sign showing the investment appetite from international long-term institutional investors in the region's infrastructure. However, it also reflects the fact that currently capital markets solutions for infrastructure finance are mostly available for projects of a relatively large size that can be financed in hard currencies.

With some exceptions, most projects that have been financed through capital markets in LAC countries are dependent on the government taking a large share of the risk. This is in part related to the shortcomings of PPP frameworks described in Chapter 2, as well as the lack of appropriate tools in the financial sector to manage project risks (e.g., project finance frameworks). The most successful instruments from the perspective of investors have been the so-called "structured sovereign bonds," where the debt service is a quasi-sovereign obligation detached from the risk of the underlying project (see details below). The latter has led to the government taking on most of the project risks, resulting in many cases in overall higher project costs.

However, numerous new instruments are being tested as PPP frameworks evolve toward a more symmetric risk allocation model between the private and the public sector. Countries pioneering these new instruments are Colombia and Mexico. So far, there are no clear signs of a particular instrument becoming dominant. The most probable outcome is that a range of different instruments will coexist to address different financing needs depending on the nature of the project (e.g., size, sector, currency), its risk profile, and project

life cycle (e.g., greenfield, brownfield). The most promising instruments are still being tested. Most instruments seem to go in the direction of hybrid solutions that do not fully fit the profile of traditional listed securities markets instruments. This is a very important feature for the LAC region, because it may mean that all the standards of a developed capital market may not be needed for these instruments to thrive.

This section has two main subsections. The first discusses the instruments being tested in the LAC region by presenting, first, a short introduction on how these instruments are being used in AEs, followed by an assessment of the most relevant experiences in the region.

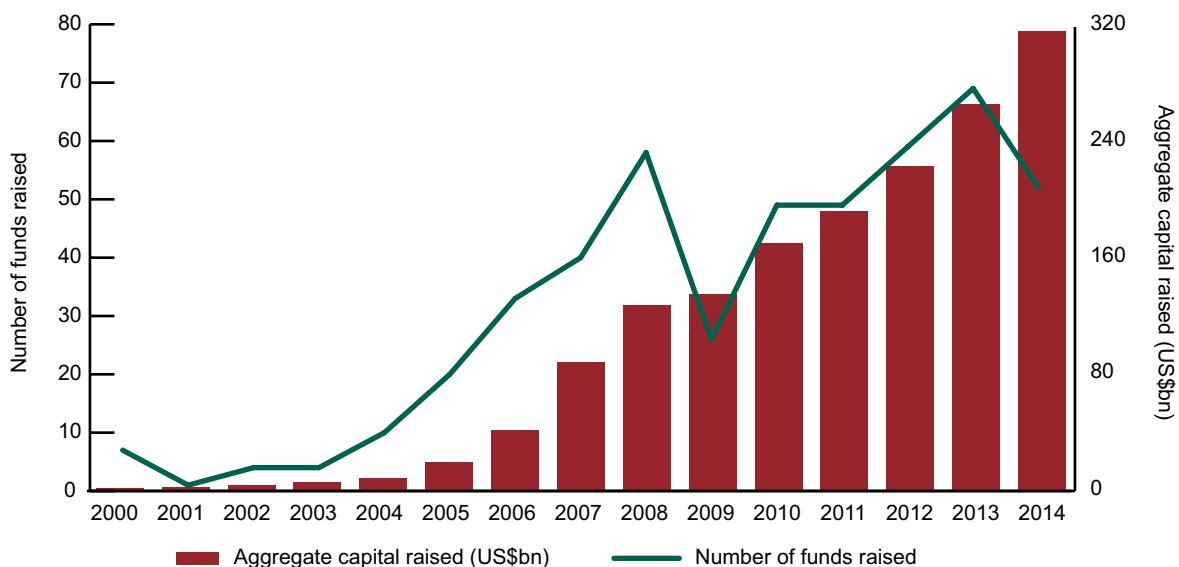
The second section will present the stage of development of capital markets in LAC countries with an emphasis on those features that seem to be more important to support the types of instruments and vehicles that are being developed. This involves an important shift from traditional ideas of public and liquid securities markets into private or hybrid capital markets structures where liquidity and information disclosure take a different form.

4.2.1 Capital Market Innovations for Infrastructure Finance in the LAC Region

4.2.1.1 Infrastructure Funds for Equity and Debt Financing

International Developments

Listed and unlisted infrastructure funds are among the most widespread capital markets vehicles investing in infrastructure. From being almost nonexistent in 2001 they had an impressive growth over a 10-year period, reaching around US\$320 billion in 2014 (see Figure 4.1). Among investors there is a preference for unlisted funds because they have more flexibility in terms of the instruments and assets in which they can invest. Disclosure regimes of publicly listed funds can be an obstacle for some projects where confidentiality of information is important. Equity funds have

Figure 4.1: Ten-Year Growth in Infrastructure Funds under Management

Sources: BlackRock, 2015; Prequin, Infrastructure Investor.

Note: Aggregate capital raised (right scale) is cumulative, while number of funds raised (left scale) is presented on a year-by-year basis.

taken the bulk of growth, but debt funds are recently becoming more important.

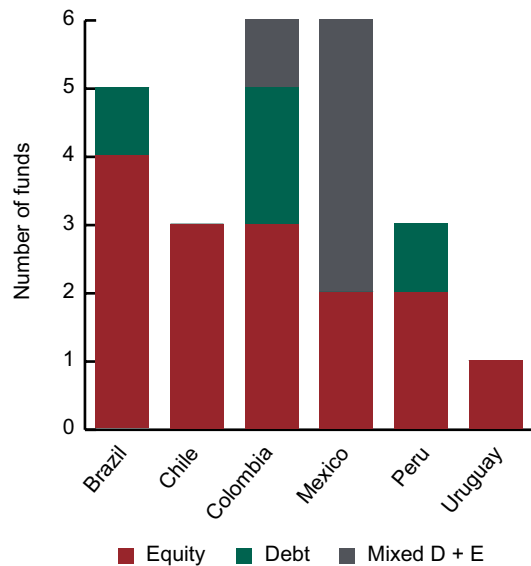
The post-crisis scenario is favoring a shift toward infrastructure debt funds as banks are shortening loan maturities. These funds are generally part of bank syndication or club deals for both greenfield and brownfield projects, usually taking longer maturities and, in some cases, subordinated debt. Debt funds enable long-term investors, such as pension funds and insurance companies, to access complex debt transactions that can be tailored to their specific risk-return profile. Investment and risk management skills that are expensive and time consuming to build are outsourced to an experienced third party. Infrastructure debt funds can be complemented by lower risk infrastructure project bonds. However, the former have the potential to become more important given their flexibility and higher risk-adjusted returns. Most debt fund investments have taken place in AEs, but interest in investing in EMEs is increasing.

Most infrastructure funds follow the private equity (PE) model, which has raised concerns

about conflicts on the alignment of interest between managers and investors. The main issues raised are the shorter tenors and high administration fees of traditional PE funds.⁶⁰ Additionally, concerns over principal/agent issues have been raised about managers not always selecting the best investments for the funds and taking a profit through fees on AUM even if investors are taking a loss when investments underperform.⁶¹ As a result, some investors have taken the initiative of developing collective investment platforms in which they can have a greater say in fees and investment teams.

⁶⁰ The investment horizon of a PE fund is around 10 years, compared to a minimum of 20 years for pension funds and insurance companies. Fees follow the traditional 2/20 PE structure: a 2 percent fee on assets under management and a 20 percent fee on profits.

⁶¹ The more common type of infrastructure fund today has a short-term life, uses debt for leverage, and does not produce the benefits of infrastructure investing that most institutional investors are seeking. High fees and misalignments of interest have also made many institutional investors wary of such funds. See Lawrence and Stapledon (2008), *Infrastructure Funds: Creative Use of Corporate Structure and Law—But in Whose Interests?*

Figure 4.2: Infrastructure Funds in LAC, 2016

Source: Infradeals.

LAC Developments

Infrastructure funds have developed unevenly in LAC countries with equity funds having the longest track record. With the exception of Mexico and to some part Chile,⁶² equity funds are unlisted and operate as PE funds. Most of the investors in unlisted funds are high-net-worth individuals or non-residents. Only in Peru have they mobilized pension fund investments but not in relevant size (see Figure 4.2). A major concern is their PE structure resulting in short tenors and high fees that do not fit the longer tenors, and stable but lower returns of infrastructure assets. Another constraint to address is the limited number of managers with experience and skills in infrastructure finance. However, the supply of managers is expected to increase with demand for these services and potentially public policies to support their development.

Infrastructure equity funds are a dormant opportunity in the LAC region that could address some of the size and competition constraints among domestic sponsors. As explained in

Chapter 2, potential sponsors in LAC are too few and small, with some exceptions with respect to size in the larger countries such as Brazil and Mexico. This has several negative consequences. Sponsors can afford to bid only on a limited number of projects, which reduces competition. Additionally, in most cases, sponsors need banks to finance their equity in the project SPV. This increases the financial cost of the project, and it also impacts banks in two ways: their lending capacity overall and their concentration limits on sponsors. An active equity market for project SPVs through infrastructure equity funds mobilizing long-term investors has the potential of creating a virtuous circle. Sponsors' financial costs could be considerably alleviated, stress on banks' concentration limits would be reduced, and more opportunities would arise for sponsors and banks to compete in a larger number of projects. These dynamics would be effective only if the governance, tenor, and fee limitations in infrastructure funds, mentioned above, are addressed (see Box 4.1 on an equity fund in Chile).

Mexico has the largest number of infrastructure equity funds in the LAC region. A special type of listed funds, called CKDs, was created in 2009 for private equity, real estate, and infrastructure assets, because Mexican pension funds can invest only in listed instruments by law. Their regulations and governance structure have improved over the years, and as of year-end 2015 infrastructure funds reached US\$3.2 billion, representing 30 percent of total CKDs. The CKDs are very specific to the Mexican context. However, they illustrate three important positive results of equity funds relevant for other LAC countries, with the understanding that other legal structures may be more suitable, depending on the country: (1) they have opened up the opportunity for pension funds to invest in the equity of greenfield or brownfield infrastructure projects with higher yields than project bonds; (2) they are increasing the leverage capacity of project sponsors and developers allowing them to invest in a greater number of projects; and (3) they are in the process of establishing joint ventures with other investors adding expertise in infrastructure finance. A breakthrough example of the

⁶² In Chile pension funds can invest only in listed infrastructure funds or, alternatively, in funds that comply with certain disclosure requirements that are equivalent to those of listed funds.

Box 4.1: Equity Fund Las Americas III in Chile

In July 2011, the Public Investment Fund *Penta Las Americas III* was created. The asset manager defined the following objectives: (1) invest in infrastructure assets in development or operational stage; (2) at least 60 percent of the assets will be located in Chile; (3) the fund will have a total life of 19 years, separated into an investment stage (four years), a stage for projects maturity (11 years), and a liquidation stage (four years); (4) leverage of the fund will be limited to 50 percent (liabilities over equity); and (5) the fund will distribute at least 50 percent of the net income, after finishing its investment stage.

In September 2011, the fund invested in 33 percent of *Sociedad Concesionaria Autopista Antofagasta*, a project led by Skanska (Sweden). This partnership was to be regulated by a Shareholders' Agreement. The project consisted of the rehabilitation, improvement, and expansion of 201 kilometers of a highway in Antofagasta. This project is related to a concession awarded in April 2010, with a time length of 245 months. The total investment was UF 7.45 million and was funded by a syndicated loan provided by Santander, Corpbanca, BBVA, and BCI banks.

In September 2012, the fund acquired 100 percent of the *Variante Melipilla* and *Ruta Interportuaria Talcahuano* concessions projects from Besalco (Chile) paying

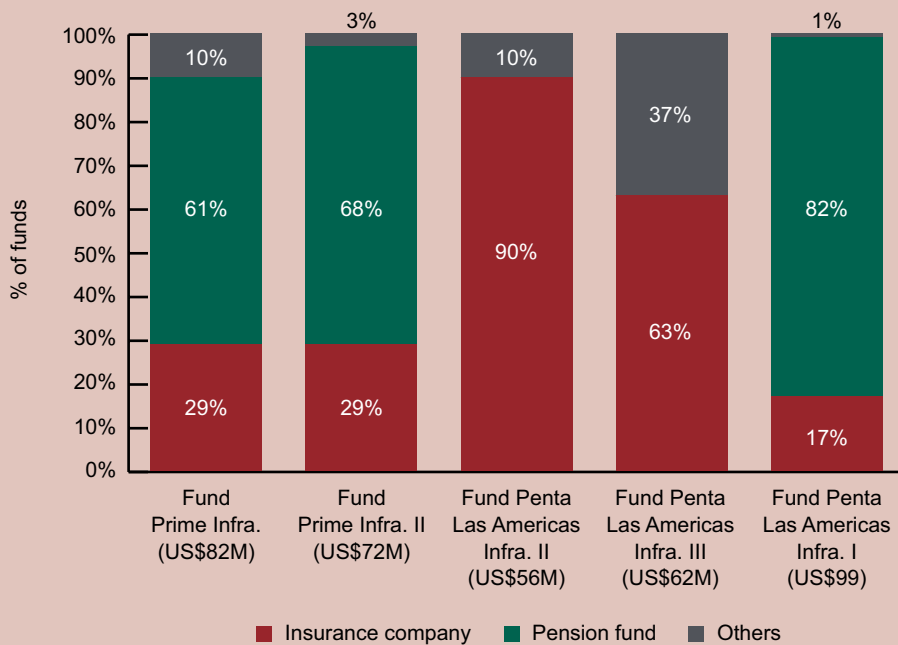
UF 1.96 million. *Variante Melipilla* is a toll road concession awarded in 2003, with a time length of 30 years and implying an investment of UF 892,860. *Ruta Interportuaria* is a toll road concession awarded in 2002, with a time length of 31.5 years and implying an investment of UF 946,700.

In October 2012, the Fund acquired 29 percent of *Ruta el Canal*, a toll road concession project between Puerto Montt and Parga. The Concession Holding Company is controlled by ACS (Spain). This concession was awarded in February 2010, implies a total investment of UF 4.33 million, and has a time length of 40 years.

In 2014 the fund had assets up to US\$62 million, and leverage of 5 percent liabilities over assets. The ownership structure is dominated by insurance companies related to the annuities business. Insurance companies, as well as pension funds, are prohibited from investing in the equity capital of unlisted companies. On the other hand, they cannot hold more than 35 percent of the total shares issued by a fund (or corporation). To offer exposure to the infrastructure business, asset managers created this type of public fund that buys pools of projects. Pension funds and insurance companies can buy shares of public funds as long as they comply with the following conditions: they are based in countries with an investment grade rating, they operate under the laws

of a country with a credit rating of AA or higher, the asset manager is responsible for AUM over US\$10 billion across all funds, and funds make a reasonable valuation of their assets periodically.

An interesting aspect of public investment funds is that fund managers are designated by the owners of the funds. For example, in May 2015, pension funds decided that the Investment Fund *Penta Las Americas I*, would no longer be managed by Penta Asset Management and would be replaced by BTG Pactual as a new fund manager.



last is the joint venture between a CKD comprising four Mexican pension funds on one side and *Caisse de Dépôt de Québec* in another PE-type vehicle (see Box 4.2). Two other listed funds have recently been created: the CerPI, a version of CKD with a structure closer to PE funds, and the FIBRA E, a REIT-type fund for mature energy projects. Both types of funds are still going through the market test after initial launches in the fourth quarter of 2016.

Listed funds, such as the CKD, may have limited growth potential as a result of their disclosure regime, which is typical of public offerings. This may keep them outside certain important infrastructure investments with commercially sensitive information. Therefore, consideration should be given to allowing pension funds to invest in private placement vehicles with lower operational costs and disclosure regimes aligned with infrastructure projects, as long

Box 4.2: CKD Infraestructura México: A Partnership with a Long-term Foreign Institutional Investor in Local Currency

CKD Infraestructura México, SA de CV is a recent and innovative example of how CKDs can be used for investing in infrastructure. This investment platform was launched in late 2015. Caisse de Dépôt et Placement du Québec (CDPQ) joined a consortium of five Mexican investors—FONADIN, Pensionisste, and the three largest Afores—in investing in the platform. CDPQ holds a 51 percent interest in the coinvestment vehicle and is the controlling manager. CKD IM, whose shares are listed on the Mexican Stock Exchange, holds the remaining 49 percent.

the expertise of infrastructure investment teams from CDPQ. This platform will allow the Mexican investors to benefit and learn from CDPQ’s infrastructure investing expertise. It will give CDPQ local intelligence and deal access and probably some political risk protection.

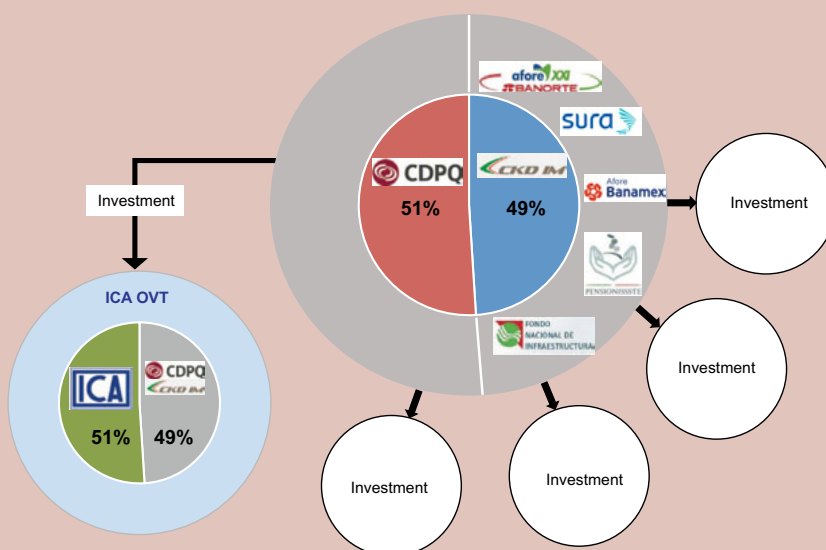
CDPQ is a Canadian long-term asset manager for Canadian pension funds and insurance companies with around Can\$250 billion AUM invested globally. A specific investment team has been appointed to manage the Mexican investment platform, but it will also draw from

The platform plans to invest up to Mex\$35.1 billion (US\$2 billion) in Mexican energy and transportation projects and has an investment horizon of 50 years. Planned investments will be in equity in brownfield projects with stable cash flows in local currency. This reflects CDPQ’s willingness to assume exchange rate risks and manage these on a portfolio basis, which is facilitated by three factors: (1) the indexation to inflation of the projects revenues; (2) the long-term horizon of investments; and (3) the diversification of the portfolio at a global level.

Investments are planned as joint ventures with an infrastructure operator that has “skin-in-the-game” and is responsible for managing the infrastructure assets. The first investment has already taken place in an SPV managing four mature toll roads, in partnership with the Mexican construction company ICA (see diagram).

Although this is a single operation at an initial stage, it shows a possible option to address several obstacles long-term institutional investors in Mexico are facing: (1) knowledge transfer from a highly specialized international assets manager and (2) a vehicle with a partner with aligned interests regarding fees and investment horizon.

New Coinvestment Platform in Mexico



Source: Staff elaboration with inputs from press releases and interviews with representatives from CDPQ, SURA, Banorte, Banamex, and Fonadin.

as several governance conditions are met. These would include standardized and neutral valuation methodologies equivalent to those of listed products and rules governing potential conflict of interest in investments and prudence in investment decisions and risk profiles. Chile has a relevant track record of allowing listed and unlisted infrastructure funds with equivalent governance rules.

Infrastructure debt funds are in their infancy, recent relevant and promising examples have been used in Colombia and Peru. In Colombia, debt funds were developed to address two major obstacles faced by domestic pension funds to invest in greenfield bonds under the 4G toll road program. The first one was the cost of carry for the sponsor during the construction phase, because under Colombian legislation pension funds can precommit future funds only for private equity and not for bonds. The second obstacle was the lack of skills in investing and managing infrastructure risks. Two funds were created in 2015, one of which has successfully invested in a hybrid financial structure in a 4G project (see Box 4.3 on *Pacifico Tres*). In Peru, a debt fund was created in 2015 targeting pension funds, and the expectation is that more funds will be developed in the short term. Their objective is

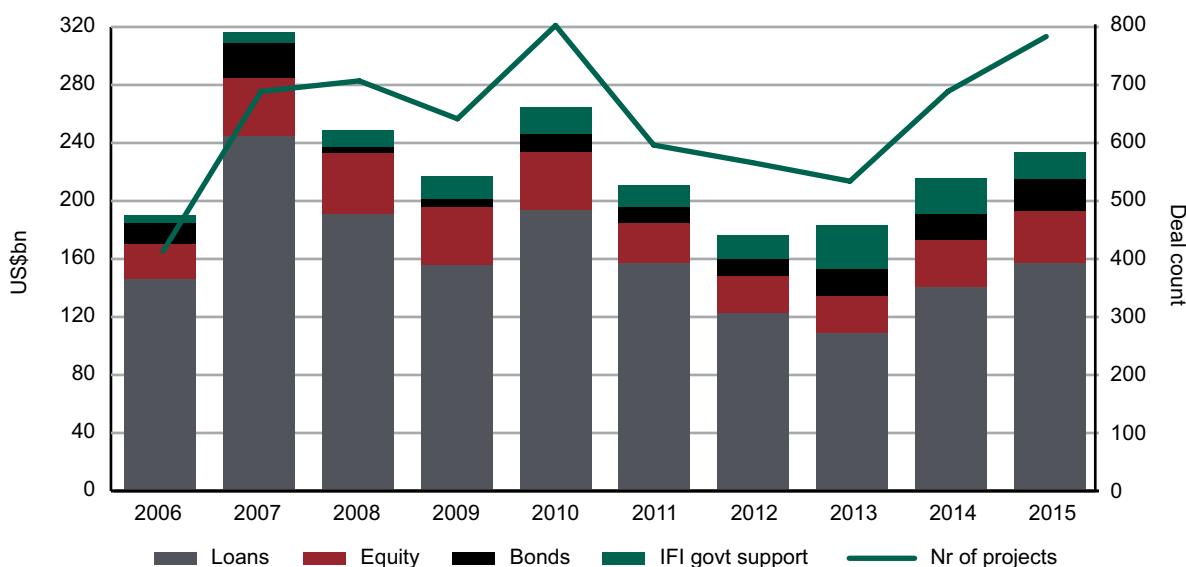
to invest in both greenfield and brownfield senior and subordinated debt. The model followed in both countries is coinvestment with a general partner (GP). A very relevant aspect in the case of the Peruvian fund is that it is targeting investment opportunities with a higher risk profile than the traditional “structured sovereign bond” model where most PPP risk lies with the government. This type of fund would create an important investment vehicle for the new generation of projects planned under the recent PPP reforms in Peru, where the private sector is expected to take a greater share of the risk (see Chapter 2).

4.2.1.2 Project Bonds

International Developments

Project bonds as a proportion of total infrastructure lending are still small at around 9 percent of total debt as of year-end 2015. Although their growth has been steady for the past four years, they are still a small complement to bank financing. The market is now above precrisis levels (see Figure 4.3) on a global basis. Before the 2008 crisis, projects bonds were an important source of infrastructure financing in several AEs and in some EMEs, given the role of monoline insurance

Figure 4.3: Project Bonds in Relation to Total Lending to Infrastructure, 2006–2015



Source: IJGlobal.

companies in providing full financial guarantees for senior debt. The full guarantee provided by monolines enabled project bonds to have the same AAA rating as the monolines. When the monolines credit ratings were downgraded, as a result of their engagement with subprime lending products, infrastructure project bonds were also downgraded to the new rating of the monoline securing it, or to the rating of the underlying project, whichever was higher. In the new context, the business model of project bonds based on the monolines' full guarantees was no longer viable. More recently, although monoline guarantees are beginning to be used again for projects in the AEs, they are not available for projects in the emerging markets.

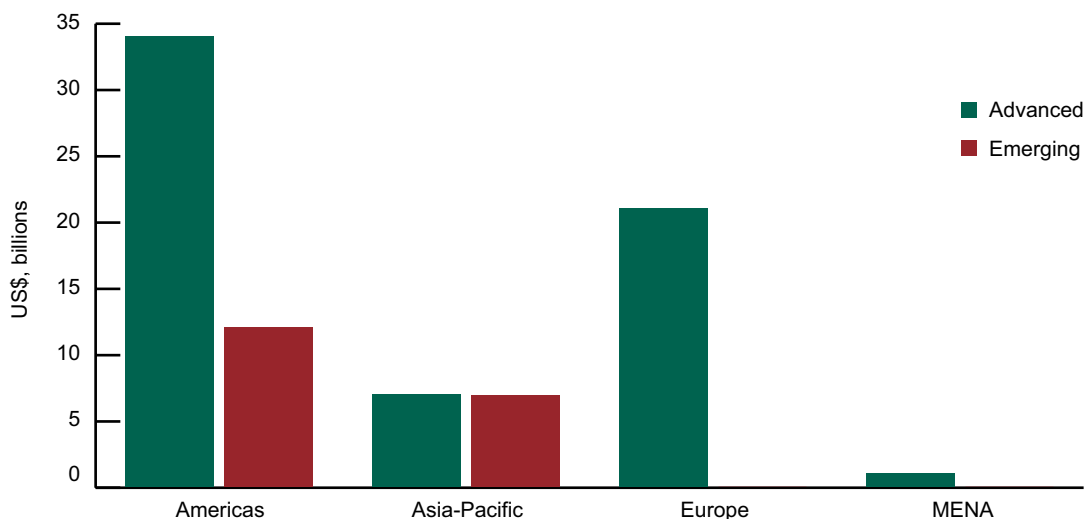
Several initiatives supported by governments have taken place in AEs to develop new types of project bonds, mostly in the United States and Europe. Project bonds, at least in their initial stages, require some kind of public sector support to reach a risk-return profile that is acceptable to the broader long-term investor base. Several public initiatives are providing risk-sharing arrangements by the government or a specialized agency. In the United States, the federal government TIFIA loan program has encouraged bond market solutions for transport projects by providing complementary concessionary lending for up to 33 percent of eligible

project costs. The United States has also put into place private activity bonds (PABs), with special financing benefits, such as federal tax exemptions, which reduced lending costs. In Europe, several initiatives are testing various innovative approaches to support the development of infrastructure project bonds. The Treasury of the United Kingdom has launched the PFI 2 Program, which includes different types of government support that encourage the use of capital markets financing. In the European Union, the Project Bond Credit Enhancement Initiative (PBCE) offered, through the European Investment Bank (EIB), first loss credit enhancement for project bonds in the form of a letter of credit, which can be drawn if the cash flows generated by the project are insufficient to ensure senior debt service, or to cover construction cost overruns. Both greenfield and brownfield projects can be financed under this scheme. This model is also encouraging the development of project bonds generally outside the support of the EIB.

LAC Developments

Latin America is the region, among EMEs, with the largest volume of project bonds (see Figure 4.4). Before the crisis, during the late 1990s and early 2000s, Chile successfully used project bonds to finance roads. They were indexed-linked

Figure 4.4: Project Bond Volume by Region



Source: IJGlobal.

bonds issued in the domestic market and were fully guaranteed by the monolines. After the crisis, the most important experiences regarding the use of project bonds include Brazil, Colombia, Mexico, and Peru. Additionally, some small but relevant experience with project bonds can be found in smaller LAC countries, particularly in those with pension funds with sizable assets compared to the size of the economy.⁶³ Depending on the country and risk profile, LAC experiences with project bonds can be classified into three groups: (1) structured sovereign bonds; (2) offshore project bonds, mostly in hard currency; and (3) onshore project bonds in local currency.

Structured sovereign bonds are an onerous financing instrument for governments but can be useful to start building market trust. These bonds were mostly developed in Colombia and Peru:⁶⁴ As a particular project reached certain construction milestones, the government issued certificates to the construction company with an unconditional and irrevocable payment obligation. These certificates were then securitized and sold to domestic and foreign investors.⁶⁵ Under this arrangement the government takes most of the underlying project risk, including construction and performance risk, so the certificates become “de facto” a quasi-sovereign instrument. They have been very effective in raising private sector financing and in building a track record of exposure to infrastructure by domestic pension funds and international investors, particularly in Peru. However,

⁶³ Project bonds have been issued in other smaller countries in Latin America such as Costa Rica and El Salvador. In these cases, the construction, expansion, and/or maintenance of specific public infrastructure (such as electric plants, maintenance of roads, or the expansion of an airport) have been financed directly in the capital markets by project bonds whose interest and principal is serviced by future flows generated by the infrastructure project and/or a tax associated to it. None of these cases involved a PPP but shows the potential of heterodox country specific solutions to engage the private sector in infrastructure finance.

⁶⁴ Paraguay has recently developed a similar model that is being used to finance its airport and a few signature road projects.

⁶⁵ Fitch, September 23, 2014, “Understanding Government-Backed Securities in Latin America,” Special Report.

the model is not fiscally sustainable on a permanent level and does not provide the incentives for the private sector to take responsibility for the quality and cost of projects, as explained in Chapter 2.

Offshore bonds are the most common type of project bonds in the LAC region as a result of shortcomings in local currency bond markets.

With some exceptions, the institutional demand and the market infrastructure for nongovernment bonds are too shallow to absorb these issues or to provide competitive pricing. Most bonds are U.S. dollar denominated, which limits this source of financing to projects with hard currency revenues (e.g., airports, energy exporters) or to the capacity of sponsors and/or governments to take currency risk. Although most bonds are issued to finance mature projects after construction, some have been issued to finance greenfield projects.⁶⁶ An interesting recent development, which could set a precedent, was a hybrid structure in Colombia for a greenfield toll road project where two project bonds were issued; one was an offshore U.S. dollar-denominated bond, and the other was an offshore indexed linked bond in local currency (see Box 4.3 on *Pacifico Tres* and *Costera*).

Onshore project bonds in local currency are still scarce in the LAC region, but could be considered the next frontier in capital markets development. Markets in the region that have been successful in developing relatively efficient government bond markets can be expected to also develop the conditions for listed and unlisted infrastructure project bonds to thrive. Foreign investors could be potential investors in domestic bonds, provided that minimum regulations facilitating capital flows and certainty of creditors’ rights were in place (see discussion below). Mexico is the most relevant example of this potential, with domestic project bonds accounting for around US\$9 billion as of year-end 2015, the largest among EMEs. With some exceptions, Mexican project bonds have the features that could be expected to be developed in

⁶⁶ Examples of greenfield projects include *Rutas de Lima* and *Eten*.

Box 4.3: 4G Project Bonds in Colombia: Pacifico Tres and Costera—An Example of a Multiproduct Transaction: Project Bonds and Infrastructure Funds

Pacifico Tres and *Costera* are the first two Colombian 4G highway projects that obtained initial financing in 2016 by issuing project bonds in both local and hard currencies (144A/Reg S dollar-denominated bonds listed on the Luxembourg Stock Exchange). The projects were also financed by loans and equity: 43 percent bonds, 34 percent loans, and 23 percent equity in the case of *Pacifico Tres*.

These projects present several innovative features:

- ❖ They are greenfield projects with a majority of the debt financing raised from pension funds, through either project bonds or debt funds. In the case of *Pacifico Tres* 73 percent of total debt came from the capital markets, and in the case of *Costera* 62 percent.
- ❖ They are examples of a hybrid project financing model that is gaining increasing popularity, mixing bank loans at shorter maturities (12 years) and debt fund loans and project bonds at longer maturities (19 years).
- ❖ A partial financial guarantee covering all debt was necessary to match the market risk appetite.
- ❖ International investors participated in both the U.S. dollar-denominated bond as well as the local currency bond.
- ❖ Voting on control issues by bond holders follows a “deemed approval process,” which is increasingly used in the LAC region.

The greenfield project loans and bonds in U.S. dollars and Colombian pesos (COPs) obtained the same investment grade in the global rating scale (BBB minus on the global scale from Fitch Ratings) and national scale ratings (AA+). Such high ratings were made possible by several features: fixed-price; date-certain EPC contracts; low exposure to revenue risks due to government availability payments; and a COP-denominated revolving Subordinated Multipurpose Facility (SMF) equal to 15 percent of outstanding senior debt. The SMF mitigates liquidity/budgetary risk, construction delays, and temporary liquidity due to low traffic performance. The bonds also featured strong structural features including multiple reserve accounts and a cash sweep mechanism. All debts are fully amortizing and senior secured.

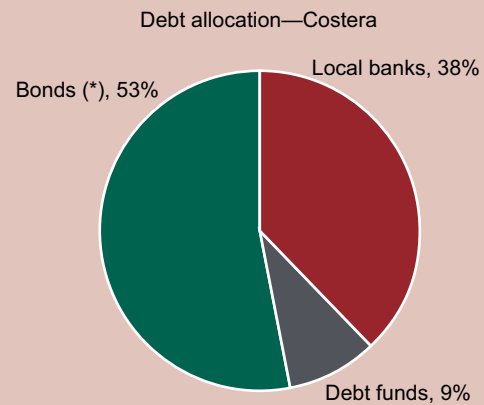
The SMF functions in a way similar to the EIB’s PBCE and is provided by *Financiera de Desarrollo Nacional (FDN)*, a quasi-public infrastructure finance bank. Given the unfamiliarity of Colombian institutional investors with

infrastructure project finance and the lack of experience with the new 4G concession model, the SMF played a critical role in making investors comfortable with these projects.

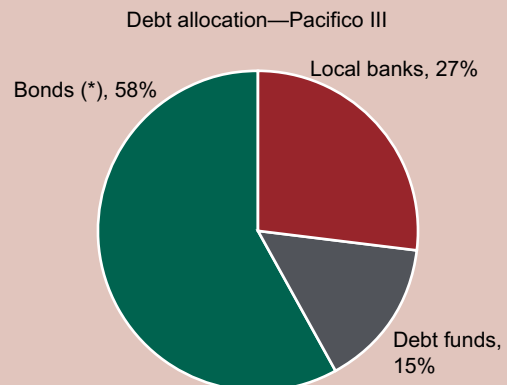
Tolls on the completed roads are annually adjusted at the beginning of the year by the inflation rate. Toll rates are moderate. Should the net present value of toll collections received by the eighth, 13th, 18th, and last year of the concession be below guaranteed values, ANI has the obligation to cover any shortfalls, after deductions for failure to meet availability, service level, or quality standards specified in the concession agreement. Such deductions are capped at 10 percent.

The U.S. dollar-denominated bonds have matched U.S. dollar-linked currency revenues (provided by the government of Colombia) settled in COPs and issued at a fixed rate. Thus, bondholders are not exposed to exchange rate risk. The COP-denominated bond payments are indexed to inflation using as reference the *Unidad de Valor Real (UVR)*.

Pacifico Tres with Debt Distribution



Costera with Debt Distribution



(*): 55% USD, 45% COP

Source: FDN

other LAC markets. They generally refinance projects after the construction phase at lower rates, and many of them have credit enhancements provided by Banco Nacional de Obras y Servicios Públicos (*BANOBRAS*) or Fondo Nacional de Infraestructura (*FONADIN*) (around 26 percent), because the market requires credit ratings of AA or above. Pension funds and insurance companies are the main holders of these bonds. They are also illiquid, but this should not be considered a drawback, because it is a common feature even in developed markets, and it provides a yield pickup to long-term investors.

Project bonds can contribute to lower the cost of financing and lengthen maturities of infrastructure projects, despite some drawbacks.

They can be very valuable in LAC in select greenfield projects and in most brownfield projects of a relatively large size. In greenfield projects, they can complement hybrid structures that include bank lending and debt funds. For example, in Colombia their added value has been competition resulting in lower pricing and 19-year tenors to complement bank loans offering only 12-year tenors. In brownfield projects, they can substantially lower the sponsor's cost as a refinancing option and allow banks to recycle their capital into other projects in their riskier but more profitable construction phase. A number of features still remain a challenge in project bonds that need to be addressed (see Table 4.2). The most relevant ones include the need to develop standardized structures that fit the diversity of underlying projects, the role of a controlling creditor to address project contingencies, the disclosure regime, and the need to develop credit enhancement instruments that could be phased out as the product and investors mature.

4.2.1.3 Direct Investments in Equity and Loans: Attracting International Investors

Although direct investments stretch beyond traditional capital markets instruments, they are still an important source of disintermediated financing to mobilize institutional investors.

Their global size was estimated at approximately US\$700 billion as of year-end 2013. For the

purpose of this section direct investments are defined as those where the institutional investor or asset owner has a direct role in deciding in which assets to invest.⁶⁷ In most cases, this modality of investment developed as a result of a misalignment of interests between investors and managers in relation to investment horizons, fees, and, in some cases, a principal-agency conflict, explained in the infrastructure fund section. Three models have developed depending on the sophistication and size of the investor: (1) solo direct investments; (2) partnership and coinvestment platforms with other investors and/or an asset manager; and (3) a delegated mandate but with discretion on which investments are chosen. Given the illiquid nature of these assets, investors under these structures have long-term investment horizons, such as defined benefit pension funds, life insurance companies, sovereign funds, and family offices. Most of their investments are in infrastructure assets in developed markets. However, with compressing yields globally there is a trend by some investors from AEs to gain exposure to brownfield equity infrastructure assets in EMEs that provide stable inflation-protected revenues.

Direct investments from foreign investors can become very relevant for LAC countries as a potential source of financing in both hard and domestic currency. They can be beneficial to both the larger countries with domestic investors as well as to the smaller countries with less developed financial systems. In the case of the larger countries, foreign direct investors are expected to partner with local investors with the local knowledge and networks that are so important in infrastructure finance. Additionally, they can be a solution to some of the misaligned interests between investors and managers explained above, which are also present in the infrastructure funds developed in the LAC region. Coinvestment models and participation of investors in investment decisions are common in some countries (e.g., Mexico). Additionally, direct investments from international investors could be a

⁶⁷ The factual information in this section was taken from WEF-Oliver Wyman (November 2013), "Direct Investing by Institutional Investors: Implications for Investors and Policy Makers."

relevant option for signature projects in the smaller countries with limited financial systems. In these cases blended finance with concessional financing or partial guarantees may be needed. The *Autopistas del Atlántico* toll road project in Honduras where debt was directly financed by two institutional investors in 2014, with a MIGA guarantee, is an example of the options available to the smaller economies.⁶⁸

4.3 Minimum Capital Markets Prerequisites for Infrastructure Finance in the LAC Region

4.3.1 Capital Markets Stage of Development

Although full-fledged liquid capital markets are desirable, they are not indispensable to develop disintermediated instruments and vehicles to finance infrastructure. This is related to two important features of the instruments that are being developed both in AEs and EMEs. The first one is that an important share of these instruments are unlisted funds or bonds requiring relatively light formal capital markets frameworks. The second feature is the fact that illiquidity is generally not an obstacle but a desired characteristic for investors, as long as it is offset with a yield premium. Most of the investments in infrastructure are valued because of their long tenors and the stability of cash flows. Therefore, typical investors in infrastructure are not seeking liquidity.

Infrastructure finance could trigger a virtuous circle in the development of deeper nongovernment bond markets in the LAC region. Some of the obstacles that have limited the development of nongovernment bond markets are opportunities in the infrastructure financing space. Although the availability of domestic banks financing to private companies has kept them away from accessing the local capital market, this is not the case for infrastructure projects. The size and tenors needed in

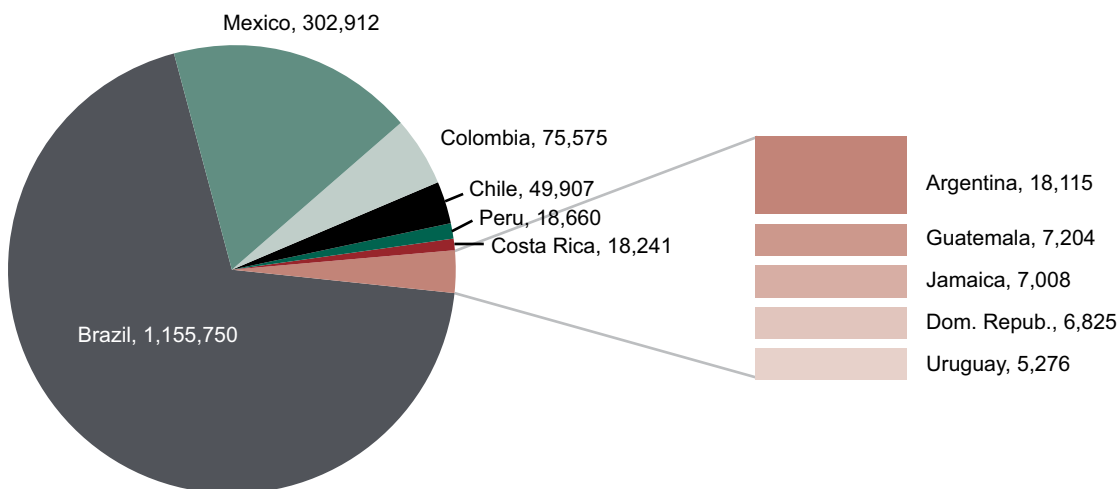
infrastructure projects are beyond the capacity of domestic banks in the LAC region (see Chapter 3). If they are to have a relevant role in infrastructure finance, they need to be complemented, in addition to international capital, by the domestic capital market. When the enabling conditions are in place, infrastructure projects can provide a supply of issuances in the capital markets that could build a critical mass in nongovernment bond markets well beyond all past failed attempts for corporate finance. This could also provide a framework for more robust nongovernment bond markets overall.

However, a number of minimum preconditions need to be met to increase the potential of capital markets as a competitive source of financing for infrastructure. These vary depending on the country but could be grouped under four categories: (1) quality of price benchmarks to value long-term assets; (2) minimum framework enabling the development of new instruments; (3) flexibility by regulators to avoid imposing regimes typical of public securities markets to infrastructure financing instruments; and (4) availability of risk mitigation to bring instruments to the required risk-return profile.

Quality of Price Benchmarks to Value Long-term Assets

A long-term government bond yield curve up to at least 10 years is important as a benchmark to value long-term infrastructure assets. In the LAC region, Mexico has the longest issuance tenor in the domestic market at 30 years. The other large domestic bond markets (Brazil, Chile, Colombia, and Peru) issue 10-year bonds in a consistent way that can provide valid price references, although in some of these markets liquidity could be improved. As for the medium-sized and smaller countries, the size of their government debt is a defining factor for their potential to develop a liquid long-term yield curve. On an indicative basis, a country would need outstanding government debt in local currency of between US\$3 and US\$5 billion to develop a

⁶⁸ This US\$145 million project was the largest ever in the history of private financing in Honduras.

Figure 4.5: LAC Domestic Government Outstanding Debt

Source: LAC Debt Group (IADB).

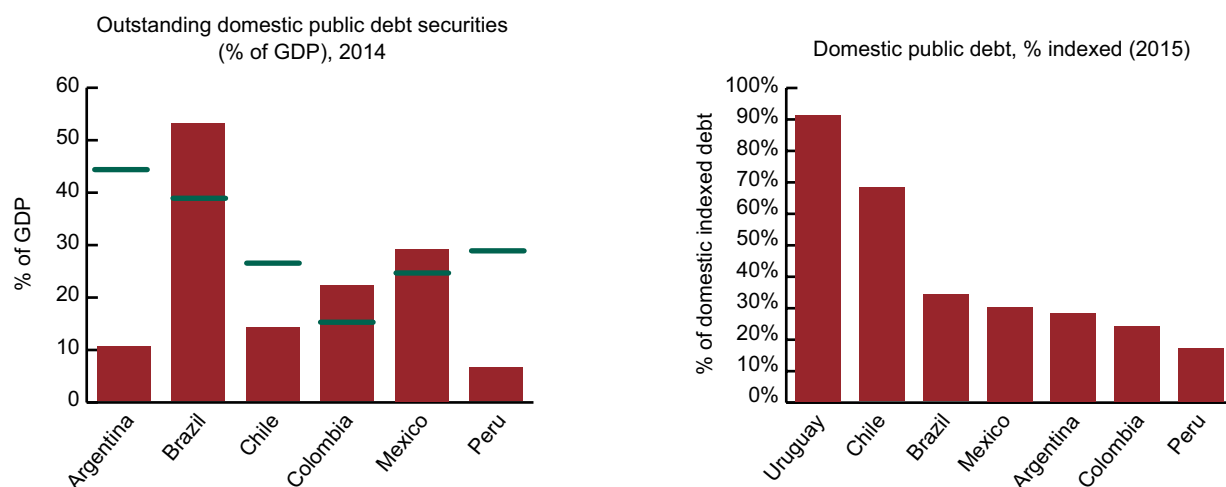
long-term yield curve.⁶⁹ This assumes the Ministry of Finance issues in short, medium, and long tenors in a systematic way and is proactive with policies supporting the secondary market (e.g., market making, trading platforms). Around 13 LAC countries would meet this threshold (see Figure 4.5). For other markets with structural challenges to develop a domestic yield curve, second-best solutions that are commonly used for price references are international market interest rates such as LIBOR or U.S. Treasuries.

Infrastructure debt is, in many cases, indexed-linked to provide the inflation protection of revenues of the underlying assets. This is also sought by most pension funds and insurance companies with liabilities linked to inflation. Therefore, the attractiveness of infrastructure-related debt, from debt funds or project bonds, would benefit

⁶⁹ This assumption is based on experience compiled from World Bank technical assistance programs in a number of EMEs. A minimum issuance volume to develop a local currency government bond market is difficult to establish because other factors have an important role, such as issuance policy and primary and secondary market structure. The US\$3–5 billion range is established on the basis of the need to have the regular issuance of a minimum of four benchmarks in the short-, medium-, and long-term tenors of around US\$500 million each. Additionally, this is a size most market players accept as a minimum threshold to develop some liquidity (see the Gemloc initiative and its thresholds).

from the existence of long-term domestic indexed-linked debt, or as second best from reliable indices tracking inflation. In the LAC region, only a limited number of countries have indexed-linked government debt with sufficient critical mass that can provide price references (see Figure 4.6).

Credit ratings are essential for infrastructure project bonds on two accounts: as a pricing reference and as a requirement for most pension funds and insurance companies. Credit ratings provide an expert credit assessment that these long-term investors could not conduct by themselves. In the LAC region, most of the large and medium-sized countries have at least one or two qualified credit rating agencies. In some of the medium-sized countries, the track record for rating infrastructure-related debt is limited. This can be expected to improve, along with stronger regulations for credit rating agencies, as more infrastructure debt comes to market. A general problem affecting all countries is the risk aversion of institutional investors to debt rated below AA, in spite of regulations allowing them to invest in any investment grade security (e.g., BBB or higher) on the national scale. Therefore all debt issued to the market is only at high ratings or is credit enhanced. This makes a case for infrastructure debt funds for higher risk debt as more risk is accepted in these

Figure 4.6: Outstanding Domestic Public Debt and Indexed

Sources: FinStats and LAC Debt Group (IADB).

Note: The line denotes the statistical benchmark of peer countries, measured by the expected median.

instruments, given that they are managed by expert third parties.

Minimum Framework Enabling the Development of the New Instruments

Developed nongovernment bond markets are desirable but not a prerequisite for infrastructure finance. All LAC countries, except for Brazil and Chile, have shallow nongovernment bond markets in different degrees. The reasons vary depending on the country but can be reduced to two categories. The first one is the lack of a basic capital markets framework such as a government bond market as well as core issuance and creditors' rights regulations that make issuance costly and cumbersome for private companies. The second reason is the dominance of banks as main providers of credit and their control of financial conglomerates, preventing nonbank credit business from developing. Large corporations in LAC countries, with hard currency revenues or the capacity to hedge foreign currency risk, have been able to access financing in offshore markets, but for the medium-sized and small companies bank financing is the most efficient option. In many cases, this has prevented a more proactive stance from policy makers on nongovernment bond markets.

A minimum number of preconditions are necessary to develop capital markets instruments to finance infrastructure. Some of these are present in the larger capital markets in the LAC region, but even in those countries there is important room for improvement. They can be grouped into four categories:

- a. *Flexibility of the regulations to develop new infrastructure specific financing instruments:* Infrastructure financing through capital markets is a new territory for EMEs and in the process of evolving in AEs. This means that new types of structures need to be developed to address the specific risk-return profile of this asset class. The starting point is the availability of project finance frameworks so that SPVs that are created for a particular project can issue bonds. In LAC this requires a strong and credible "trust" or "fideicomiso" regulation. While the large LAC countries, such as Brazil, Colombia, and Mexico, have developed robust "fideicomiso" structures, this is still a problem for some countries. Typical problems that some LAC countries encounter are difficulties in issuing listed bonds without a financial history for the SPV, taxes on the SPV that make the structure financially unviable, or lack of formal legal protection such as

bankruptcy remoteness. These obstacles may be overcome through other legal structures, including offshore vehicles, but a robust domestic legal framework would be desirable.

- b. *Recognition of infrastructure financing as an institutional market:* Nongovernment bonds generally have thrived in markets with a special issuance regime for professional investors with less onerous issuance processes equivalent to the U.S. 144A regulation. This is even more important for infrastructure project bonds that require issuance and placement regimes that are agile and competitive with bank lending processes. In the LAC region, institutional issuance and placement regimes are unevenly developed: in some countries such as Brazil they are fully developed; in a second category such as Colombia and Peru the regulation is in place but it is rarely used; in a third category, public offering rules are required for all issues, which can prevent the market from developing.
- c. *Flexibility on investment regulations for long-term institutional investors:* Pension funds and insurance companies need to have sufficient flexibility to invest in infrastructure within prudent risk limits. Typical challenges on this front include the combination of very conservative investment regimes and/or low capacity among investors to understand and manage risks related to infrastructure financing (see Chapter 5). In some LAC countries, the restriction to invest only in listed products could be limiting a greater role of institutional investors. For example, in Colombia and Peru recent regulatory changes allowing pension funds to invest in unlisted debt funds, within certain prudential limits, are having a very important impact in diversifying financing sources beyond banks (see Box 4.3 on the *Pacifico 3* project in Colombia).
- d. *The existence of financing structures and institutions that can offer credit enhancement:* This is a recurrent need in EMEs and in some AEs. Without credit enhancement it is usually

not possible to mobilize financing from a large diverse group of institutional investors. In some markets such as Mexico, financial guarantees have been offered for several years; in others such as Colombia they are in the process of being offered. However, important issues still need to be addressed so that credit enhancement can be provided in the most effective way. Issues that governments need to assess include what are the most effective and cost efficient guarantees to crowd-in nonbank financing, which institutions should be providing them, what should be the division of labor between DFIs and multilateral organizations, and what should be the strategy to avoid perpetuation of guarantees over time.

4.4 Conclusions and Policy Recommendations

Capital markets can become an important complement to banks in financing infrastructure by engaging domestic and international long-term institutional investors. Although banks are expected to continue dominating infrastructure financing, given their larger size and risk management skills, institutional investors are expected to provide financing in the longer tenors and to complement financing volumes. Sizable investments from investors would need public policies targeting the enabling environment for both international and domestic institutional investors. International institutional investors would be critical to bridge the financing gap, given investment restrictions of domestic investors (see Chapter 5). Attracting international institutional investors would depend on several factors: the availability of projects requiring foreign currency financing, access to foreign exchange hedging instruments, and the existence of deep domestic capital markets.

Robust PPP and project finance frameworks are a critical precondition for the success of capital markets financing solutions. With some exceptions, both frameworks have been missing across

the LAC region. In their absence, financing infrastructure for capital markets instruments has been either sporadic or concentrated in offshore instruments or in structured government bonds that are fiscally unsustainable. Exceptions include Chilean project bonds insured by monolines until the start of the financial crisis, when monolines were downgraded and could no longer provide AAA ratings to project bonds they guaranteed, and Mexican local currency project bonds that have been used to refinance projects after the construction phase.

Capital markets financing solutions need to be flexible and open to a broad range of instruments. Hybrid financing structures mixing bank and capital markets financing, particularly in greenfield projects, are able to address some of the challenges faced by pure capital markets solutions. Through these structures, banks can provide financing in the shorter tenors and take the function of controlling creditor, while institutional investors can take the longer tenors and rely, in part, on banks' greater expertise in infrastructure finance. Projects in the less risky operation and maintenance phase with stable cash flows can be more easily financed with capital markets instruments only.

Capital markets instruments need to adapt to the different nature of projects and the different risk-return profile of investors. Instruments with most promising results include project bonds, equity, and debt funds, though in some special cases direct investments may be the best option. Project bonds are gradually developing while they are still facing the challenge of evolving into standardized structures and credit risk levels acceptable to a broader investor base. The availability of credit

enhancement instruments provided by development banks or multilaterals are important in the initial stages of project bond innovations. Infrastructure debt funds are showing promising prospects in the LAC region to attract domestic investors and to provide long-term financing along with banks from the construction phase of projects. Infrastructure equity funds are already present in the region but could be further developed to provide capital to domestic sponsors.

Only a few number of countries in the region can be expected to mobilize financing to infrastructure through capital markets in a systematic way. Prerequisites include the existence of long-term domestic institutional investors and a minimum depth of their government debt market providing price benchmarks. Additional conditions that would help include quality credit ratings agencies, a supportive framework for institutional investors on both the issuance side and the investment regulations, and availability of credit enhancement options to support the first stages of capital market innovations.

Countries with small capital markets may be able to mobilize financing from foreign institutional investors but occasionally and in limited volumes. In general, only projects with dollar revenues and with blended concessional financing would be eligible. Depending on the situation of the country, some of the instruments or vehicles that could be used include structured government bonds and direct investments in the debt or equity. Given the potential cost of these options for governments, they would be able to provide value-for-money only in special signature projects.

Institutional Investors and Infrastructure Finance

5.1 Introduction

It is almost paradoxical to see the large needs of infrastructure in the Latin American region, and at the same time to see that institutional investors have only a small fraction of their portfolios invested in infrastructure.⁷⁰ This is not a small thing for funds that manage assets reaching more than US\$875 billion. Channeling part of the resources managed by long-term institutional investors into the infrastructure sector is an important challenge for policy makers.

This chapter explores the role of institutional investors in the financing of infrastructure, their structure of incentives, and initiatives that may help to facilitate more active participation in this market. Although poor infrastructure project preparation and consequent unsuitability of risk-return profiles are important impediments for pension funds to participate in the infrastructure finance, other aspects such as the structure of incentives of institutional investors make them cautious about investing in infrastructure. This chapter provides a series of recommendations and regulatory incentives that may align the incentives of defined contribution pension systems with the long-term incentives of contributors.

Although pension funds in the accumulation phase can play a significant role in the financing of infrastructure, the participation of life insurance companies in the payout phase can play a more decisive role in the development of the infrastructure bond market. Life insurance companies, in particular annuity providers, are potentially big supporters of fixed income assets with long maturities, including infrastructure bonds. Unfortunately, because of regulatory inconsistencies this market has not been able to develop in the region, with the sole exception of Chile, where annuity providers manage assets for approximately 20 percent of GDP. Although general insurance companies may provide various insurance products that mitigate specific risks, such that financiers become more comfortable with the risk of the project, they are not long-term investors, and consequently their role in development of the infrastructure bond market is only indirect. This chapter focuses the discussion on the role of pension funds that participate in the accumulation phase.

Pension funds in some countries in the region are sizable. Since 1981, 10 countries in Latin America have conducted pension reforms, which included the creation of mandatory funded pension schemes.⁷¹ As shown in Table 5.1, assets of domes-

⁷⁰ This situation is similar in other emerging markets.

⁷¹ These countries include Argentina, Bolivia, Chile, Colombia, Costa Rica, the Dominican Republic, El Salvador, Mexico, Panama, Peru, and Uruguay. Argentina and Bolivia reverted these reforms.

Table 5.1: Latin America: Assets under Management Pension Funds (2016)

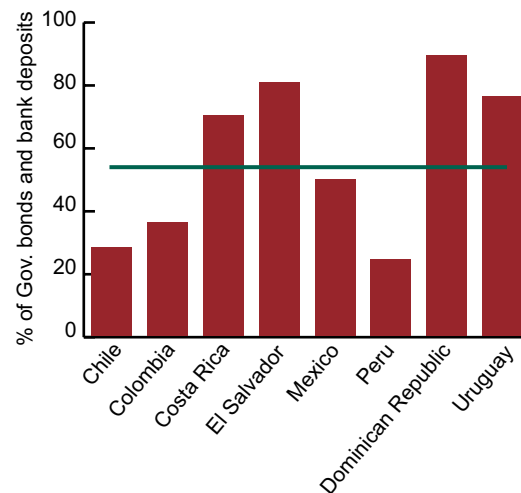
Country	US\$ Million	% GDP
Brazil	425,556	23
Chile	167,836	71
Mexico	145,795	15
Colombia	60,610	21
Peru	39,106	20
Uruguay	11,278	23
El Salvador	8,678	34
Costa Rica	7,695	15
Dominican Republic	6,844	10
Panama	1,118	4

Source: National sources.

tic pension funds range from 1 percent to 71 percent of GDP in each country. In the case of Brazil, pension fund assets are approximately US\$250 billion, of which approximately US\$150 billion are managed by Defined Benefit pension funds.⁷² These pension reforms were designed not only with the expectation of improving the future pensions of individuals, but also boosting the development of the domestic capital markets and contributing to the financing of development of these emerging economies. Although it is beyond the scope of this report to assess the success and challenges of the implementation of these pension reforms, with the exception of Chile, progress of these reforms in supporting the financing of development has been limited. As shown in Figure 5.1, pension funds in many countries of the region hold excessive amounts of government instruments and bank deposits. Although differences exist among them, almost 60 percent of the assets of the pension funds in the eight countries with open pension systems are invested in these two basic instruments. In 2014, Brazilian voluntary open pension fund system

⁷² As discussed later in the document, the approach toward investments of Defined Benefit and Defined Contribution pension schemes is completely different.

Figure 5.1: Pension Funds in Latin America Holdings of Government Bonds and Bank Deposits



Source: National sources.

(PGBL and VGBL) had approximately 95 percent of the portfolio invested in short-term fixed income.⁷³

Macroeconomic factors have affected the capacity of the pension funds for diversifying their asset portfolios. In some countries, such as Colombia and El Salvador, the crowding out of public debt and the debt financing of the transitional deficits (at least during certain periods) helps to explain the high concentration of pension funds in government securities.

In addition, capital market reforms and the regulatory structure of incentives of the pension funds have not been sufficient to cope with the region's infrastructure needs. Two decades ago, there was an expectation that these newly created pension funds were going to be active in creating new financial instruments for investing in new sectors of the economy—in other words, that the strong appetite for returns from the pension funds was going to create a sustainable supply of financial instruments that was going to help to finance economic development. The lack of sufficient progress in capital market reforms has limited the capacity of

⁷³ It excludes the asset allocation of closed pension funds (*fundos fechados*).

pension funds to invest in reliable financial vehicles for financing infrastructure. In addition, pension funds have maintained a structure of incentives such that pension fund managers are interested in competing in ranking of returns compared to their peers, rather than taking strategic positions that could optimize the individuals' future pensions.

Progress in updating the investment regulatory framework of domestic institutional investors for investments in infrastructure has been uneven in the region.

Since the early 1990s Chile has been proactive in creating the financial infrastructure and updating laws and regulations for pension funds and other institutional investors to invest in infrastructure, but most LAC countries, including Colombia, Mexico, and Peru, have been upgrading their regulatory framework during this decade. In the case of Brazil, some large defined benefit pension funds of public entities (e.g., *Previ*) have significant exposure to infrastructure, but the large majority of pension funds have not invested in this sector, because infrastructure financing has come largely from unsubsidized lending from public banks. As shown in Table 5.2, infrastructure is still a small share in the portfolios of institutional investors in the region.⁷⁴

Although pension fund exposure to infrastructure in OECD countries is limited, the main

Table 5.2: Investments of Pension Funds in Infrastructure in the Latin American Region, 2014 (as a percentage of the fund)

Country	Equity	Debt
Chile	0.1%	1.1%
Mexico	< 2.0%	1.5%
Brazil	< 0.5%	< 0.2%
Peru	2.9%	2.4%
Colombia	0.6%	0.2%

Source: Authors' estimates.

⁷⁴ It is important to highlight that the quality of the data is below optimal. In some cases, such as Mexico, the instruments for investing in infrastructure (CKDs) do not make a differentiation between investments in infrastructure versus other type of investments (e.g., real estate).

investment vehicle is unlisted equity. On a 2014 survey including 77 large pension funds with assets under management of US\$7.8 trillion, OECD (2016) reported that 1.1 percent of their assets were invested in infrastructure.⁷⁵ However, a closer look to the data shows that unlisted equity is the largest category of infrastructure investment of these pension funds. Because the nature of the majority of pension funds in OECD countries is different, this investment vehicle is not eligible for the open pension funds in the region, as discussed below.

The lack of suitable projects is a recurrent argument for the low participation of pension funds in infrastructure financing. Weaknesses in project preparation in PPP projects in the region have been well documented in the literature,⁷⁶ which makes some of these projects unattractive for pension funds. To the extent that there are uncertainties about the viability of the project, pension funds would refrain from participating. Poorly designed concession programs in past decades in Brazil, Colombia, and Mexico have reduced the appetite for pension funds to venture into these programs.⁷⁷

With the exception of some large ones in Brazil, most of the pension funds in the region are defined contribution, with a regulatory framework that incentivizes them to act as pure asset managers. The emphasis on portfolio diversification leads them to take only minority participation in all their investments, including the financing of infrastructure projects. This approach is different compared to large pension funds in countries like Australia and Canada, where they aim at taking controlling positions in some of their investments. In the absence of a well-developed framework of project financing, it becomes difficult for pension funds to support the financing of projects without

⁷⁵ The definition of infrastructure in the survey is broader than the one used in this report.

⁷⁶ See Engel, Fisher, and Galetovic (2013) and Guash (2004).

⁷⁷ Examples of poorly designed programs include the short-term periods that are given to concessionaries to assess the projects and to present technical and financial proposals (90 days in Brazil, 60 days in Peru) and poor quality of the technical specifications of projects.

other investors that may have skin in the game. The absence of project financing for bank lending in the initial stage, followed by pure bond financing, with disseminated bondholders and limited monitoring is a solution that may exacerbate moral hazard behavior of the sponsors and banks participating in the financing of the construction of the project.

In addition, the regulatory framework of DC pension funds does not provide sufficient incentives for investing in instruments with long maturities. Pension funds in the region are not the type of investors that reach out for new deals, but tend to rely on the instruments available on the market. The lack of “animal spirits” in Latin American pension funds to search for infrastructure deals is in part explained by the design and the structure of incentives in the open pension fund schemes. Before jumping into discussion of the appetite for pension funds for infrastructure, it is important to contextualize the regulatory framework of pension funds, as described in the next section.

5.2 Defined Contribution Pension Funds and Long-term Investments

Pension funds are not necessarily long-term investors. Taking for granted that all pension funds are by nature long-term investors is a common mistake among policy makers. This notion is likely to come from their resemblance to defined benefit (DB) pension schemes, which have a structure of incentives toward the long term, because plan sponsors are responsible for paying a certain level of pension benefit to employees when they reach the conditions for retirement. Because they have become too expensive to manage and impose a liability for employers that they are no longer willing to take, DB pension funds are rapidly disappearing everywhere.⁷⁸ Although few DB pension plans remain in the LAC region, including plans offered

by a handful of large companies in Brazil, most of these pension plans are closed to new entrants.

Important to notice also is the structure of demographics of the DB plans. DB plans are expected to liquidate their assets as they mature. Because most of DB pension funds in Brazil have not taken new contributors for more than a decade, they are gradually disinvesting and consequently reducing the duration of their fixed income assets.

Because the liabilities in DB schemes are defined by contract, the incentives of a DB investment fund manager are to put in place an asset/liability management structure. The structure of investments should be directed to ensure that future flows of the assets are sufficient for paying the future liabilities of the fund. Models of asset allocation for DB funds suggest the use of a liability-driven approach. In DB schemes, despite market volatility, long-term fixed income asset duration and illiquidity of the financial instruments are less of a problem, compared to defined contribution (DC) pension plans, because both assets and liabilities move harmonically.⁷⁹

Governance structure of DB plans is typically aligned with the objectives of the fund. Boards of directors of DB pension funds play an essential role in defining investment strategies, and plan sponsors pay attention in ensuring that the pension fund is well funded. This is a consequence of the fact that plan sponsors are ultimately responsible in cases of underfunding of the pension plans. Although DB funds may compare investment strategies among them, competition is not the driving force of investments. Rather than focusing on returns—as happens in the case of DC pension plans—the focus is on funding the long-term liabilities. Investment managers may even act as market makers, adventuring into deals that can potentially generate flows aligned with their liability structure. This type of pension fund may have the animal spirits and the will to search for investment opportunities, for example, in the infrastructure sector.

⁷⁸ See Bovenberg and van Ewijk (2011); Choi et al. (2002); and Pugh and Yermo (2008).

⁷⁹ To the extent that credit risk is properly assessed.

The incentives of DC pension plans operate with a different dynamic. The consistent decline of DB schemes in the past three decades has been accompanied by a surge in DC pension funds, which are the predominant pension funds in the region. DC pension funds do not have liabilities, and the structure of pension fund manager incentives is largely driven by competition. Because competition is typically measured in terms of past returns, the investment strategies of DC plans are not necessarily associated with long-term objectives. Boards of directors in asset management companies are more focused on maintaining or increasing market shares rather than ensuring adequate pensions for contributors in the future.⁸⁰ The adequacy of future pensions in a DC scheme is basically a combination of “the effort” of the pension fund manager and market conditions. Unfortunately, this is a reality that comes from a pension fund design that is increasingly prevalent in the rest of the world.

Incentives of DC pension fund managers are directed to beating competitors in terms of short-term rates of returns, independently of the absolute level. Although the idea of competition may sound sensible to most readers with some background in economics, the problem is that the horizon for measuring this performance, and consequently the horizon of their investments, is short compared with the objective of ensuring a good pension for individuals in the long term. Because the structure of liabilities is not a relevant variable in the investment process, pension funds become pure asset managers. As discussed in Box 5.1, the optimization of short-term return brings pension portfolios into suboptimal asset allocation.

In the absence of explicit liabilities, DC pension funds operate as pure asset managers, with no explicit long-term incentives. Based on performance—typically measured as the rate of return—individuals are expected to choose their pension fund manager. Consequently, free mobility of individuals across funds becomes the mechanism

for market discipline. Unfortunately, because individuals may leave a pension fund at any time, it becomes even harder for a pension fund to define a long-term liability, which reinforces the short-term incentives. The comparison among funds requires a valuation that may reflect the value of instruments at each moment of time (mark-to-market or mark-to-model).

It is important to understand the case of Australian pension funds, which have large allocations to infrastructure and are mostly of a DC nature.

Two important considerations help to understand this paradox. First, the concept of infrastructure used in Australia is much broader than PPP and includes all sorts of instruments (listed and nonlisted) in the infrastructure. In fact, the infrastructure bond market in Australia is very shallow. Second, Australia has a large diversity of pension funds, including industrial, corporate, and retail pension funds. The retail pension funds, which have more resemblance to the pension funds, do not have any significant investments in infrastructure, while the largest industrial pension funds have large allocations in infrastructure. However, most of these assets are related to investments in privatized assets.⁸¹

5.3 Regulatory Framework of DC Pension Funds: Implications for Investments in Infrastructure

The absence of meaningful interpretation of Anglo-Saxon concepts in civil code countries, such as fiduciary responsibility, has resulted in complex regulations for pension fund managers. Although common law countries, such as Australia, the United Kingdom, and the United States, deal with conflicts of interest through court systems that are well prepared to provide interpretation of

⁸⁰ Greater market shares ensure greater fees for the pension fund managers.

⁸¹ By comparison, Chilean pension funds were very active in purchasing privatized assets in the mid-1980s in the energy and telecommunications sector. When they saw the opportunity to sell those assets, they did it. However, this concept of infrastructure investments used in this report is more narrow and focused on financial products related to public infrastructure.

Box 5.1: Short-term Portfolios for Pension Funds: A Suboptimal Outcome

The literature on optimal asset allocation has demonstrated that an intertemporal summation of short-term return optimizations is not equivalent to long-term optimization. A simple example may help to illustrate this difference.⁸² Imagine the case of a transition economy on the border with Western Europe in the early 1990s whose economy has high interest rates. As this economy transitions toward economic integration with Europe, interest rates are expected to converge over time to the lower levels found in Europe (see figure below). Imagine the strategy of two pension funds with different incentives structures for their managers that invest for the new generation of contributors, who expect to retire in 2030. For simplification purposes, and following Campbell and Viceira (2002), the argument assumes that fixed income is the only asset in the economy.⁸³

The first pension fund is a pension fund with a clear long-term view, and its strategy is to maximize the pension of the individual at retirement age. Following that strategy, the pension fund will invest in instruments that protect individuals against inflation risk and interest rate risk through investments in inflation-linked bonds with maturities in 2030.⁸⁴ Although this fund is able to lock in high interest rates at the initial stages, in the presence of fluctuations in market prices, fund managers will have to cope with volatility in the value of the assets until their maturity.

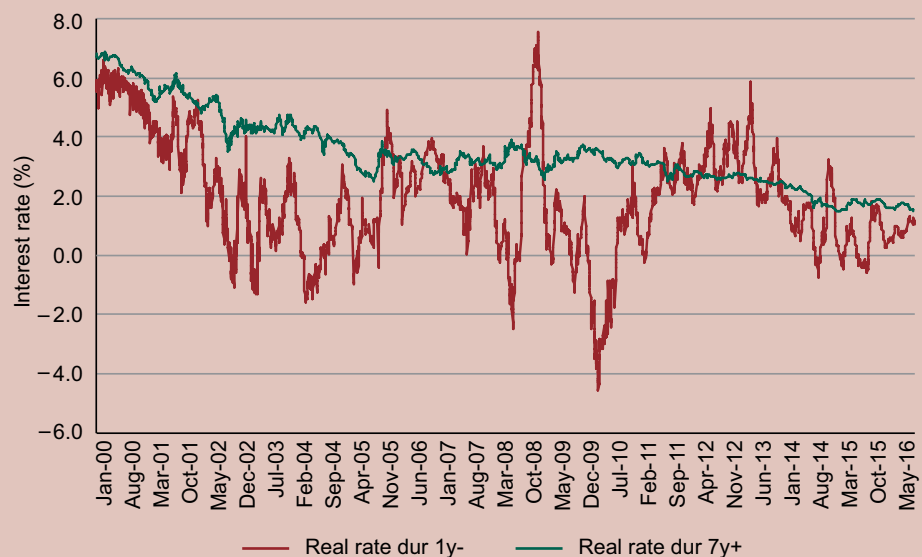
The second pension fund competes on returns with other pension funds in the market. To cope with high volatility, this pension fund invests in shorter-term instruments but runs the risk of reinvestments. To the extent that other pension funds herd toward similar durations, the comparison is not about the optimization of the pension at retirement age, but about obtaining a rate of return above other competitors.

To the extent that interest rates effectively converge to lower levels, the strategy followed by the first pension fund may have proven to provide better pensions, while it may have suffered high volatility compared to the other fund. Although the second fund was able to show smoother returns over the years (duration of the fixed income was shorter), they reinvested the asset portfolio into lower yields consistently over the years.

The discussion turns into defining the relevant benchmark for measuring performance: The first fund measures its performance against their capacity to pay their liabilities in 2030, and the second one, in terms of the short-term return of the rest of the pension fund managers. Although the first fund is likely to perform poorly against the short-term returns of the industry, the second one will perform poorly compared to the amount of money accumulated at retirement (2030).

Thus, because the incentives of DC pension fund managers may not be aligned with optimizing the future pensions of individuals, their interest in holding financial instruments with long-term maturities, such as infrastructure bonds, might be limited.

Decreasing Interest Rate Scenario



Source: Authors' elaboration.

⁸² See Campbell and Viceira (2002) and Castañeda and Rudolph (2010).

⁸³ For purposes of simplification, the argument assumes that individuals die one year after retirement. Although this argument may sound awkward, it is simply to complicate the argument with the discussion about the liability structure of the pension funds.

⁸⁴ For the sake of the exercise it assumes that bonds are available at all tenures.

concepts such as “prudent person” and fiduciary responsibility, civil code countries (such as the ones prevalent in the Latin American region) require explicit provisions to ensure that pension fund management companies act in the best interest of their contributors.

These regulations should also take into consideration idiosyncratic elements in the region, such as the fact that a few economic groups or conglomerates control a substantive share of the financial and corporate sector. The main problem with this structure of property is that conglomerates have all the incentives to leverage the investments of their (real sector) companies with money from the pension funds. A controller of a large pension fund will channel the money of not only his pension fund, but also from the whole industry, giving the herding incentives created in the regulation. Because pension funds take only minority positions, the economic groups maintain the control and decision making, while pension funds remain passive. It is essential to have in place a regulatory framework that ensures professional governance and regulatory restrictions to ensure that the investments of the pension funds are aligned with the long-term incentives of contributors, which are not necessarily aligned with the incentives of the shareholders of the economic groups. Articulating regulations able to prevent mismanagement of the funds and at the same time to provide incentives for optimal asset allocation have been a significant challenge in the region.

In particular, pension fund regulation should ensure that economic groups managing pension funds do not simply use the pension funds to leverage investments of their groups or to take positions whose objective is to shift profits toward the group’s shareholders. As described above, besides having few economic groups, the structure of ownership of the financial sector in Latin America is highly correlated with the ownership structure of the corporate sector. In Colombia, for example, the two largest corporate groups in the country also own the pension fund management companies of the two largest pension funds in

the country, with a market share of approximately 80 percent in assets under management.

Explicit provisions for aligning the interest of the managers with that of the contributors are cumbersome in civil code countries. Although such provisions are not infallible, and burdensome, they are necessary to ensure transparency and credibility of the pension fund system. Such provisions typically require the following:

- a. Maximum exposure to investments in related parties.
- b. Mark-to-market valuation.
- c. A maximum holding of issuance of each bond, or in general any financial instrument; typically the law requires at least three investors.
- d. Trading of the securities on exchanges or trading platforms with a high level of information to the market.
- e. Possibility of switching pension funds at any time.

Investments in Related Parties

In many countries the exposure to related parties is constrained by difficulties in identifying the ultimate beneficial owner of companies or in proving relationships in a strict legal framework.

Although a cap on investments in related parties is a powerful tool for deterring mismanagement of funds, many countries lack comprehensive regulations for meaningful interpretation of related parties or individuals with interest. Although the pension regulation may ban investments in related parties, it is essential to have in place a clear definition of the meaning of related parties in securities laws. The concept of “control” and “individual with interest” should go beyond a simple calculation of the percentage of ownership of a company through the main shareholders and their family members.⁸⁵ The

⁸⁵ Companies with disseminated ownership can be controlled with less than 10 percent of voting shares of the company.

regulation also needs to take into consideration the process for selecting the board of directors and what directors are chosen with the votes of the main controllers of the company. In the case of a PPP project, the relationship between the concessionary company, the construction company, and the pension fund management company needs to be clearly identified.

Trading through Exchanges or through Platforms with a High Level of Information

Trading only through exchanges and electronic trading platforms with a minimum level of information is a common feature in the regulations of DC pension funds. Despite being qualified investors, regulations typically require pension funds to purchase securities exclusively through exchanges and electronic trading platforms that can provide sufficient information to the market. Although this regulation may sound excessive and expensive, its objective is to protect participants against mispricing and misappropriation of value through direct or indirect transactions with related parties.

The absence of regulations on asset valuation may put pension fund managers at a crossroads that may end up making investments that benefit the shareholders of the pension fund managers instead of the contributors. This issue is especially important in LAC countries characterized by few economic groups that control not only the corporate but also the financial sector. In the absence of transparent transactions, financial conglomerates may end up benefiting themselves at the expense of the pension fund contributors.

Mark-to-Market and Mark-to-Model Valuation
In the presence of contributors being allowed to choose and move their pension fund among managers, periodic asset valuation is essential for guiding contributors as to the value of their investments. The rate of return is meaningful only to the extent that assets are valued properly. Valuation at mark-to-market and mark-to-model forces pension fund managers to reveal the best estimate of value of the portfolio at each moment. Although

liquidity is shallow in most of the LAC markets, prices need to reflect the best possible price estimates of the value assets at any time. Book value of the fund can mislead individuals about the return of their assets and consequently result in poor decision making by the contributors. For example, pension fund managers in Croatia are allowed to choose between book value and mark-to-market, and consequently the same instrument can have multiple values across pension funds and even within the same pension fund. As pension funds compete on returns, it becomes difficult to compare financial performance among pension funds. Because contributors who are retiring (or switching funds) at that moment were receiving more money than what they effectively had, the participants that stayed with the fund had less money than what was effectively reported.

Mark-to-market and mark-to-model valuations create a bias for instruments with shorter maturities. As discussed above, and elaborated in Box 5.1, competition for returns creates incentives to minimize volatility, by reducing the duration of the fixed income portfolio. Thus, long-term bonds—such as infrastructure bonds—become instruments that are not at the core of the preferences of pension fund managers.

Although regulation in some countries restricts the mobility of individuals and allows different valuation methods, contributors become trapped in a system unable to provide the basis for portfolio evaluation. Free movement of contributors is a basic principle embedded in open DC pension systems. As individuals are unable to affect the investment policies of the pension fund, the possibility of switching pension fund managers is the main tool that individuals have to show their displeasure with the performance of a pension fund. Although the movements of contributors from one pension fund to another in most of the cases are unrelated to the performance of the fund and more related to supply-driven considerations,⁸⁶

⁸⁶ See Berstain and Cabrera (2007).

this principle should be maintained as efforts for increasing financial education improve.

Limits by Percentage of the Issuance

Regulations of DC pension funds typically require that a pension fund not take more than one-third of an issuance of a bond. Although this is a relatively standard provision for collective investments to ensure valuation and liquidity, the logic of this regulation for pension funds is mostly to avoid self-dealing. In small markets with institutional investors dominated by pension funds, this is equivalent to having at least two other pension funds participating in each issuance of a bond or an infrastructure fund. Assuming that the other two pension funds are independent from the fund manager may mitigate the risk of mispricing and misappropriation of revenues.

Minority Investors

To promote proper portfolio diversification, regulations require pension funds to participate as minority investors. Pension funds are not expected to control companies, and corporate governance laws typically require them not to vote for representatives of the controller in the selection of the members of the board of directors. Pension funds are expected to behave as pure asset managers, with little inference in the management of the companies, but ensuring that their minority shareholder rights are properly protected, including their investments in infrastructure.

As pension funds participate in the financing of infrastructure as minority investors, their capacity to assess the quality of the project is limited. Pension funds that have only minority stakes in an infrastructure and follow a well-diversified asset management strategy are unlikely to be able to pay attention to the monitoring of each of the investments. Although they can leverage on the assessment and monitoring of other participants, they are not the ones called to make a detailed evaluation of the projects. A pension program might be successfully sustained to the extent that there are always financial institutions monitoring these projects.

Because they have limited monitoring capacity, financing an infrastructure program exclusively by DC pension funds would be inappropriate.

From the financial sector perspective, a PPP is simply a contract between the government and the financial sector where the financial sector finance provides the funding and the government grants the right for exploiting that resource. Consequently, it is critical that the financial sector understands the risks involved in the project. This critical assessment of the project is not in the expertise of pension funds or life insurance companies.

Commercial banks have better capacity to monitor infrastructure projects. To the extent that they have “skin in the game,” and incentives to properly monitor the projects, banks are fundamental in attracting the participation of institutional investors in the financing of infrastructure. To the extent that banks remain active during the whole life of bonds, pension funds are more incentivized to participate in infrastructure projects. In addition, to ensure the alignment of interests, it is essential for the sponsors of the projects to maintain an equity participation during the whole life of the projects. Although no threshold can be identified, shareholders are not expected to have less than 20 percent of the value of the project at any time.

Alternatively, investments in infrastructure through collective undertakings, such as infrastructure funds, may help to bring in the assessment expertise in the long-term financing of the investment projects and foster the participation of pension funds. The idea of turning infrastructure bonds into liquid instruments to facilitate the life of institutional investors is positive but totally insufficient for maintaining a sustainable infrastructure program. The necessary monitoring of the project might be provided by infrastructure funds and other forms of collective undertakings, with general partners participating intensively in the monitoring of the projects.

Finally, although it is common to find complaints by the pension fund management industry about the costly burden of complying with

these regulations, while imperfect, they are the only channel for dealing with misaligned incentives of pension fund managers. Although loosening these regulations may facilitate quick deals, from a longer perspective that may end up eroding the credibility of the pension fund system. In addition, avoiding these regulations and simply pretending that civil law countries can operate as common law countries is a significant risk for the pension funds in Latin America. Because courts and judges are unprepared to give meaningful interpretations to this concept, these regulations create a high risk for the pension funds and their future pensions.

5.4 What Do Institutional Investors Want for Investing in Infrastructure?

Given the structure of regulation and the incentives of the pension funds described in the previous section, this section explores the features in infrastructure financing that pension fund managers search for when they are deciding to invest in this sector.

In general, the perspective of pension fund managers in the region is similar to the investors that act as pure asset managers. Pension funds in the region are looking for high returns, low risk, liquidity of the instrument, fair pricing, and reliable partners. Although the common responses might not sound informative, they provide the basis for structuring financial vehicles for investing in infrastructure. In particular, it is important to notice that liability matching is not an issue, and consistent with the regulation there is no interest in closely monitoring the investments.

High Returns

Pension funds are likely to benchmark infrastructure bonds against government instruments. Infrastructure bonds should be able to offer a return over government instruments that reflect credit risk plus some liquidity risk. The idea

to convey to investors is that infrastructure bonds can provide returns above government bonds with limited credit risk. However, the promises should be substantiated on a proper design of the risk-sharing arrangement of the PPP program.

However, poorly prepared projects that look for financing by pension funds may not create enough traction among institutional investors. Poorly designed concession programs may create long-lasting distrust among institutional investors, and further improvements of the program may require expensive incentives, including public guarantees and support from state financial institutions, to attract the attention of pension funds in the financing of infrastructure. After several attempts of poorly designed PPP programs, Colombian and Mexican pension funds have recently started to commit investments in infrastructure.

Low Risk

In the absence of capacity to conduct project financing, or to assess and monitor projects properly, pension funds are likely to request public guarantees. The public guarantee element is something that has to do with the minority participation in the projects.

Because it imposes risks that they are typically unable to price properly, pension funds rarely participate in the construction phase. Unless construction guarantees are provided, pension funds would be reluctant to participate during the construction phase. Their interest is more in the operational phase, where risks are more understandable to them. This willingness of pension funds to participate only in the operational phase imposes a two-stage financing mechanism for infrastructure projects, where the long-term financing comes only in the second phase.⁸⁷

⁸⁷ The World Bank presented a concept for financing infrastructure in Brazil that involves participation from the initial stage. See Silva, Gragnani, and Rudolph (2016).

Institutional investors are comfortable in taking demand risk. Demand risk involves the possibility that the cash flows of the concession might be insufficient to pay for the bond. As mechanisms for mitigating the demand risks, infrastructure concessions in the region have used flexible term concessions and minimum traffic guarantees.

Flexible term concessions: Through this mechanism, the demand risk is mitigated as the term of the concession expands when demand is lower than expected, and it increases when it is higher than expected. From the perspective of the bond issuance, the bonds are issued at a standard maturity, such as 20 years. If the demand is higher than expected, some of the bonds (randomly selected) start to be prepaid, and if the demand is lower than expected, the debt can be renegotiated in the future, as the solvency of the project remains intact.

Minimum traffic guarantees: Although the provision of these guarantees helps to mitigate the demand risk, they reduce the incentives to monitor projects. As a way of reducing the risk of the instrument, issuers have typically securitized the stream of contingent liabilities represented by the minimum traffic guarantees.⁸⁸

Liquidity of the Financial Instrument

The preference for liquid instruments requires designing standardized instruments for investing in infrastructure. As it facilitates valuation and allows the reduction of the bid-ask spreads, pension funds have a high preference for liquidity. In this regard, standardization of the instruments for financing infrastructure—in the form of a project bond or infrastructure bond—may facilitate the participation of pension funds in infrastructure.

Standardization of the vehicle for financing infrastructure may help to reduce the costs and may widen the spectrum of investors participating in the financing of infrastructure.

⁸⁸ In the case of Chile, among the projects that were awarded with minimum income guarantees, they represented close to 70 percent of the infrastructure investment.

Standardization of the investment vehicle, supported by a standard vehicle and the support of monolines, had significant importance in the financing of infrastructure in Chile in the period 1998–2007. More recently, a concept developed by the World Bank for Brazil proposes standardization of the infrastructure bonds for developing the infrastructure bond market. In this case, Brazilian pension funds see interest in ensuring that the structure of interest payments of an infrastructure bond may replicate the structure of a long-term government bond.⁸⁹

Fair Pricing

The design of the concession program should ensure fair compensation for investing in infrastructure. Pension funds are going to voluntarily invest only in financial instruments that provide a reasonable return over government instruments with similar maturities. The lack of participation of institutional investors in the financing of infrastructure in Brazil has been such that the returns offered on the bonds have not been sufficient to compensate for the risks. Part of the problem has been that to provide low-cost service to taxpayers, concessions have been granted at rates of return to the concessionaries, such that the only way of making it profitable is to get subsidized financing from a state-owned bank. As the state-owned bank receives subsidized financing from the government, it can afford to offer lending to projects at concessional rates. Institutional investors have remained out of the infrastructure business.⁹⁰

Tax incentives on infrastructure financing products may create disincentives for the

⁸⁹ For the case of Brazil, this requirement implies designing financing instruments able to offer interest payments during the construction phase.

⁹⁰ Although the supply of infrastructure bonds in Brazil (*debentures incentivadas*) has been limited, the retail sector has been the main purchaser of these instruments. Participation of the retail sector in infrastructure finance is a problem in itself, because of the complexity of the projects, and consequently the difficulty for them to assess the risks of the projects. The infrastructure bond market should be directed largely to qualified investors.

participation of pension funds in infrastructure financing. It is important to keep in mind the distortions that can be created with tax exemptions, specifically when certain instruments (for example, infrastructure bonds) receive tax exemptions. This is the case of *debentures incentivadas* for infrastructure financing in Brazil and mortgage finance instruments issued by *Titultrizadora Colombiana* in Colombia. As a way of promoting investor participation, these instruments were declared tax-exempt for all participants. In the presence of pension funds, which are characterized by deferment on interest income taxes, pension funds see a competitive disadvantage and consequently do not participate in this market. In the presence of these tax incentives, retail investors and other private sector investors have participated in the financing of these projects.

5.5 Facilitating the Participation of Pension Funds in Infrastructure Financing

This section proposes a series of recommendations for the regulatory framework of pension funds and capital markets to facilitate the participation of pension funds in infrastructure financing. The participation of pension funds and life insurance companies in the financing of infrastructure can be incentivized by some small modifications in their regulatory framework and some developments in the domestic capital market. This section describes the most common modifications in the pension fund regulation and other desirable features in domestic capital markets that can facilitate the participation of pension funds.

Allowing Investments of Institutional Investors into Project Bonds

Because infrastructure is not recognized as an asset class in most pension fund regulations, investments in infrastructure are typically considered an investment limit grouping “other investments” or “alternative investments.” Laws and regulations typically require pension funds to

buy bonds of companies with a proven record of accomplishment and at least two years in the business. Although this concept makes sense in the case of corporate finance, it is not intended for project finance. In project finance, the expected flows of the project are expected to pay for the interest and amortization of the bond, and consequently it is very likely that the issuer might be a newly created company that will operate with high leverage. The regulation should ensure that pension funds are allowed to invest in project bonds, and that these instruments are considered fixed income (and not equity) within the regulation.

Allowing Ample Investment Limits for Investments in Infrastructure

Because infrastructure programs can be sizable, regulations should ensure ample limits for pension funds and life insurance companies for investing in infrastructure. However, to ensure proper risk diversification of the pension funds, investments in local infrastructure should not be beyond 10 to 15 percent of the assets under management, depending on the quality of the design of the country’s concession program. As these investment limits are increased, the government should ensure that the quality of the infrastructure program is solid.⁹¹

Creating an Inflation-Linked Yield Curve

Benchmarking of long-term inflation index government bonds might facilitate pricing of infrastructure bonds. This is relevant for the case where infrastructure bonds are also issued linked to inflation. To the extent that tariffs of infrastructure concessions are indexed to inflation, the issuance of infrastructure inflation-indexed bonds provides a currency hedge for the concessionary company and an instrument for which the domestic institutional investors have an appetite. Inflation-linked bonds are especially attractive for annuity providers (life insurance companies) in the LAC region that are required to link pensions to inflation. This is the case in Chile, Colombia, the Dominican Republic, and Mexico.

⁹¹ See Appendix 1 for a detailed description of existing limits.

Imposing Duration Targets on the Fixed Income Portfolio of Pension Funds

As explained in the previous section, the duration of the fixed income portfolio in open DC pension schemes can achieve multiple equilibrium and in economies without well-developed long-term bond markets, such as Brazil, is likely to be very short. Lengthening the duration of the fixed income portfolio by imposing minimum duration targets in the regulation of pension funds may increase the appetite of pension funds for infrastructure bonds. In addition, it helps to align the long-term interests of the contributors with the investment strategies of the pension funds.

The threshold for minimum duration of pension portfolios should take into consideration the government's capacity to supply long-term instruments, without shifting artificially the shape of the yield curve. By imposing a minimum duration of the fixed income portfolio, pension funds would be more focused on searching for credit risks, for example, in infrastructure bonds, corporate bonds, and housing bonds markets, among others.

Alternatively, as suggested by Rudolph and Sabat (2016), the same results might be achieved by using common portfolio benchmarks for pension funds. These common portfolio benchmarks consider not only the longer duration of the fixed income instruments, but also portfolio compositions aimed at optimizing the portfolio of pension funds through life-cycle schemes. Common portfolio benchmarks provide a more comprehensive solution but may create resistance among stakeholders.

Facilitating the Presence of Other Institutional Investors with Different Risk Profiles

Because pension funds in open DC systems typically herd when making investment decisions, it is important to have other investors that hold a different risk profile toward infrastructure. In the absence of other institutional investors, herding behavior increases the illiquidity of the instruments and exacerbates market swings. The presence of

other institutional investors with different risk profiles is an important element for mitigating the liquidity risk and promoting participation of the pension funds in the financing of infrastructure on an initial stage. The presence of retail investors is no guarantee for minimum liquidity in the secondary market, because these investors are too small to satisfy the transaction needs of the pension funds.

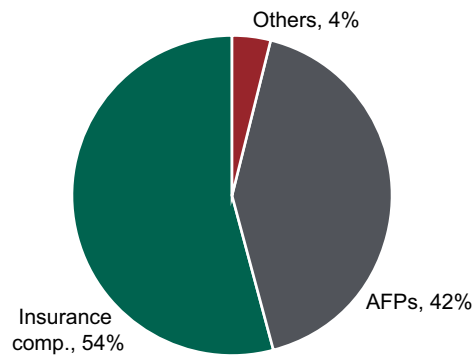
The development of the annuity market has been essential for the development of the long-term bond market in Chile. At retirement, contributors select between life annuities and phased withdrawal.⁹² Approximately 60 percent of contributors choose annuities. Because regulatory requirements impose some type of asset liability management, life insurance companies have the incentives to invest in long-term assets, including infrastructure bonds.

Life insurance companies (annuity providers) in the case of Chile have been key in ensuring the participation of pension funds in the infrastructure bond market. The strong support from life insurance companies opened pension funds' appetite to participate in this business, as shown in Figure 5.2. DC pension funds would be less reluctant to participate in instruments that are strongly supported by other institutional investors with a different risk appetite. Because short-term returns are an important driver, DC pension funds will look for potential buyers with a different risk appetite, including buy-and-hold investors such as life insurance companies, where they can offload their investments in the case that they feel it is necessary to sell.

Life annuities are the main product offered by life insurance companies in Chile. These companies participated aggressively in the infrastructure bond market between 1998 and 2006 and have continued supporting the infrastructure bond

⁹² Individuals may also select a combination of temporary withdrawals, which is a combination of phased withdrawal with a deferred annuity. This product has not been very popular among retirees, as less than 2 percent of them select temporary withdrawals.

Figure 5.2: Main Holders of Chilean Infrastructure Bonds, 2014



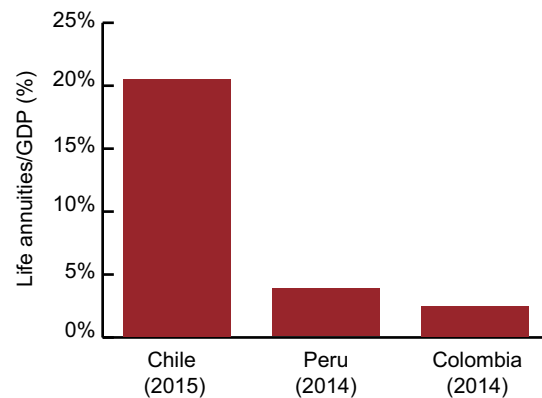
Source: Authors' estimates.

market. The development of the annuity market offers a constant demand for long-term fixed income instruments (such as infrastructure bonds) to hedge their long-term liabilities. Annuities management works in a similar fashion as DB pension plans and makes them truly buy-and-hold investors and willing to purchase additional supply if needed at a market price.

With the exception of Chile, characterized by a buoyant annuities market, the other LAC countries have not been able to develop the payout phase properly (Figure 5.3). The coexistence of funded and pay-as-you-go schemes, with subsidized benefits for the participants in the pay-as-you-go scheme, and the possibility of contributors switching from one system to the other has been a significant impediment for the development of the annuities market in countries such as Colombia, Mexico, and Peru. More recently, the Peruvian Congress enacted a law that allows individuals to take lump sums out of practically all of their pension fund savings at retirement age, creating an important barrier for the future development of the annuities market.

The disability and survivorship annuity market by itself is unlikely to develop the scale that is needed for supporting the development of the infrastructure bond market. The annuity products existent in Peru, Colombia and Mexico are limited to disability and survivorship pensions. As part of

Figure 5.3: Life Insurance Assets in Chile, Peru, and Colombia



Source: Authors' elaboration.

the mandatory pension scheme, individuals pay a premium to an insurance company, through their pension fund management company, which covers the risk of disability and survivorship. In case of disability, the fund of the individual's and the complement paid by the insurance company is used to purchase an annuity. In the case of death of the contributor, the money is used to buy an annuity to eligible survivors. While this market can offer some annuities, the size of the market would be insufficient to develop the long-term bond market.

DB pension funds in Brazil still manage a substantive part of the pension fund assets. Brazil, like no other country in the region, has the opportunity to develop the infrastructure bond market. Supported by assets of approximately US\$150 billion, DB funds are looking for opportunities of yields above government instruments with long-term profiles. Besides the issues of corruption that have affected the largest construction companies in the region, it is important to offer financial vehicles able to address the needs of these funds. Because the J curve is a major consideration for investing in infrastructure products (see Box 5.2), it is essential to design products able to pay interests during the whole life of the bond. To allow the participation of pension funds from the beginning and consequently to avoid refinancing risk, the vehicle should be able to pay interests during the construction phase. If pension funds are not comfortable with

Box 5.2: Brazilian Pension Funds and Construction Risk

Accounting rules in DB schemes may also play a role in the demand for infrastructure bonds. In some cases, especially for the DB type of investors, the sequence of cash flows plays an important role in the potential demand for infrastructure bonds. Pension funds are more interested in instruments that can provide cash flows along the whole life of the bond. Some pension funds, particularly in DB schemes, might be reluctant to invest in instruments subject to a J curve. These instruments are not only difficult to value (compared to plain vanilla instruments), but also provide a structure of cash flows that is suboptimal for hedging the liabilities. Depending on accounting practices, showing negative flows in the first years after the investment makes these instruments unattractive.

taking construction risk, the financial vehicle should be able to offer a guarantee during this phase. Because construction risks are measurable, these guarantees might be privately offered.

DB funds need to be catalytic in bringing other institutional investors into the market.

While US\$150 billion is a considerable amount of resources, it is insufficient for financing the infrastructure program in Brazil. However, the design of an adequate financial vehicle with strong support from DB pension funds might be instrumental in bringing other domestic and foreign institutional investors interested in infrastructure risk but largely interested in the liquidity of the instruments. To the extent that the financial vehicle is highly standardized, the possibilities of leveraging with other investors increases.

International investors may also play an important role as additional investors in bond markets, but they are likely to play a more relevant role in larger markets, such as Brazil and Mexico, where they can feel more comfortable in taking long-term currency exposures.

Pension Funds as Minority Investors

Minority participation in the financing of projects imposes an approach toward investments

that is different from pension funds in other parts of the world. Pension fund managers in DC schemes and life insurance companies in the LAC region participate only as minority investors, and the risks that they are willing to take are limited. This is a different approach compared to large pension funds in AEs and sovereign wealth funds, which have the possibility of taking majority control on the equity side and enforcing a closer monitoring on the companies in which they invest.

Because it is too costly for pension funds to assess and monitor infrastructure projects, it is optimal for them to invest through intermediaries. Greenfield projects that involve complex assessments of the construction risks in the initial phase involve risks that pension funds are not able to assess or to take. In addition, evaluating operational risks requires some “hands-on” skills that are not present among pension funds or insurance companies in the region. To the extent that they participate through intermediaries or other partners that have the capacity to evaluate these risks, pension funds might be more incentivized to participate. Pension funds and life insurance companies may finance infrastructure through different channels: (a) credit-enhanced infrastructure bonds, including the case of monolines and (b) investments through shares in infrastructure funds.

Although unavailable today, monolines provide an optimal product for pension funds in the region. These intermediaries may take the infrastructure risk by themselves and transfer only the credit risk of the intermediary (monoline) to the bondholders. One important feature of the monoline structure is that it internalizes all the issues of control and therefore facilitates the dialogue with the concessionary company and sponsors in cases of credit events or renegotiations. As shown in Table 5.3, a significant part of the transport infrastructure program in Chile was financed with the support of monolines.

Pension funds can invest in infrastructure through collective undertakings, whose general partners have the knowledge and management

Table 5.3: Chile: Infrastructure Bond Issuance (1998–2007)

Concession Name	Issuance Date	Local Credit Rating	Guarantee	Term (years)	Amount (USD million)	Yield (UF)	Spread	Duration (years)
Talca-Chillán	Nov-98	AAA	Monoline	9	167	8.80%	1.50%	5.0
Ruta Araucania	Jun-00	AAA	Monoline	20	255	7.42%	1.12%	9.0
Autopista del Bosque	Feb-01	AAA	Monoline	20.5	271	6.37%	1.08%	10.0
Rutas del Pacífico	Apr-02	AAA	Monoline	23	362	6.02%	1.13%	11.4
Autopista del Sol	May-02	AAA	Monoline	16	192	6.35%	1.47%	7.5
Los Libertadores	Apr-03	AAA	Monoline	14	72	5.78%	0.93%	13.7
Los Libertadores	Apr-03	AAA	Monoline	7	54	4.00%	1.37%	3.6
Variante Melipilla	Jul-03	AA-	No Monoline	21.8	23	6.49%	2.64%	9.5
Autopista Central	Dec-03	AAA	Monoline	23	451	5.30%	0.69%	11.9
Costanera Norte	Dec-03	AAA	Monoline	21	271	5.67%	0.56%	12.0
Costanera Norte	Dec-03	AAA	Monoline	12	59	5.22%	0.87%	7.9
V. Norte Express	Jun-04	AAA	Monoline	24.5	555	5.22%	0.60%	12.0
Autopista del Maipo	Oct-04	AAA	Monoline	21	198	4.69%	0.39%	12.8
Vespucio Sur	Nov-04	AAA	Monoline	24	173	4.60%	0.44%	12.5
SCL	Nov-04	AAA	Monoline	15	103	4.19%	0.59%	9.8
Talca-Chillán	Jul-05	AAA	Monoline	14.5	196	3.04%	0.70%	8.1
Autopista Interportuaria	Jan-06	A+	No Monoline	24.5	34	4.25%	1.75%	7.8
Autopista del Sol	Jun-06	AAA	Monoline	12	34	4.15%	0.70%	8.5
Talca-Chillán	Oct-06	AAA	Monoline	15.5	39	3.30%	0.47%	11.2
Autopista del Bosque	Nov-06	AAA	Monoline	18	52	3.36%	0.54%	16.2
Autopista del Maipo	Dec-06	AAA	Monoline	24	208	3.51%	0.66%	21.3
Los Libertadores	Jan-07	AAA	Monoline	18	42	3.25%	0.45%	10.8

Source: COPSA, Ministerio de Obras Públicas de Chile.

capacity to monitor the infrastructure project.

It is essential to ensure a contractual arrangement that ensures the proper alignment of interest between the general partner and the limited partner. To the extent that general partners conduct an effective evaluation and monitoring of the projects, pension funds may channel resources toward infrastructure financing. Although this vehicle is a relevant one, pension funds are likely to limit their exposure to these vehicles due to the risk presented by the instrument.

5.6 Conclusions and Policy Recommendations

Although pension funds in Latin America have sizable resources, their structure of incentives embedded in regulation of open defined contribution schemes makes it very difficult for them to engage more heavily in the infrastructure sector. The regulatory framework of pension funds remains heavily biased toward short-term investments and diversified portfolio strategies with little room for monitoring their investments. The financing of PPP projects, characterized by high leverage, requires a level of monitoring that pension funds

are unlikely to provide. Because they can take only minority participations in their investments, the structure of financing cannot rely on the fact that pension funds managers will be monitoring the projects.

The monoline model, while currently not available, is the most effective way of engaging this type of pension fund in the financing of infrastructure.

After the collapse of the monoline model, investments of pension funds in infrastructure in the region have remained timid, and governments in the region have engaged in PPP programs with a heavy reliance on government guarantees. Because it allows them to treat infrastructure bonds like any other corporate bond, the monoline model was the perfect fit for open pension fund systems in Latin America.

Although pension fund investments through infrastructure funds may increase, volumes probably are not going to be enough to support the long-term financing of the infrastructure programs in the LAC region. Infrastructure funds provide some of the monitoring that a capital market model of financing needs, but it will be limited by the amount of risk that pension funds are willing to take in the region. DC pension funds would prefer investing in instruments that can offer a minimum level of liquidity, and consequently efforts to standardize the investment vehicle for investing in infrastructure may prove to create appetite for pension funds and other institutional investors to participate in this market. In addition, the development of a yield curve of an inflation linked bond may help to reduce the cost of funding of projects whose fees are indexed to inflation (for example toll roads).

Regulatory changes aimed at incentivizing long-term investments, including minimum duration of fixed income portfolios, may help to channel investments of pension funds toward infrastructure. As competition on performance (and on a commercial basis) may guide pension portfolios into short-term portfolios, the introduction of minimum requirements on duration may effectively incentivize pension funds to invest in instruments with longer maturities, including infrastructure bonds. A more ambitious regulatory improvement, such as the

introduction of portfolio benchmarks, may also provide the incentives for investing in long-term bonds, but in the context of a portfolio that optimizes the pensions of individuals at retirement age.⁹³ Because the distortions generated by inadequate valuation could be sizable, the promotion of valuation at book value is not the adequate answer to the lack of investments in long-term assets.

The development of the annuity market is essential for the development of the local infrastructure bond market. Because open pension funds in the region are not necessarily long-term investors, they will have more incentive to invest if annuity companies are also participating in the deals. Because annuity companies have a different risk approach toward long-term instruments, pension funds perceive them as potential buyers in case they decide to offload their participation in infrastructure bonds. In the presence of herding behavior, which characterizes pension funds in the region, the presence of other institutional investors creates the needed confidence for taking exposure to infrastructure projects. Countries such as Colombia, Mexico, and Peru will need to overcome significant regulatory barriers to develop the annuity market effectively.

Increasing infrastructure exposure by pension funds in the region to reach more ambitious targets, such as those of some Canadian funds, would require a different business model. Canada's pension funds OTPP and Omers have infrastructure investment targets of 8.4 and 21.5 percent of the assets under management, respectively.⁹⁴ Although these investment targets are possible in corporate plans with DB or Defined Ambition schemes, the structure of incentives in DC schemes with a competitive open pension system, such as the ones in Latin America, is insufficient to move pension funds in that direction.

⁹³ See de la Torre and Rudolph (2015) and Randle and Rudolph (2014) for a discussion about portfolio benchmarks.

⁹⁴ These investment limits include all types of infrastructure and are not limited to PPPs. In the case of Canada, a large share of the infrastructure portfolio is invested in equity.

Market Failures and the Role of DFIs in Infrastructure Finance

6.1 The Role of Development Financial Institutions (DFIs)

Domestic DFIs may have an important role to play in promoting private sector infrastructure finance in LAC countries depending on the context and instruments used. This chapter explains the circumstances for justifying the participation of DFIs in mobilizing private sector financing and types of tools that they have available.⁹⁵ The presence of DFIs is not always needed; in fact, in the case of Chile the whole infrastructure financing program has been successfully implemented, for more than two decades, without support from DFIs (see Box 6.1). However, in the presence of market failures, DFIs can provide some financial support downstream, once projects are ready for public tendering (e.g., co-financing in long-term maturities and guarantees). In addition, DFIs can complement the role of PPP authorities by facilitating the technical bankability of the projects by supporting proper project preparation.⁹⁶

⁹⁵ The chapter focuses on potential roles for DFIs without discussing the division of labor between domestic and international DFIs. Only in cases where there is a clear-cut role for one of the two types of DFIs is the difference explicitly mentioned.

⁹⁶ It excludes addressing the provision of upstream government financial support such as instruments to mitigate demand risk (e.g., availability payments, minimum revenue guarantees) or viability gap funds to optimize the cost of financing, which is generally the responsibility of central or subnational governments and has been covered extensively in recent publications. For a discussion on upstream direct government support see WBG (2016), “Financial Viability Support: Global Efforts to Help Create Commercially Viable PPPs.”

Multilateral organizations, such as the World Bank Group, also have an important role to play in helping member countries to implement best practices and support proper implementation of infrastructure investment programs. The developmental objectives of multilateral organizations, supported by strong governance and technical expertise, are aligned with the design of adequate infrastructure products. Multilateral organizations can be instrumental in bringing best practices for infrastructure financing to client countries. Institutions such as the International Finance Corporation and other multilateral institutions that participate directly in the financing of projects can play a catalytic role in bringing projects to the radar screen of large investors that otherwise do not look intensively projects in the region.

DFIs should play a supplementary role in infrastructure financing. DFIs should be able to provide additionality in cases where market failures inhibit financial sector participation, but as enabling conditions improve, they should be prepared to backtrack and let the financial market stand on its own. As a consequence of different circumstances (e.g., degree of development of that particular market, lack of skills), private financiers in some markets might not be prepared to assess or manage the risks involved in a PPP framework. In these circumstances, DFIs may play a catalytic role in bringing private sector financing, but their role is justified to the extent that these conditions are still

present. In some cases, there may be risks that no market stakeholder is prepared to take even if financial markets are well developed. This is the case, for example, of certain institutional investors as it is also the case in AEs.

DFIs participation in infrastructure financing should be designed in coordination with broader government policies supporting quality infrastructure programs and policies aimed at developing the financial sector and capital market. Implementing policies that promote private sector participation in infrastructure financing not only is a complex task that requires relatively long periods of consolidation, but it also requires institutional flexibility to design policies that may address the evolving areas where the market is not working properly. In this context, DFIs should be prepared to act with different instruments, as market conditions evolve. The presence of rigid institutional structures and governance frameworks characterized by insufficient autonomy from government policies may add challenges to DFIs in their acting as catalyzers of private sector financing of infrastructure.

Support from DFIs may help to reinforce credibility, considering previous PPP programs that have been detrimental taste for private financiers. Some Latin American countries have been developing PPP frameworks for two decades or more, but many of these programs have failed to attract private sector financing or have created losses among private financiers because of regulatory inconsistencies. Over the years, countries such as Colombia and Mexico have gone into multiple generations of PPP programs, but the bad experiences from the initial stages have created skepticism among private financiers for participating in new programs. DFIs can help to enhance this credibility. In the case of Chile, as explained in Box 6.1, the first PPP program was successfully designed and support from DFIs was unnecessary.

DFIs face challenges between two extremes: financing projects that are not economically and socially relevant, and financing projects that crowd out private sector financing. On the

one hand, financing nonviable projects is typically associated with domestic DFIs with governance structures that do not have sufficient independence from the government. Given their mandate and level of expertise, DFIs may be willing to finance riskier projects than private financiers, but in all cases they should be able to invest in profitable projects. All subsidies are expected to come directly from the government. On the other hand, crowding out of private financing can be a consequence of several factors, but prominently the fact that DFIs' mandates do not require them to complement the private sector. In some cases, DFIs are subject to quantitative targets set by the government (e.g., Brazil and Mexico) that could lead to replacing private sector financing in segments where it is not necessary. In some other cases, the subsidized cost of funding received by the DFI leaves private financiers out of the market. Subsidized cost of funding from the government is a relatively opaque way of subsidizing projects. Best practices suggest the provision of subsidies from the government explicitly defined in the budget, allowing DFIs and public financiers to compete for infrastructure financing on a level playing field.⁹⁷ Brazil's BNDES has relied heavily on subsidized funding from the federal government for financing infrastructure projects. Governance structure is essential to ensure that the target market of DFIs is between these two extremes.

DFIs can play a critical role in providing financial support to infrastructure projects, provided they have proper governance structures and policy mandates that require them to focus their

⁹⁷ Support from DFIs does not necessarily imply subsidized financing. To the extent that DFIs finance themselves in the market like any other bank, for example, through bond issuance, there is no subsidy. The main advantage of DFIs is the capacity to take some risks that may help to complete some markets that have not developed. Although the cost of funding a domestic DFI is probably no different from a prime bank, they can support higher levels of developmental goals with the lower return on equity required by its shareholders. For example, whereas a private bank would ask for an equity premium of 10 percent, a DFI may perfectly target an equity premium equal to zero. In other words, the government expects a rate on equity equivalent to the cost of funding of the government. For further discussion, see Rudolph (2009).

Box 6.1: Infrastructure: Highways Financing in Chile: Why Is It an Exception in LAC?

Although some countries in Latin America have been involved in PPP infrastructure projects for the past two decades, with the exception of Chile, the rest of the region has faced difficulties attracting private sector financing to these projects. While Chile moved long ago from the provision of demand guarantees and all major projects were financed without support from state financial institutions, the rest of the region has relied, for most of their road projects, on availability payments, demand guarantees, and strong DFI contributions for financing their current infrastructure programs. Most analysts argue that institutional capacity, including PPP agency and relative good quality of project preparation, and the presence of pension funds helped to align the stars for facilitating the financing of the highways program in Chile, but in reality, other elements are equally important, as described below:

- a. *Foreign concessionaries with links with international financiers:* Initial reliance on foreign concessionaires with significant ties to foreign financiers with previous experience on project financing was part of the process. Local construction companies and local banks played a limited role, because the concessionary companies that were awarded the largest projects were foreign.
- b. *Competition in the financing of infrastructure:* Although local banks were initially reluctant to embrace the infrastructure program, foreign banks provided the initial funding in such a way that local banks felt the pressure to learn and engage in the business. While some of the banking finance in the 1990s relied on corporate and sponsors' guarantees, it was enough to finance the initial stage.
- c. *First impressions:* The most profitable projects were granted first. Low-risk projects were granted first. These were mostly brownfield projects with proved demand history. This simple strategy helped to create trust and facilitated the funding of projects that needed a subsidy component for a second stage.
- d. *Subsidies were explicit:* Projects with high social but low private rate of returns received direct subsidies from the state. In the case of the Route 5 highway, the most profitable tranches of the highway had to pay to the government for the existing asset. That money was used to subsidize the least profitable tranches of the highway.
- e. *Strong appetite from long-term institutional investors:* While pension funds played an important role in purchasing infrastructure bonds, the participation of annuity companies was essential in bringing in the pension funds. Because they have a long-term liability, the annuity companies are the ones that mobilized the rest of the market for purchasing bonds.
- f. *Monoline structure:* The monoline structure was essential for bringing the attention of institutional investors. The full wrap provided by the monolines fit well the asset management model of pension funds. In addition, there was a standardization of the infrastructure bond, early in the process, which created confidence about the risks that each of the stakeholders was taking.
- g. *Long-term inflation-linked bond market:* At the time of the launching of the first infrastructure concessions, the financial sector had experience in trading fixed income instruments with maturities of 20 years or more. The inflation-linked bond market was the most liquid market in medium- and long-term tranches.
- h. *Innovation capacity:* While the first concessions provided minimum traffic guarantees, the government introduced concessions based on present value of revenues, which eliminated the need of demand guarantees.
- i. *Consensus on the view that infrastructure was necessary to increase the productive capacity of the country:* Most of the stakeholders realized early in the process that infrastructure was a profitable business, and consequently there was no point in channeling money through state financial institutions to support the projects. A broad consensus between the government and private stakeholders was built to ensure that the PPP contract was fair to all the parties. This broad consensus set the basis for expanding the PPP program to sectors other than highways.

attention in completing markets. Although there is not a single way of crowding in private sector investors, DFIs can play a catalyzer role for private sector financing. As stated above, the developmental objectives of DFIs do not imply in any way that DFIs should provide subsidies. In this regard, DFI participation would make sense only for projects that have gone through the appropriate quality screening from a social and economic perspective. However, compared to private sector financiers, the developmental objectives of DFIs allow them to make a more complete analysis of the projects, and consequently to be better positioned to decide on the viability of these projects. Private financiers may decide to co-finance these projects to the extent to which this information is perceived by the market as unbiased and independent of the government. This independence is granted on solid governance structures and mandates that promote additionality of the DFIs. It is also critical that the participation of DFIs does not eliminate reasonable incentives for the sponsor and private financiers to conduct appropriate due diligence and monitoring of the project. This implies that the private sector is allocated a share of the project risk so that private financiers also take an active role in project structuring and monitoring to contain those risks. Finally, DFIs' actions should complement and reinforce ongoing broader PPP policies and financial sector policies aiming at private sector-only financing solutions.

The role of DFI in financing infrastructure become more critical in countries with less developed capital markets, but it is essential to use the limited resources in smart way (*smart money*). As other sources of funding are not readily available, the role of DFIs is critical in triggering private sector financing into infrastructure. DFIs should aim not only to provide funding to government-sponsored projects in PPPs, but also to ensure that the projects are presented with a sufficient degree of preparedness, and that PPP contracts provide adequate risk allocation, so that other private financiers might participate in the process. Because a shallow capital market is not synonymous with lack of resources, DFIs should aim at facilitating

the participation of private sector financiers in the process. Private investors may involve companies, family offices, and resources from the diaspora, among others. In the context of imperfect laws and regulations that protect the rights of bondholders, DFIs can design bilateral contracts that protect those rights. Creating the incentives for private sector participation, it would be easier for these financiers and others entering into future PPP transactions without the strong support from the DFIs. While the concept of *smart money* is more difficult to implement than simply funding PPP products, it allows leveraging and doing more with the scarce resources from the DFI.

Some DFIs in the region are starting to play a catalytic role in infrastructure financing. Colombia's FDN has played an important role in attracting private sector investors to the road infrastructure products, and since 2015 Brazil's BNDES has been moving its financing strategy of infrastructure projects toward leveraging with private sector financing. In January 2017, BNDES announced a bold decision to reduce the financing with subsidized lending rates.

6.2 Development Financial Institutions and Market Failures in LAC Countries

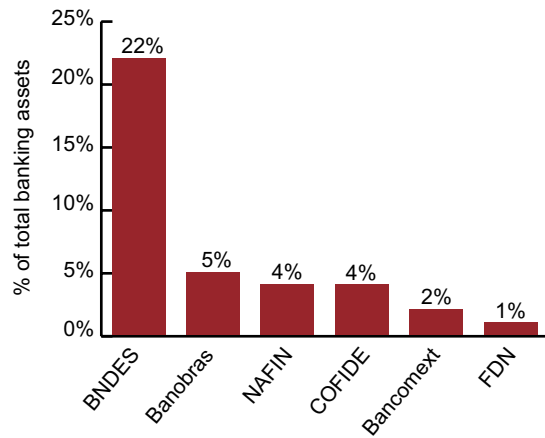
DFIs have played an important role in the financing of infrastructure in some countries in the LAC region. Over the period 2011–15, DFIs, including export credit agencies (ECAs), provided around 30 percent of total financing for infrastructure, of which 16 percent was provided by national development banks (see Figures 6.1 and 6.2). Of the ten Latin American national development banks that are active in infrastructure financing, only six have a clear mandate and systematic engagement. Their commitment to infrastructure financing is very diverse in terms of mandate, volumes, and instruments. Some of them have narrow mandates to finance infrastructure, such as FDN in Colombia and Banobras in Mexico, while others combine

infrastructure financing with other strategic priorities, such as BNDES in Brazil, NAFIN in Mexico, and COFIDE in Peru.

DFIs' instruments for supporting infrastructure financing vary across countries in the LAC region. Although some DFIs have a strong focus on direct lending, others focus more on guarantees. Brazil's BNDES has had a strong program of

lending to infrastructure, supported by its subsidized cost of funding. FDN in Colombia is in the process of developing several types of financial guarantees, having offered so far partial construction phase guarantees and liquidity guarantees for toll road projects. In the case of Mexico, multiple state financial entities overlap in supporting infrastructure financing with different instruments ranging from long-term loans to partial financial guarantees: Banobras (specializes in infrastructure financing), NAFIN (specializes in SMEs but also provides support to renewable energy projects), Banco Nacional de Comercio Exterior (BANCOMEXT) (specializes in the export sector and provides support to targeted energy projects), and FONADIN (provides a broad range of products from project preparation to loans and guarantees in the riskier segments or projects).

Figure 6.1: Assets as Percentage of Total Banking Assets in Their Home Country, 2016

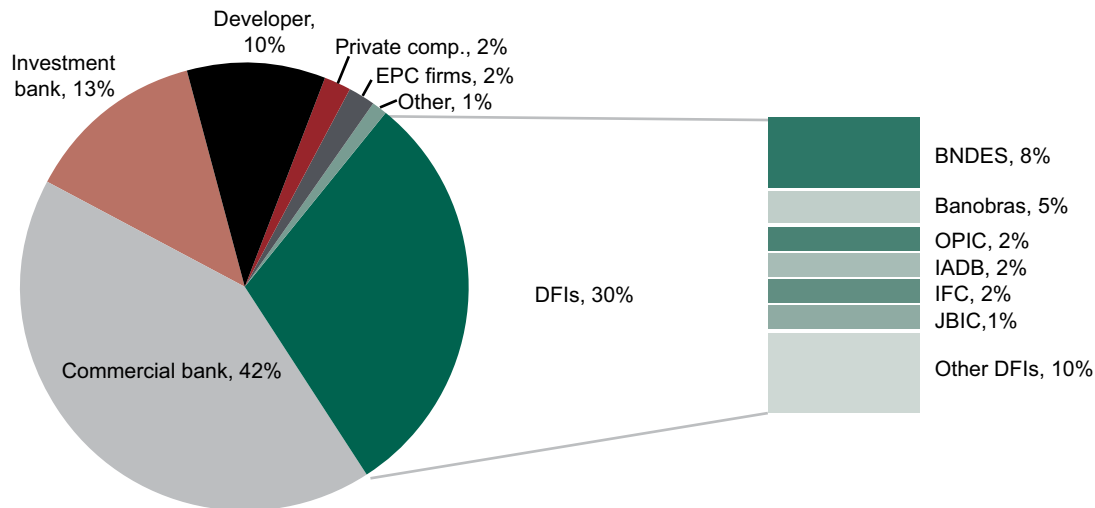


Source: State development banks and supervisory banking authorities.

Note: Total banking assets include private and public banks.

The most common role for DFIs in the region is to provide financial support to projects with different types of products ranging from direct lending to partial guarantees. In addition, some of these institutions provide technical assistance in project preparation. Their catalytic role in mobilizing private sector financing for public infrastructure projects is generally not explicit in their mandate, so a systematic strategy in this direction is generally lacking. In some countries, it is very clear that DFIs

Figure 6.2: Supplies of Capital to Infrastructure Projects in LAC Countries, 2011–2015



Source: IJGlobal.

leave very little space to private sector financiers; however, in most cases the degree of additionality provided by DFIs can be determined only on a project-by-project basis.

National development banks in the LAC region present different features that have an impact on the role they play and the products they offer. A selection of relevant features in LAC national DFIs can be categorized into three groups:

- ❖ *First, the size of their balance sheet:* DFIs with large balance sheets tend to rely more on direct lending than on partial guarantee products such as BNDES in Brazil and Banobras in Mexico. In the case of FDN in Colombia, a smaller balance sheet has been an important factor in designing a strategy based on partial financial guarantees as a core product. In the absence of mandates that require complementary private sector financing, direct lending is a technically easier solution. In addition, not all DFI banks in the region have platforms and skills in place for providing guarantees, which limits their capacity to act in this market. In some cases, the local financial sector does not have the skills to take advantage of the guarantees.
- ❖ *Second, the cost of funding:* This is highly dependent on whether central governments provide funding or not. The majority of national DFIs in the LAC region obtain part of their funding from government budgets in different proportions, which allows them to offer their products at well below market prices, but most of them issue bonds as well. Bond issuance by DFIs allows them a cost of funding aligned with the sovereign, but typically with a spread that depends on the bank's credit perception. Recently, fiscal pressure on central governments has limited the amount of funding DFIs have had access to, which has driven some to consider a greater weight of financial guarantees to increase impact of their balance sheet (e.g., BNDES). Although access to government funding is legitimate and can support DFIs'

developmental role, it can also reduce the discipline they should have in using their resources efficiently. FDN is probably one of the few examples in LAC countries of a DFI that relies only on market financing. This is also behind a focus on financial guarantees and a strict pricing policy ensuring that products offered do not generate losses.

- ❖ *Third, their ownership structure:* The common model is full government ownership. Depending on the country, different government agencies and ministries are represented on the board with the Ministry of Finance taking a leading role. The exception to this model is FDN, recently established in Colombia, which has mixed ownership with multilateral financial institutions and the private sector. A mixed ownership structure may help with a stronger governance of the institution.

To the extent that market conditions and regulatory framework are insufficient to motivate private sector financing, DFIs can play a catalyzer role. The presence of DFIs in infrastructure financing should be designed in line with market conditions. At one extreme, for more than two decades, Chile has been able to finance its PPP infrastructure program without the participation of DFIs, but with strong support from pension funds and life insurance companies. At the other extreme, BNDES has been the main financier of the large majority of infrastructure projects in Brazil, with limited participation from private sector banks and institutional investors. In 2015, with the purpose of bringing private sector financing into infrastructure, BNDES put in place a program of incentives that offers lower cost of borrowing from BNDES to projects that receive co-financing from the private sector. The cost of borrowing from BNDES decreases as the financing from private sector increases.

A few reasons may justify the participation of DFIs in financing infrastructure. These can be grouped under two categories: (1) pure financing interventions to address financial market failures

and (2) interventions to support PPP authorities to improve the quality of project preparation. DFIs can have an invaluable catalytic role in crowding in private sector finance in LAC while PPP and financial sector reforms are being implemented. It is essential for most DFIs in the region to align their mandates and governance structures with these justifications to ensure the additionality of their interventions. Most LAC countries with DFIs are already moving in this direction; however, they could have a greater impact with a more systematic and comprehensive approach.

Although market failures are becoming less binding for private sector participation, well-designed DFI interventions can help to smooth financing during the transition. Within a clear mandate of additionality, DFIs should have a dynamic approach of interventions that are subject to changing market conditions. The objective would be to avoid perpetuation of unnecessary concessional lending or inefficient project support schemes or guarantee programs. Multilateral organizations can add value in this regard.

However, it is important not to rule out the role of DFIs and multilateral organizations in two types of situations. First, DFIs have a role to play in smaller economies with weak PPP frameworks and shallow domestic financial markets. Multilateral organizations can be an important complement to DFIs through technical advice, additional capital, and crowding in international investors. In these markets, nonresident financing is generally important to help bridge the infrastructure gap. Blended concessional financing, and in some cases guarantees, can be critical to attract private capital at an acceptable cost. Second, in the more mature LAC economies, targeted interventions by DFIs and multilateral organizations, with different risk mitigation products in new sectors or projects with a special risk profile, may be necessary in the face of market failures. This is particularly important when trying to attract debt financing from institutional investors that have a low risk appetite for long-term, low-return investments.

The next sections discuss market failures and potential interventions for DFIs based on the conditions that may justify their interventions.

6.3 DFIs' Downstream Contribution Addressing Financial Market Failures

Financial market failures are mostly related either to lack of skills to assess, management of infrastructure finance risks, or a low degree of market development. In these scenarios, DFIs can play an important role while these market conditions become less binding for private sector financing. Structural reforms addressing capital market development and infrastructure-related regulation may help to overcome these market failures. A critical aspect is that DFI interventions should be designed in ways that can contribute to addressing market gaps in the longer term so that DFIs can phase out their interventions. Market failures that are most commonly found in infrastructure finance where the role of DFIs would be justified are discussed in this section.

6.3.1 Lack of Expertise by the Domestic Financial Sector in Infrastructure Financing Structures

The financial sector in most LAC countries does not have the expertise required in typical project finance structures, with no recourse to the sponsor's balance sheet. Infrastructure projects typically operate with new companies with no financial history that operate with high leverage and whose capital in some cases goes up only to approximately 30 percent of the total financing of the project. Project financial structures tend to be very robust in terms of reliability of future cash flows, covenants, debt coverage ratios, and termination payments. Lack of understanding of project finance in LAC countries results in a poor credit risk assessment of projects and weak financial

arrangements. Lenders tend to apply the same principles as in corporate finance, relying on the balance sheet of the sponsor or on additional guarantees, all of which increase the cost of financing and do not necessarily reduce risk.

DFIs can play an important role in providing technical capacity to banks and other private financial institutions. These tasks can take place either through direct technical assistance or knowledge transfer by participating in project finance deals along the private financiers. Although it is not natural for DFIs to have this type of expertise, they can take the lead in training their staff and building project finance platforms based on best practices that could serve as an example for the local financial market. Other indirect options, such as co-lending or partial guarantees that crowd in foreign intermediaries with project finance skills, might also be effective. In Colombia and Mexico, the participation of national DFIs in project financing through guarantees or co-lending along domestic financiers has helped to attract international banks with project finance expertise, resulting, among other benefits, in knowledge transfer to domestic intermediaries.

6.3.2 Lack of Size, Depth, and Sophistication of the Domestic Financial Sector

Insufficient financial sector development affects the capacity to provide financing to projects with long tenors in the LAC region. Only in a few LAC countries is the domestic financial sector able to provide financing for the tenors required by infrastructure finance. With the exception of Chile, the financial sectors in the region are strongly dominated by banks. Only in the countries with a stronger financial sector development do banks have the capacity to lend at medium-term maturities (5 to 7 years), and in some exceptional cases, they can lend sporadically in longer maturities (12 to 15 years). In most of the cases, these tenors are insufficient for the maturities required by infrastructure projects. Structural reasons and regulatory aspects help to explain these shortcomings, including weak macro-fiscal frameworks and lack

of long tenors in the government bond yield curve. Additionally, the absorption capacity of local currency markets is limited to smaller projects. With the exception of Chile and Mexico, most project bonds, in the few countries that are issuing them, depend on nonresident financing in foreign currency and in offshore markets with high exposure to foreign currency exchange risk.

Some DFIs in the LAC region are already supporting the provision of long-term financing to banks. Access to long-term funding by banks facilitates the conditions for banks to finance infrastructure. Brazil is in the process of upgrading its regulatory framework to new international standards (Basel III), and some Brazilian banks have raised awareness about the need for accessing long-term sources of funding to be able to finance infrastructure projects. In the absence of a bond market where banks can access long-term funding via capital market, DFIs can help to complete the long-term financing market by providing long-term funding to banks. Mexico's Banobras has a program in place that provides long-term funding to banks.

The provision of partial credit guarantees, which the private financial sector is not willing to offer, may create the conditions for institutional investors to participate in infrastructure financing. Some DFIs in Mexico have provided partial financial guarantees that have helped to mobilize financing of institutional investors into project bonds. These bonds generally finance the lower risk post-construction phase of projects. However, broader and more systematic efforts to crowd in long-term investors might be needed across the region. This effort could take place with two complementary strategies: (1) a bolder shift from direct lending into credit enhancement products, including partial guarantees; and (2) developing new instruments to attract long-term institutional investors in the riskier phases of projects. An innovation that could be more widely used is infrastructure debt funds to mobilize institutional investors from the construction phase of projects. The provision of partial credit guarantees during the construction phase to engage private sector financing provides a

welfare-improving solution compared to DFIs' direct financing of infrastructure (see Chapter 4).

6.3.3 Asymmetric Information in Early or Revised Phases of PPP Framework Implementation

After previous experiences of poorly designed PPP programs, launching upgraded programs may require support from DFIs. With the exception of Chile, most of the PPP frameworks in LAC countries have not been successful in involving private financiers through the development of project financing in their initial PPP programs. Over the years, countries such as Colombia and Mexico have gone into several generations of PPP programs, but the bad experiences from the initial stages have created skepticism among private financiers for participating in new programs. Revisions of PPP frameworks, such as in Colombia in 2012 and Peru in 2015, attempt to shift risk from the public to the private sector, following international best practices. Support from DFIs may help to build trust among private financiers and reduce the asymmetric information, once the revised PPP programs are properly designed.

DFIs can be instrumental in supporting early stages of PPP framework implementation. They can provide partial guarantees in all phases of the project cycle while the PPP framework is tested and consolidated. As public and private sector stakeholders build confidence, these guarantees can be withdrawn. An important value of DFIs' participation in these circumstances is also their "stamp of approval" and the signal from public authorities to support the transition process until the private sector is confident to take on the new risks.

6.3.4 Counterparty Risk from Central or Subnational Governments with Low Credit Ratings

Central and subnational government roles in PPP projects may be perceived as too risky by private financiers. Larger countries in the LAC

region with an investment grade credit rating have counterparty risks that are typically manageable for investors. However, some of the smaller economies with credit ratings below investment grade and shallow financial markets may find it difficult to attract international investors to their PPP programs or in the financing of specific PPP projects. In the case of subnationals, risk may become more difficult to manage, especially in states or municipalities with weak institutional capacity. As in federal countries, such as Brazil and Mexico, subnationals are expected to run a significant part of the PPP programs, and investors may not feel confident in participating in some of these markets. Both central government and subnational risks could relate to a number of different issues depending on the country: capacity to accomplish their responsibilities in the PPP process in a timely and efficient manner (e.g., rights of way, environmental and social permits), capacity to pay on time their obligations to the project sponsor (e.g., availability payments), the stability of core regulations affecting the profitability of the project, or judicialization of PPP contracts that may inhibit the capacity of governments to fulfill their obligations to the project.

Multilateral organizations can contribute to mitigate the counterparty risks. In smaller economies with a low credit rating, multilateral organizations may play an important role in enabling the participation of private sector in the financing of infrastructure. Their public credibility and expertise in designing contracts with sovereign counterparts leaves multilateral organizations in a strong position to manage counterparty risks. Guarantees against political risks are a valuable instrument for incentivizing private investors to participate in the financing of infrastructure projects. The LAC region has had extensive and positive experience with these types of support for central governments. Regarding subnational government risk, this is a relatively new area where DFIs can play a very important role while subnational PPP frameworks and institutions are consolidated. For example, private sector investors in PPP projects with subnational counterparts in Mexico see the co-financing of DFIs as a risk

mitigator factor, given their capacity to manage the counterparty risks in a more efficient manner.

6.3.5 Lack of Preparedness of the Local Concessionary Companies

A common feature in the LAC region is the limited capacity of the concessionary companies to deal with sizable PPP programs. Lack of preparedness on the part of domestic concessionary companies is a potential weakness of a PPP program, because concessionary companies dealing with these projects are expected to have sizable capital and knowledge of the PPP business. It is common in the region that at the moment of launching their PPP programs, potential sponsors are dominated by construction companies with limited capital and unsophisticated skills for financing long-term projects. Although the possibility of relying on foreign concessionary companies is an alternative, these companies might not be always available, especially in the initial stages. Chile provides an interesting example, as foreign sponsors dominated the concessionary companies in the successful highway concessions program of the 1990s. Bringing in foreign sponsors has valuable benefits, but trying to replicate the Chilean experience can be risky, because the risk appetite of these companies is selective.

DFIs can play a role in bringing expertise and capital to the local incipient concessionary companies. DFIs can play a significant role in preparing local companies to participate competitively in tenders of PPP projects. These tasks involve bringing potential sponsors into good governance and transparency standards, attracting expertise from strategic partners into these companies, and bringing additional capital from other investors. One interesting example is Colombia's FDN, which is launching an initiative to crowd institutional investors into the equity tranche of investments through specialized equity funds.

6.3.6 Foreign Exchange Risks

Many countries in the region face difficulties in financing their infrastructure programs in local currency. This is a consequence of the limited size of their domestic capital markets and the difficulty of the domestic governments to internationalize their local currency.⁹⁸ Financing projects that generate cash flows in local currencies, with financing in U.S. dollars, create unbearable risks for most foreign financiers, and it could be an important constraint for financing infrastructure projects. Most PPP infrastructure projects generate revenues in local currencies, with the exception of projects such as airports, ports, and some energy projects.

The degree of development of their financial sector leaves domestic markets in different positions. Some of the largest markets, and potentially the more liquid ones, including Brazil and Mexico, may create enough traction from foreign institutional investors once the infrastructure bond market grows. Investment in local currency-denominated infrastructure bonds may complement the investments that they already have in other plain vanilla instruments, such as government bonds. In these markets, some foreign institutional investors take currency risks as part of global diversification strategies. A second group of countries include those with more sophisticated financial markets, where international banks with local branches or subsidiaries might be able to raise long-term funding in local currencies, for example, by issuing long-term bonds, and to use the proceeds to finance infrastructure projects. In this case, banks take only credit risk. In these cases, foreign financiers hedge the currency risk by issuing debt locally. The third group of countries include those with relatively small financial sectors, such that they can finance their projects on in foreign currencies. In these cases, PPPs tend to be restricted to large projects generating dollar revenues (e.g., airports), or signature projects that are critical for the country where the public

⁹⁸ In other words, the capacity of foreign investors to take long positions in local currencies. See Eichengreen, Haumsann, and Panizza (2010).

sector generally takes all the foreign exchange risk (e.g., some important roads or energy projects).

DFIs or governments' Treasuries can provide transitionary support to address foreign exchange risk while markets mature. This is probably one of the highest risks to address given the exposure it can generate for both DFIs and governments' Treasuries. In markets with a low level of financial development, foreign investors are unlikely to take currency risk. The long-term solution to this risk is sound macroeconomic policies and the development of deeper local currency markets that will allow for greater financing in local currencies and more efficient currency hedging instruments.⁹⁹ In the meantime, DFIs or government counterparts (the Treasury), in cases of large operations, can provide foreign exchange currency hedges to foreign financiers participating in infrastructure projects. It is essential to ensure that these currency hedges are offered at prices that may closely reflect market conditions (fair prices). The experience of Chile in the design of a long-term currency hedge for infrastructure financing, as explained in Box 6.2, provides interesting lessons for other countries trying to finance infrastructure projects with foreign currency. Another relevant example is funding in local currency to foreign financiers as offered by Banobras in Mexico.

6.4 DFIs' Upstream Contribution in Project Preparation

DFIs can contribute to support governments in improving project bankability when, for technical reasons,¹⁰⁰ project preparation and information are below marketable standards. Problems in the quality of project preparation are widespread in the LAC region to different degrees depending on the country. As explained in Chapter 2, even in

⁹⁹ In the presence of market volatility, governments are the ones that have more capacity to bear these risks, and these exposures create the incentives to conduct sound macroeconomic policies.

¹⁰⁰ As opposed to "nontechnical reasons" linked to the need of special financial support to make the project bankable.

countries with PPP frameworks, projects are often tendered without a sufficient degree of preparation. Governments do not have enough resources to prepare projects before presenting them to the private sector, or they rush the concession programs to put into operation at least some of the projects while the same administration is still in office. These situations often lead to higher cost of financing or suboptimal risk allocation when governments or DFIs bridge the risk gap so private financing can be raised.

Preparation of public projects has traditionally been a function of governments, and this should be the target of PPP policies. In the transition, multilateral organizations can work with governments and DFIs in providing valuable assistance with both funding and expertise. They can also help transfer knowledge about experiences with project preparation among countries, recommend best practices, and help to standardize procedures for appraising and structuring PPPs and concessions in LAC countries.¹⁰¹ However, the scale and quality of project preparation are still likely to fall far short of what is needed unless new ways of involving the private sector are developed. The challenge is to structure the private sector's support and involvement in a way that does not compromise the competitive tendering process or create perceptions of favoritism.¹⁰²

Strong governance is essential to ensure credibility of DFI contributing to both upstream and downstream project preparation. Governance of DFIs needs to ensure that the unit that provides support to the government in project preparation and policy advice is independent from the unit that prepares independent assessments of the projects and invest in public infrastructure projects, together with private counterparts.

The specialized expertise needed to prepare infrastructure projects, especially PPPs, has

¹⁰¹ See Chapter 5 for a general discussion of project preparation processes and practices in the LAC region.

¹⁰² G24 and Global Green Growth Institute (2015).

Box 6.2: Currency Hedges: The Experience of Chile

- a. The experience of Chile with currency hedges is an interesting one to consider. In 1998, when the country was being hit by the Asian crisis and the government was vigorously pushing the concessions of transport infrastructure, there was a sense that the local market was going to be potentially insufficient to finance all the infrastructure projects. To address this market failure, the government offered a long-term zero currency collar to concessionary companies that obtained financing in U.S. dollars, in a way that in cases of excessive depreciation would imply payments from the government to the concessionaries, and excessive appreciation would imply payments from the concessionaries to the government.
2. The formula operated as follows: At the moment of setting the collar, both parties set the reference value of the dollar against the UF, which is a unit value of the Chilean peso indexed to inflation. It set a band of 10 percent above and below the reference value. Thus, at any time in the future involving payments of interest or capital when the relationship between U.S. dollars and UF exceeds 10 percent the reference value (depreciation of the local currency), the government has to pay the amount resulting from the difference between the value unit and the ceiling of the band (10 percent) times the value of the payment in foreign currency at that moment of time. The concessionary company has to pay the government when the value of the domestic currency appreciates for more than the floor of the collar (minus 10 percent). When the value of the currency moves between the floor and the ceiling of the band, there are no payments between the government and the concessionary company. As happened with the rest of the guarantees offered by the government, the payments were expected to have a lag associated with the approval process of the government budget.
3. The mechanism was successful in facilitating financial closure of various PPP projects. Six infrastructure projects requested this currency hedge mechanism, but all the concessionaries moved away from the mechanism by 2005 because they were able to refinance the projects in local currency. In the period after the Asian crisis and up to the international financial crisis, Chile saw low inflation and systematic currency appreciation, in part supported by the favorable commodity cycle prices. During this period, the government did not make any payments, but some concessionaries had to make them on more than one occasion.
- d. Some lessons from the Chilean experience offering currency hedges are as follows:
- i. Although nominal exchange rates may have unpredictable movements over time, the trend of real exchange rates tends to be more stable. Thus, it is preferable to set the reference value of the currency in real terms (U.S. dollar/UF) than in nominal terms (U.S. dollar/peso).
 - ii. The currency hedging mechanism has to be simple. The Chilean Finance Ministry designed different models for the hedge, but it ended up with something simple that was easy for everyone to understand. An important consideration was the possibility of payments by both parties.
 - iii. Although the Chilean government faced potential additional risk, there was the impression that if the government and private sector act prudently, the currency of a developing economy should appreciate systematically.
 - iv. The currency hedge was designed as an option for the concessionary company, and consequently they should be able to take it or leave it, at no cost, at any moment (no exit fees).
 - v. As currency depreciation was the initial concern of the concessionaries, the effective currency appreciation pushed them to look for financing in local currency. It was a good instrument for reducing uncertainty and facilitating the kickoff of the infrastructure program.
 - vi. A government or a reputable state financial institution can offer this type of currency hedge. However, the government has to understand that there are no hedging instruments that they can rely on except by following good economic policy. The government's liabilities can skyrocket if they do not address potential macroeconomic imbalances that can translate into drastic currency depreciations. Consequently, governments have to be conscious about their own limitations at the time they become involved in long-term currency deals.

Box 6.3: Project Preparation Facilities

The project preparation process can be broken down into two stages. Early-stage project preparation focuses on the study of a project's feasibility (on both technical and political grounds). Once it has been determined that a project is feasible, late-stage project preparation is undertaken and culminates in the project's financial close. This late stage involves the preparation of detailed engineering designs, environmental and social impact assessments, resolution of population displacement issues, stakeholder consultations, transaction structuring, and bidding. The early-stage work typically costs only a fraction of the costs required by late-stage work.¹⁰³ However, financing for early-stage work is likely to require public funds given the risk that many projects will not go forward and the time gap between the initial feasibility studies and the financial close. Efforts to attract private sector financing for project preparation are likely to be more successful if focused on late-stage project preparation.

The current funding available for project preparation is clearly a small fraction of what is needed. Most current

funding comes from government budgets or grants from MDBs and donors. It appears unlikely that these sources of funding will be increased substantially. Thus there is a need to find financing models that will allow PPFs to be more self-sustainable. One solution is to make greater use of revolving funds, where the PPF is compensated by the private sector concessionaire via cash, equity in the project, or a subordinated loan in the financing package. Another approach is to use a "venture capital model" that provides for cost recovery plus a variable margin based on some performance measure. Each approach creates different incentives in terms of optimizing preparation costs, refining the quality of the project preparation and serving the public interest.¹⁰⁴ The venture capital model has potential to become a means for increased private sector project preparation efforts.¹⁰⁵ The private sector can also contribute to public infrastructure project preparation when the government has in place a process for approving unsolicited proposals (USPs) and providing adequate compensation for such proposals.¹⁰⁶ (Use of USPs appears to be much less widespread in the LAC region than in other regions.)

given rise to the creation of project preparation facilities (PPFs).¹⁰⁷ PPFs may be country specific, regional, or global. They have a range of institutional arrangements and cover both publicly and privately financed public infrastructure, although most are focused on projects that have private sector involvement. In recent years many have been

funded and/or managed by multilateral organizations, bilateral aid agencies, and other financing institutions from donor countries and NGOs.¹⁰⁸ Multilateral organizations and donors have also assisted in the development of national PPFs, some of which operate as independent agencies and some as parts of ministries or national development banks (see Boxes 6.3 and 6.4 on PFI). PPP Units, a specialized form of PPF focusing on public-private partnerships, have been established in many countries around the world, and there are a number in the LAC region.¹⁰⁹

In 2015, in response to a request from the G-20, the multilateral organizations put forward proposals to strengthen project bankability in collaboration with governments. The proposals,

¹⁰³ The feasibility studies and contract design typically amount to 1 to 4 percent or more of the total project investment. Preparation costs typically are 1 to 2 percent for large projects (more than US\$500 million), 2 to 3 percent for medium projects (more than US\$100 million), and 3 to 4 percent for small projects (less than US\$100 million). WEF (2013).

¹⁰⁴ These different incentives are discussed in WEF (2015).

¹⁰⁵ An example of a purely private sector PPF is TIMU Energy Holdings. See *ibid.*, p. 15.

¹⁰⁶ There has been a clear global trend in recent years of countries including provisions for dealing with USPs as part of their PPP programs. Lack of capacity to identify, prioritize, prepare, and procure projects has been a key driver for allowing USPs. However, projects initiated as USPs face many challenges and thus policies for USPs need to be carefully designed. See PPIAF (2014).

¹⁰⁷ *Ibid.* and CSIS (2016).

¹⁰⁸ PPFs supported by multilateral, bilateral, and donor organizations are less common in the LAC region than in other regions of the world. See Global Infrastructure Basel (2014).

¹⁰⁹ A list of these is provided at <http://ppp.worldbank.org/ppp/overview/international-ppp-units>

Box 6.4: MDB Case Studies

MDBs are already working to strengthen project preparation through PPFs. Some examples are presented below.

PPIAF

In 1999 the Private-Public Infrastructure Advisory Facility (PPIAF), a multidonor technical assistance facility, was set up to assist governments in developing countries to develop the enabling environment conducive to private investment including the necessary policies, laws, regulations, institutions, and government capacity. PPIAF also supports governments to develop specific infrastructure projects with private sector participation. It provides support primarily by providing grants to governments and providing technical assistance. It has become a major source of information about best practices for PPFs and guidance on how to access and use PPFs provided by multilateral and bilateral development organizations.

PPIAF has worked with several LAC countries. It started by providing assistance to Colombia in 2000 and advised the government on the development of its new “fourth generation” concession program. Later it helped with the design of the National Infrastructure Agency (ANI).

For more information see <http://www.ppiaf.org/>.

Inter-American Development Bank’s InfraFund

The InfraFund is dedicated to assisting public, private, and mixed-capital entities in LAC countries in the identification, development, and preparation of bankable and sustainable infrastructure projects that have the potential of reaching financial closure. The InfraFund was launched in 2006 with \$20 million in capital.

The Inter-American Development Bank has several other facilities that support project preparation: the Project

Preparation Facility (PPF), the Project Preparation and Execution Facility (PROPEF), the Fund for Integration Infrastructure (FIRII), and the Fund for Financing Disaster Prevention (FDP).

For more information see <http://www.iadb.org/en/topics/transportation/infrafund,1635.html>.

The Global Infrastructure Facility (GIF)

The World Bank Group launched the GIF in 2015 with an initial capitalization of US\$100 million. It is designed to provide an open global platform for greater collaboration in preparation and structuring of complex infrastructure projects—working with a number of MDBs as technical partners, and with the private sector, governments, and bilateral and national development finance institutions to boost private sector investment in infrastructure in emerging markets and developing economies (EMDEs), and structuring projects to enable participation by institutional investors or other private providers of long-term financing.

GIF will also attempt to promote a harmonized approach among MDBs to project preparation and supervision, including through use of standardized procurement policies and documents and environmental and social safeguards, similar requirements for ex-ante cost-benefit analysis and project “executability” assessments, and the use of concrete metrics to monitor and report on development effectiveness. The GIF’s private sector advisory partners represent some US\$12 trillion in assets and include pension funds, insurance companies, fund managers, reinsurers, and sovereign wealth funds, as well as commercial banks.

For more information see <http://www.worldbank.org/en/programs/global-Infrastructure-facility>.

which focused on project preparation and information-sharing activities, provide a basis for better coordination in the technical support and financing provided by DFIs.¹¹⁰ In an effort to reduce the time and cost, while raising the quality, consistency, and transparency of the public sector’s

project preparation, multilateral organizations have been promoting the use of standardized procurement policies and documents; the application of similar environmental and social safeguards policies; common requirements for ex-ante cost-benefit analysis, value-for-money analysis, and project “executability” assessments; and standardized metrics to monitor and report on development effectiveness. As pointed out in Chapter 2, such

¹¹⁰ Multilateral Development Banks (2015).

standardization will help generate predictability and reduce transactional costs. To support this effort the multilateral organizations and DFIs recently established a pilot online platform, the International Infrastructure Support System (IISS), which offers general and sector-specific infrastructure project templates. Public sector agency teams can use the platform as both a guide to their preparation activities and a project management tool.¹¹¹

6.5 Conclusions and Policy Recommendations

DFIs and multilateral organizations can contribute to promote private sector infrastructure finance in LAC countries. Their role would vary depending on the country, type of project, and instruments used. DFIs should be able to provide additionality in cases where market failures inhibit financial sector participation, but as enabling conditions improve, they should be prepared to backtrack and let the financial market stand on its own. In addition, multilateral organizations, supported by a strong governance, financial and human resources, credibility with private sector counterparts, and technical capacity are a significant asset for supporting infrastructure financing in the region.

DFIs' role in infrastructure finance may take place both upstream in project preparation and downstream in pure financing. Under both modalities DFIs can have an invaluable catalytic role in crowding in private sector finance in LAC countries while PPP and financial sector reforms are being implemented. It is essential for most DFIs in the region to align their mandates and governance

structures with these justifications to ensure the additionality of their interventions.

DFIs' interventions need to be accompanied by government-led interventions to address market failures. Otherwise a number of distortions may develop that would crowd out the private sector and limit its capacity to finance infrastructure in the future. Market failures that justify the presence of DFIs in infrastructure financing are related to several circumstances that can be grouped in three broad categories: low depth and sophistication of financial markets; low skills and capacity to structure, implement, and finance projects; and high country or project risk. In most countries these market failures can be addressed over time through structural policies.

The choice of instruments by DFIs is critical to develop self-sustained private sector financing. Which instruments are most appropriate would depend on the country context. Countries above a minimum financial threshold would benefit mostly from indirect support such as partial guarantees of several types and second-tier lending. Additionally, DFIs can play a lead in developing and testing financial innovations that in a second phase could be adopted by the rest of the financial sector. In smaller countries with shallow financial sectors DFIs can play an important role in providing concessional financing and guarantees to attract private sector financing. However, in these cases, it would be important to have a very selective criteria on which projects and interventions would most value the country.

While the role of DFIs is even more important in countries with shallow capital markets, these institutions should aim at leveraging resources from private financiers. While direct support from DFIs is needed, these institutions should help with governments in improving the projects and risk allocation to facilitate private sector financing.

¹¹¹ IISS was publicly launched in January 2016. It is being maintained at the Sustainable Infrastructure Foundation, headquartered in Geneva. See www.sif-iiss.org

A Snapshot of Infrastructure Finance in the LAC Region

A1.1 Infrastructure Gap and Financing Requirements in the LAC Region

Most LAC countries suffer from an undersupply of public infrastructure, which constrains economic growth and hampers access to basic services. In the World Economic Forum Infrastructure Index, the LAC region presents a wide range in the quality and availability of infrastructure, although most countries show significant infrastructure gaps, clustering in the lower half of the 140 countries ranked. This includes the larger economies in the region: —Brazil (74th), Colombia (84th), and Peru (89th)—as well as the smaller economies—Costa Rica (71th), Honduras (93th), Dominican Republic (100th), and Bolivia (107th). Four countries stand relatively higher in this index: —Panama (40th), Uruguay (42nd), Chile (45th), and Mexico (49th).

According to independent estimates, the LAC region would require an annual investment in infrastructure of 3.6 to 5.2 percent of GDP.¹¹² The biggest gap is found in the Information and Communication Technology sector (41 percent of the requirements), followed by Energy (33 percent), Transport (22 percent), and Water and Wastewater (4 percent), split almost equally between new

capital requirements and rehabilitation for operations and maintenance.

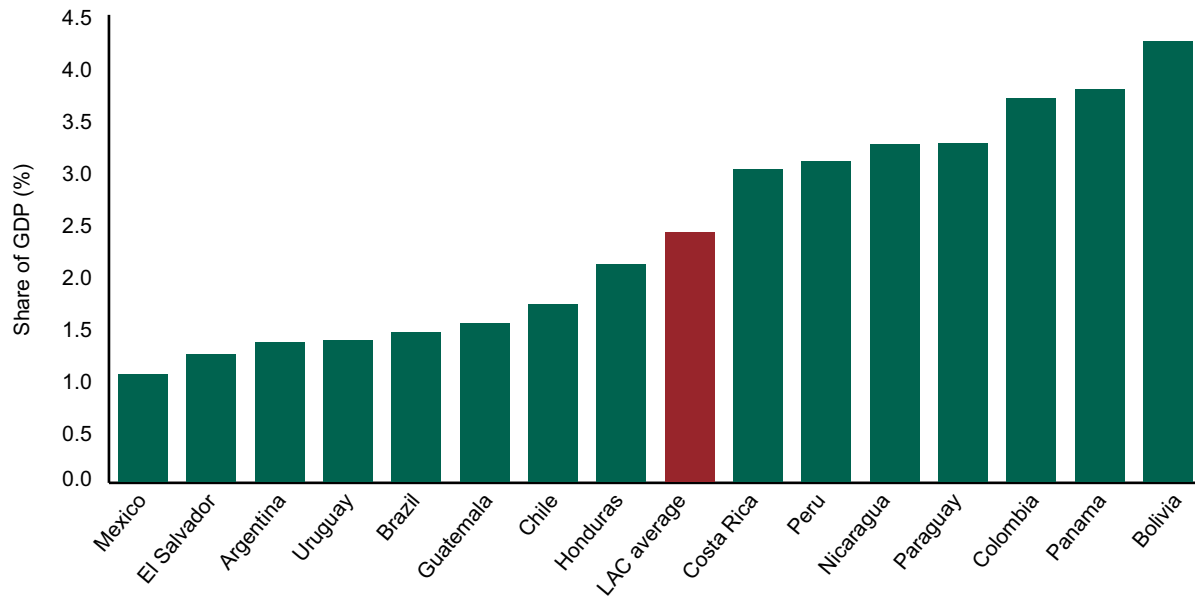
Ongoing investment in public infrastructure in the LAC region is significantly less than that required to eliminate the gap. Average annual investment rate for the region over the last six years has been only 2.8 percent of GDP, well below the estimated range of requirements (see Figure A1.1). However, significant variation is found across countries in the region, with the larger economies (Argentina, Brazil, Chile, and Mexico accounting for 60 percent of regional GDP) having the lowest annual investment rates (between 1.6 and 3.3 percent of GDP), while small economies (e.g., Nicaragua and Panama) have been investing more than 5 percent.

A1.2 Trends in the Use of PPPs in the LAC Region

Although investment in infrastructure remains dominated by public sector direct investment globally, the role of the private sector has been growing over time. Within the developing world, the LAC region has been a leader in the use of PPPs. The number of PPP projects grew threefold over the past 10 years, from 40 to 140, predominantly in the Energy, Transportation, and Water and Wastewater sectors. However, when measured in terms of share of GDP (Figure A1.2), growth in PPP

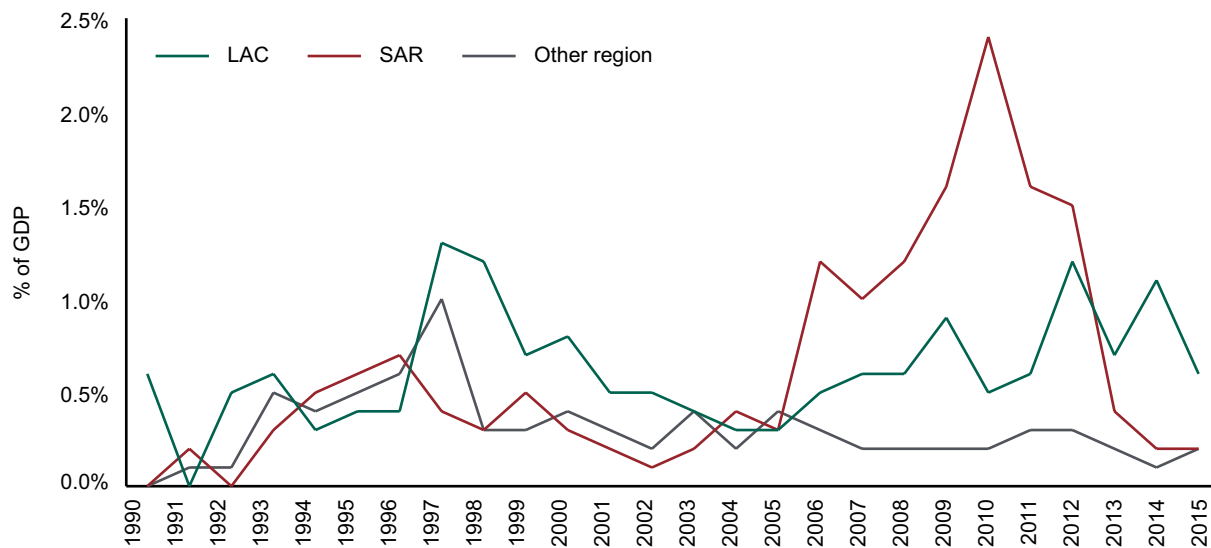
¹¹² Perrotti and Sanchez (2011); Kohli and Basil (2011); Ruiz-Nunez and Wei (2014).

Figure A1.1: Annual Average Public Infrastructure Investments as Percentage of GDP in Selected LAC Countries, 2008–2013



Source: www.Infralatam.info

Figure A1.2: PPP Investments as Percentage of GDP by Region, 1990–2015



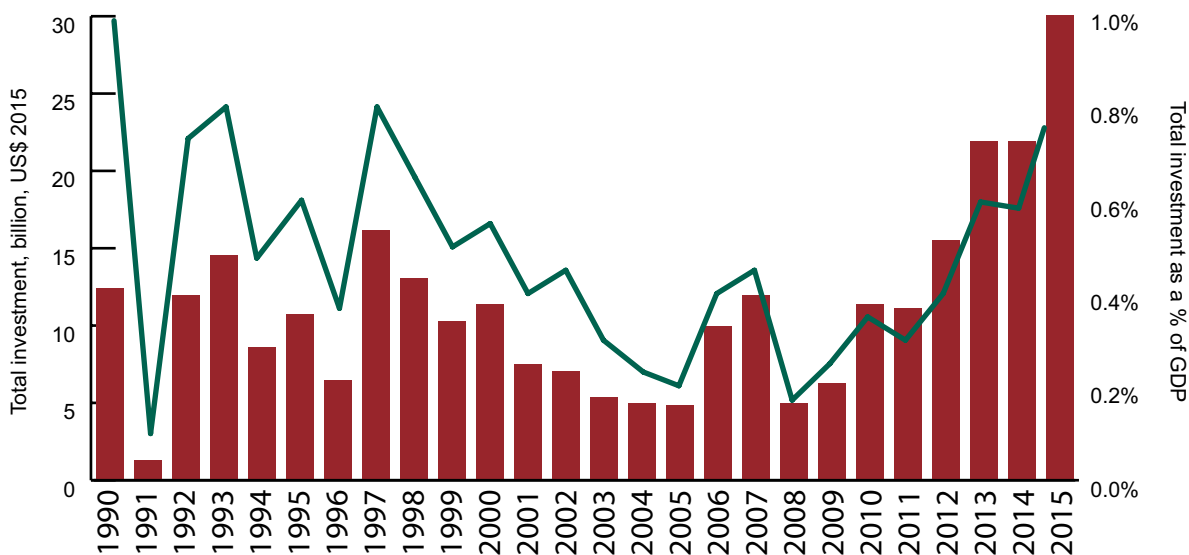
Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

within the region has been no faster than growth of the overall economy and did not surge as occurred in the Southern Asia Region (SAR). Between 2006 and 2012, the SAR region experienced a dramatic surge in the use of PPPs, which then declined with deteriorating economic conditions in India (Figure A1.3). The LAC region, excluding Brazil,

experienced a growth wave in the use of PPPs that started in 2008 with investments in PPPs as a percentage of GDP growing from 0.2 percent of GDP in 2008 to 0.8 percent of GDP in 2015.¹¹³ On balance,

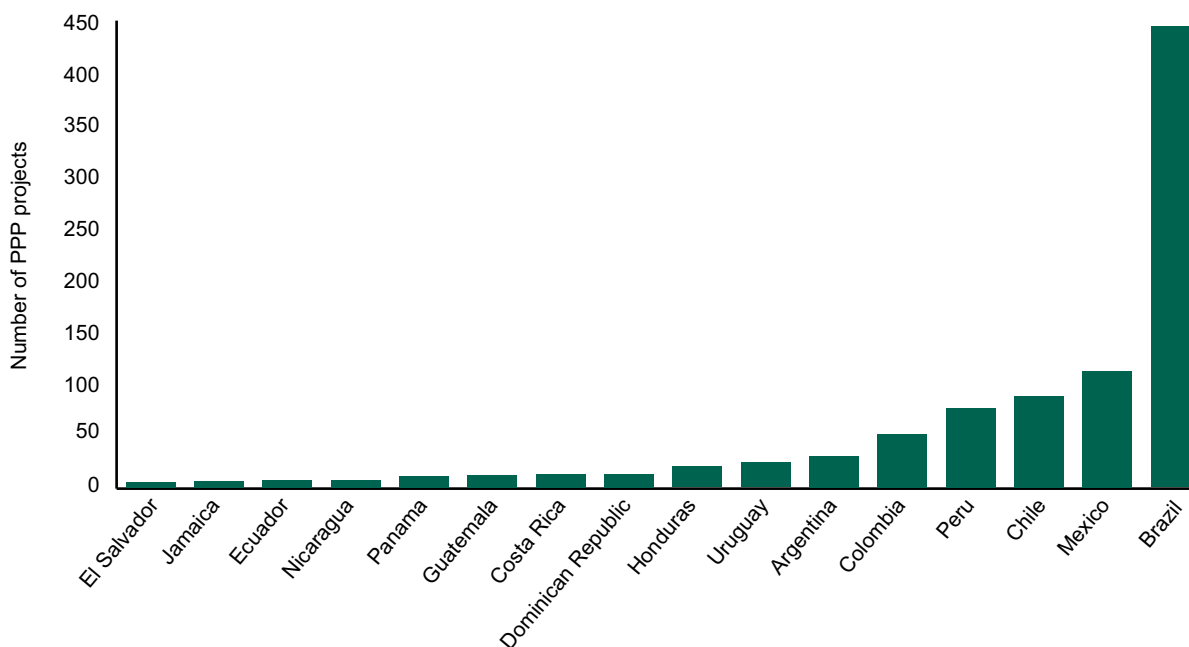
¹¹³ Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

Figure A1.3: PPP Investments in LAC excluding Brazil, 1990–2015 (absolute levels and as percentage of GDP)



Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

Figure A1.4: Number of PPP Projects by LAC Country, 2006–2015



Source: IJ Global

therefore, private participation in infrastructure (PPI) in the LAC region has begun to play an increasing role in tackling the infrastructure gap.

Many countries in the LAC region have had at least one PPP project during the 2006–2015 period. As shown in Figure A1.4, PPP projects

have taken place not only in the largest countries, but also in smaller ones, including countries in Central America. However, very few countries have a relatively mature PPP market (see Chapter 2).¹¹⁴

¹¹⁴ According to the Economist’s Intelligence Unit (EIU) Infra-scope Report for the LAC Region, 2014.

Table A1.1: Classification of Countries According to Maturity in the PPP Market (Infrascope Index)

Maturity	Country
Developed	Brazil, Chile, Colombia, Mexico, Peru
Emerging	Costa Rica, El Salvador, Guatemala, Honduras, Jamaica, Panama, Paraguay, Trinidad and Tobago, and Uruguay
Nascent	Argentina, Dominican Republic, Ecuador, Nicaragua, and Venezuela

Source: Infrascope Index (2014).

According to Infrascope (2014), only Brazil, Chile, Colombia, Mexico, and Peru have solid capacity to implement PPP projects (see Table A1.1). While challenges for financing infrastructure in the top group of countries remain, the other economies present a certain degree of maturity in PPP frameworks that can open up opportunities for the financial sector to get involved in some of the PPP projects.

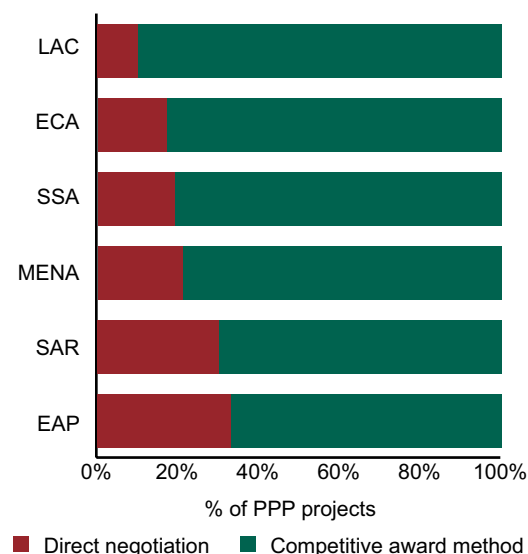
A1.3 Characteristics of PPP Markets in the LAC Region

A1.3.1 Direct Negotiations

The use of direct negotiations (through an unsolicited proposal [USP]) as a procurement process, as opposed to competitive tendering (originated either publically or as an USP) is not uncommon in the LAC region, while it varies by country. However, an interesting characteristic of the region is that direct negotiations in relation to the number of PPP projects are lower compared with other regions. As shown in Figure A1.5, direct negotiations have been dominant in the Energy sector. The relatively low level of direct negotiations in the LAC region is a positive PPP market attribute.

A1.3.2 Evaluation Criteria

An important market characteristic is the method by which proposals from private sector sponsors are evaluated in the market. In the LAC region, bids are typically evaluated on the basis of the lowest tariff

Figure A1.5: Percentage of PPP Projects Awarded through Direct Negotiations versus Competitive Tendering, by Region, 2010–2015

Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

to users (30 percent), the lowest subsidy or availability payment required from government (19 percent), the highest price paid to the government (16 percent), or the lowest payments payable to the government (13 percent).¹¹⁵

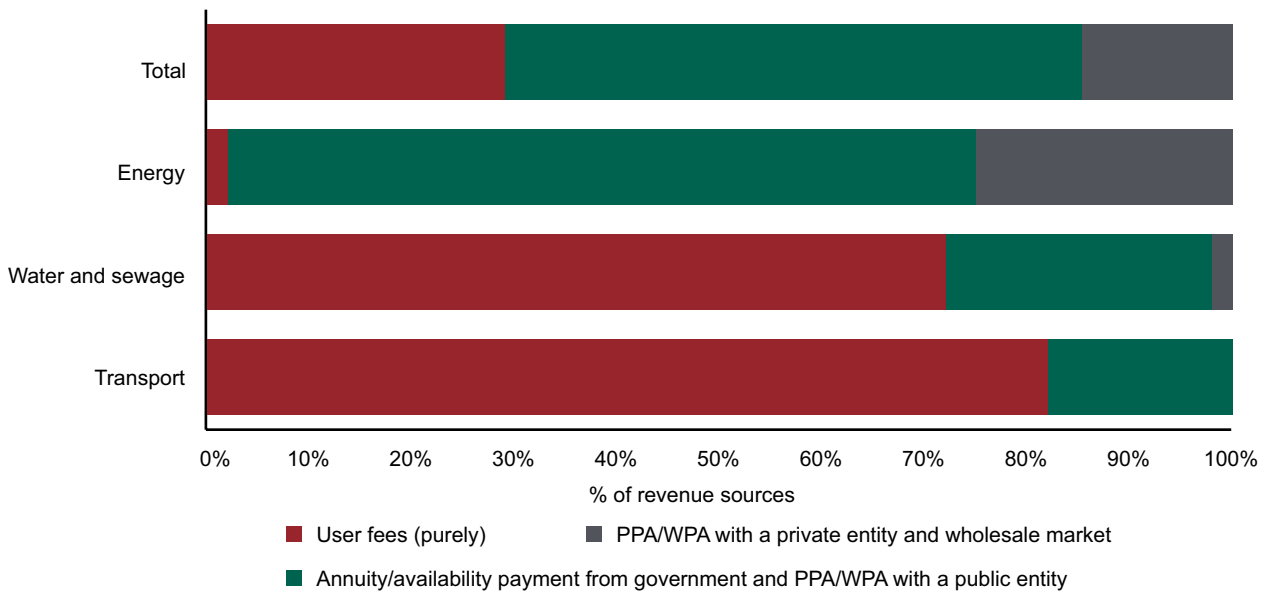
A1.3.3 Source of Funding

The bidding criteria analyzed in the previous section is typically linked to the revenue source of the project.¹¹⁶ The higher price paid to the government is usually linked to projects that can finance themselves without government transfers. Therefore, it is important to look at the composition of the revenue sources. Project revenues in a project can be grouped under three categories: (1) user fees;¹¹⁷

¹¹⁵ Based on information from the PPI Database.

¹¹⁶ By bidding on the price paid to the government implies that the government is maximizing its revenues. This is not necessarily aligned with offering a low cost option to users.

¹¹⁷ This is the case when the PPI project relies exclusively or mainly on user fees to cover its cost.

Figure A1.6: Revenue Sources of PPP Infrastructure Projects by Sector, 2010–2015

Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

(2) purchase agreements with private entities;¹¹⁸
 (3) availability payments from government and PPA/WPA with public entities.¹¹⁹ The first two categories do not require government transfers. Around 25 percent of projects in LAC that reached financial closure between 2010 and 2015 were funded exclusively by user fees and 12 percent with PPA/WPA with private entities and wholesale markets (see Figure A1.6). Transport was the sector with the highest share of projects funded purely by user fees (82 percent), which includes airports, ports, railways, and roads.

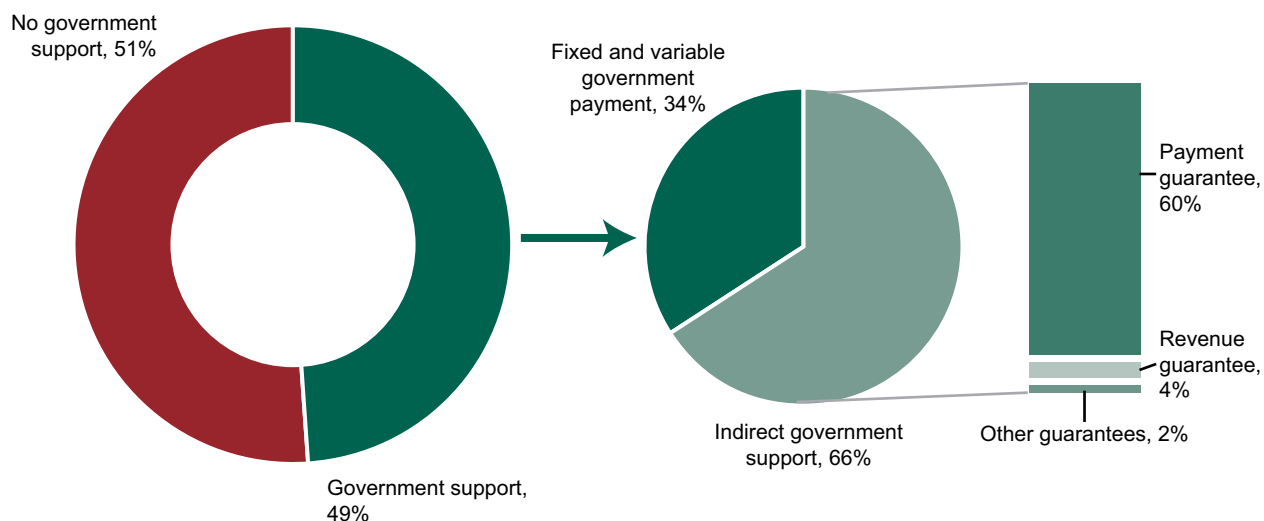
¹¹⁸ This case includes power/water plants or transmission lines that sell to or transport electricity/water to private off-takers. Wholesale markets include cases when outputs are sold to a single buyer or a group of buyers at market prices.

¹¹⁹ This is when the government agrees to make payments to the project company in exchange for the provision of infrastructure. It also includes PPA/WPA, which include the participation of public entities but may include the combination of public and private entities.

A1.3.4 Direct and Indirect Public Support for PPP Structures

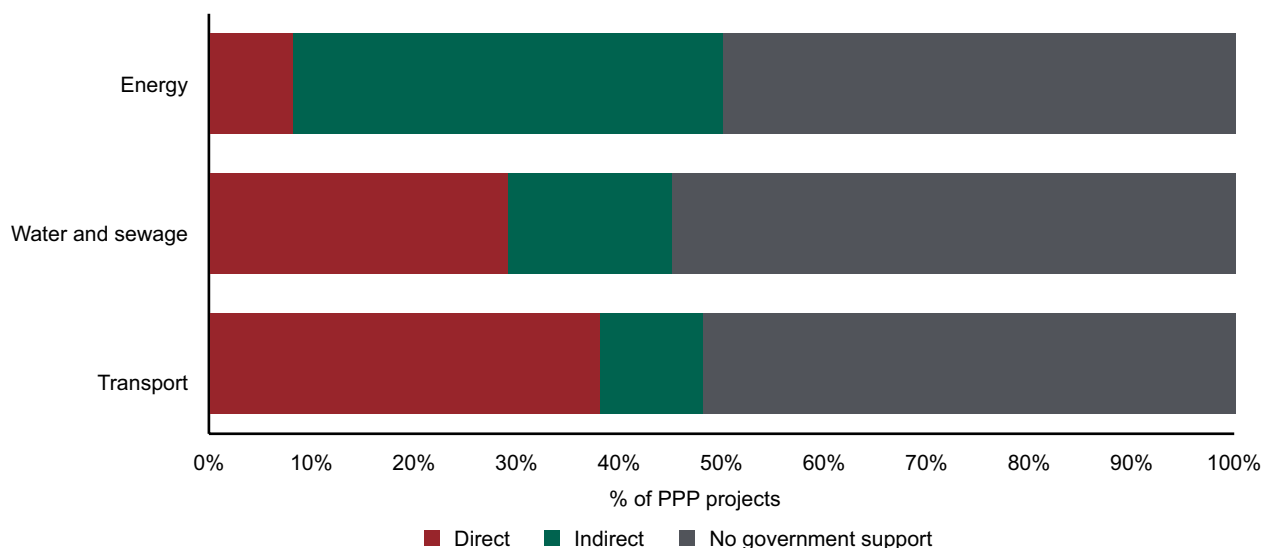
Public Authority expenditures and/or public user fees ultimately pay for infrastructure assets. Government can directly support project funding through annual “availability” payments or through upfront grants (see Figure A1.7). Such direct support is also used to offset “viability gaps” in attracting private financing. In some cases, governments have provided “indirect” support through the use of guarantees to mitigate some risks, such as demand risk, termination risk, and exchange rate risk. In other cases, governments have mitigated the demand risk with the use of flexible term concessions, based on concessions granted according to the criteria of minimum net present value of revenues. The use of performance-based availability payments or other government obligations is also common in the region. Direct and indirect government support continues to play a critical role in facilitating private sector investment in infrastructure projects. From 2010 to 2015, approximately half of all PPP deals in LAC had some form of government support through direct or indirect contributions. Guarantees of government obligations were the most common type of indirect support.

Figure A1.7: Type of Government Support in the LAC Region, 2010–2015



Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

Figure A1.8: Type of Government Support in the LAC Region by Sector, 2010–2015



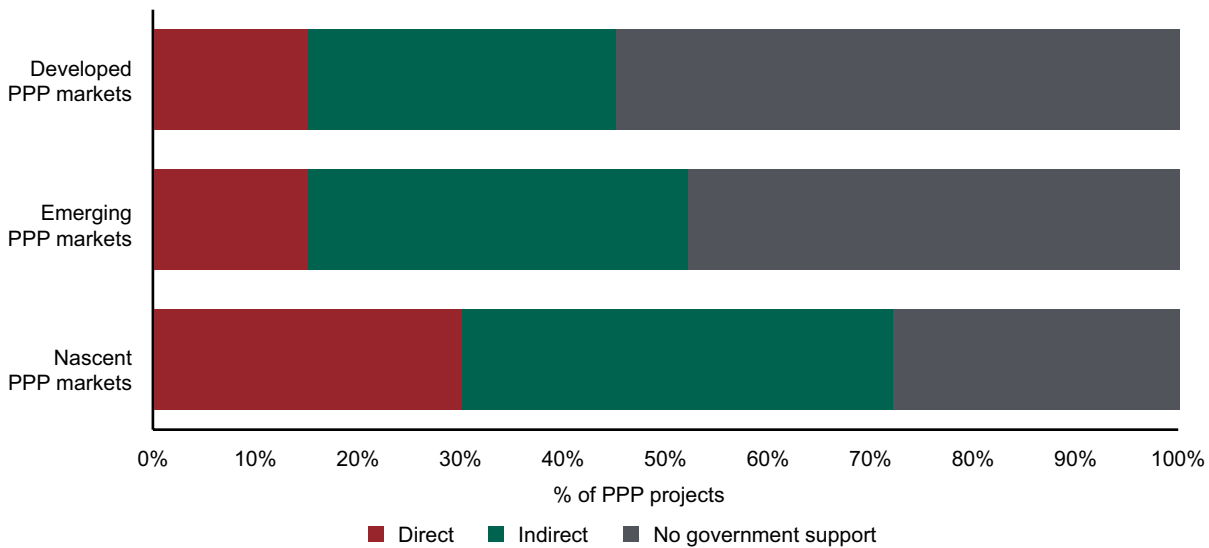
Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

The Energy sector has by far the greatest use of guarantees, whereas the transport sector received the highest percentage of direct support (see Figure A1.8). Type of government support also differed by maturity of the market to PPPs.

The degree of direct and indirect government support depends on the sophistication of the

market. Nascent markets receive the highest percentage of guarantees (see Figure A1.9). Among projects that received indirect government support, payment guarantees were the main type of indirect government support used in nascent and emerging markets (see categories in Table A1.1). Developed markets have also used construction, debt, and revenue guarantees.

Figure A1.9: Type of Government Support in the LAC Region by Maturity of the Market, 2010–2015



Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

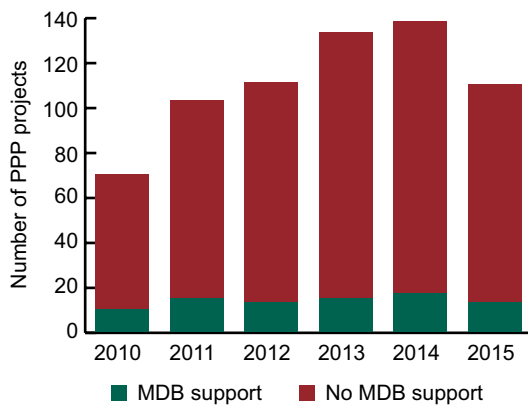
A1.4 Support for PPPs in the LAC Region by Multilateral Development Banks

Multilateral development banks’ (MDBs) support of PPPs across the LAC region has been uneven depending on the sector (see Figures A1.10 and A1.11). Their support has included assisting in the preparation and structuring of PPPs and providing financing through loans and other financial instruments to projects. However, the support has not

been widely based, because only 13 percent of PPP projects in the region have received MDB support, and this support has been heavily concentrated in the energy sector.¹²⁰ The most common form of MDB support has been direct loans, and this form of support comprised 74 percent of MDB-supported projects. This is consistent with findings in other

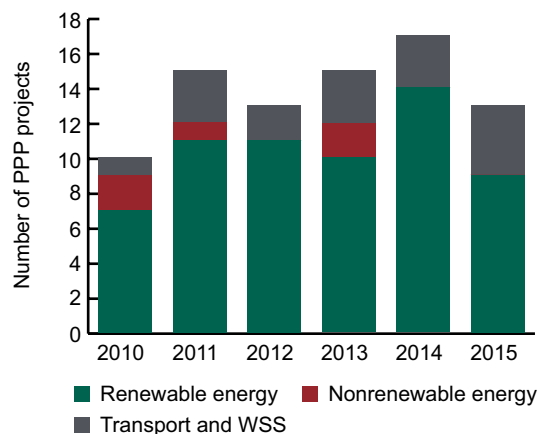
¹²⁰ Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

Figure A1.10: Total Number of Projects with MDB Support in LAC Region, 2010–2015



Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

Figure A1.11: Total Number of New Projects with MDB Support by Section, LAC Region Only

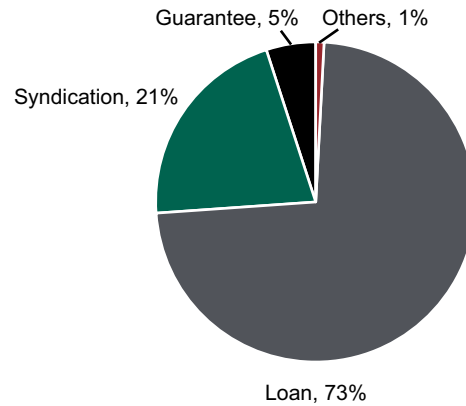


Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

PPP markets supported by MDBs in that direct loans are the most common support in more mature developing markets, and equity-type support is more common in nascent markets. Syndication¹²¹ and guarantees were also provided but less frequently, representing only 20 percent and 5 percent, respectively (see Figure A1.12).

¹²¹ The risk management products, or derivatives, allow project companies to hedge currency, interest rate, or commodity price exposure. Some of them are currency and interest rate swap, options and forward contracts, and derivatives.

Figure A1.12: Type of MDB Support, 2010–2015, LAC Region Only



Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

Basel III and Its Impact on Project Financing

Although the impact of Basel III requirements on project finance is still unknown, there are four principal subjects in which Basel standards may impact infrastructure financing:

- ❖ Liquidity Coverage Ratio (LCR);
- ❖ Net Stable Funding Requirement (NSFR);
- ❖ Large exposures;
- ❖ Credit risk.

LCR will be more strict with the “committed facilities” granted for project finance than for other type of financing. NSFR requires stable funding for over a year of financing, so that if banks do not have access to medium- or long-term funding, their ability to participate in project finance could be affected. Basel III is tighter regarding large exposures, which may limit the participation of relatively small banks in project finance (which are usually large projects). The proposed changes to the current Basel III credit risk framework may end up in higher capital requirements when external ratings are not allowed or available and in the elimination of internal ratings based (IRB) models for project finance.

A2.1 Liquidity Coverage Ratio (LCR)

To comply with this ratio, banks need to hold sufficient high-quality liquid assets (cash and central

bank reserves, for example) to meet anticipated outflows over a 30-day period of acute stress:¹²²

$$\frac{\text{Stock of HQLA}}{\text{Total net cash outflows over the next 30 calendar days}} \geq 100\%$$

When a credit or liquidity facility is granted, banks should assume a certain percentage drawdown of the undrawn portion of those facilities (to reflected as outflow), depending on the type of entity receiving the facility.¹²³

One element impacts project finance more strongly than other types of financing. As shown in Table A2.1, contractual loan drawdowns from “committed facilities” to a SPV should be fully reflected as “outflows,” while for other types of credit facilities (such as corporate finance) only a proportion of it is reflected as drawn. Considering the frequent use of SPVs in project finance, it is likely that the LCR framework will have a more significant impact on project finance, compared to other types of financing.

¹²² BCBS, “Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools” (January 2013).

¹²³ Ibid.

Table A2.1: Liquidity Treatment to Credit and Liquidity Facilities

Type of Entity	% Drawdown	
	Credit Facility	Liquidity Facility
Retail and small business customers		5%
Nonfinancial corporates, sovereigns and central banks, PSEs, and multilaterals	10%	30%
Other legal entities (e.g., SPEs, conduits, SPVs)		100%

Source: Authors' elaboration based on BCBS, "Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools" (January 2013).

A2.2 Net Stable Funding Requirement (NSFR)

This ratio introduced by Basel III will have an indirect impact on the ability of banks to hold significant volumes of more than *one-year term exposures*.

The BCBS defines it as the ratio between the amount of available stable funding and the amount of required stable funding. It should be kept equal or above 100 percent on an ongoing basis:¹²⁴

$$\frac{\text{Available amount of stable funding (ASF)}}{\text{Required amount of stable funding (RSF)}} \geq 100\%$$

The amount of ASF is measured based on the broad characteristics of the relative stability of an institution's funding sources, including the contractual maturity of its liabilities and the differences in the propensity of different types of funding providers to withdraw their funding. The amount of ASF is calculated by first assigning the carrying value of an institution's capital and liabilities to one of five categories. The amount assigned to each category is then multiplied by an ASF factor, and the total ASF is the sum of the weighted amounts.

The amount of required stable funding is calculated by first assigning the carrying value of an institution's assets to the categories listed. The amount assigned to each category is then multiplied by its associated RSF factor, and the total RSF is the sum of the weighted amounts. Assets should be allocated to the appropriate RSF factor based on their residual maturity or liquidity value.

Considering the composition of each type of stable funding defined by the BCBS, the NSFR broadly requires that funding of at least one year should be in place to match assets of one year's maturity or more.

When financing has less than one year of residual term, the required amount of stable funding (RSF) is lower. In this sense, banks have an incentive to provide shorter term financing, so that the residual term that each project will have over one year is smaller. For instance, a two-year project will have a RSF factor of 100% (for example) during the first year and a RSF factor of 50% during the second year; so, on average, the RSF factor during the lifetime of the two-year project is 75%. But, if it is a 10-year project, the RSF factor will be 100% during the first nine years and 50% in the last one, resulting in an average RSF factor during the 10-year lifetime, of 95%.

Project finance is not affected differently from any other corporate finance or consumer loans over one-year maturity. However, NSFR may impact negatively on the ability of banks to participate in project finance.

A2.2.1 Large Exposures

The 2014 Basel Large Exposures Framework prescribes a general large exposure limit of a bank at 25 percent of a bank's Tier 1 capital.¹²⁵ A "large exposure" is where the sum of all exposure values of a bank to a counterparty or a group of connected counterparties is equal to or larger than 10 percent

¹²⁴ BCBS, "Basel III: The Net Stable Funding Ratio" (October 2014).

¹²⁵ Exposure limits between G-SIBs are set to be more stringent, at 15 percent of tier 1 capital.

of bank's Tier 1 capital.¹²⁶ To identify large exposures to a counterparty, a bank must consider all those exposures defined under the risk-based capital framework (both on- and off-balance sheet exposures included in either the banking or trading book and instruments with counterparty credit risk under the risk-based capital framework).¹²⁷

Originally the exposure limits were defined in the context of the standards in Basel I.¹²⁸ It included numerical limits as a percentage of Basel I capital, the definition of which has been subsequently revised in later revisions of the Basel capital framework and more recently and substantively in Basel III. In this regard, the new exposure limits are more restrictive, considering that they are set as a percentage of Tier I capital, which represents only a portion of a bank's total capital.

Even though this regulation is not specifically focused on project finance, it can be expected to have a more significant impact on it, given their nature (i.e., large exposures are to be expected considering the magnitude of these kinds of projects).

A2.2.2 Credit Risk

In 2010, under the “global regulatory framework for more resilient banks and banking systems”¹²⁹ (known as Basel III), project finance could be treated with the following:

- ❖ Standardized approach as general corporate finance (risks weights vary between 20 percent and 150 percent).

- ❖ Foundation IRB (F-IRB) approach as general corporate finance according to external credit ratings, if banks meet the requirements for the estimation of probability of default.
- ❖ Slotting criteria approach, if banks do not meet the requirements for the estimation of probability of default (risks weights vary between 70 percent and 250 percent).

In the 2015 “Revisions to the Standardised Approach for Credit Risk,” second consultative document (Dec. 2015), established that, under the standardized approach:

- ❖ When external ratings are available: the applicable risk weight to project finance would be determined as general corporate finance.
- ❖ When external ratings are not available or not allowed for regulatory purposes: project finance is treated differently (150 percent weight in the construction phase and 100 percent weight in the operational phase).¹³⁰

Later, the document “Reducing Variation in Credit Risk-Weighted Assets,” consultative document (March 2016), proposed to remove the internal ratings-based (IRB) approach for specialized lending (project finance) that use banks' estimates of model parameters.¹³¹

The IRB approach permits banks to use internal models as inputs for determining their regulatory capital requirements for credit risk, subject to certain constraints. The BCBS proposals to remove the option to use the IRB approach for certain exposures are driven by the BCBS's judgment of the costs and benefits of permitting banks' internal models to drive regulatory capital calculations, taking into account the substantial evidence of significant

¹²⁶ BCBS, “Supervisory Framework for Measuring and Controlling Large Exposures” (April 2014).

¹²⁷ An exposure to a counterparty that is deducted from capital must not be added to other exposures to that counterparty for the purpose of the large exposure limit.

¹²⁸ BCBS, “Measuring and Controlling Large Credit Exposures” (January 1991).

¹²⁹ BCBS, “Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems” (December 2010).

¹³⁰ BCBS, “Revisions to the Standardised Approach for Credit Risk,” second consultative document (Dec. 2015).

¹³¹ BCBS, “Reducing Variation in Credit Risk-Weighted Assets—Constraints on the Use of Internal Model Approaches,” consultative document (March 2016).

Table A2.2: Evolution of Basel Approaches Regarding Project Finance Credit Risk

Approach	2010	2015 Under Consultation	2016 Under Consultation
Standardized approach (SA)	SA (20%–150%)	If external credit ratings exist and are allowed: SA (20%–150%) If external credit ratings do not exist or are not allowed: 150% in preoperational phase and 100% in operational phase	
IRB approach	If meets requirements for estimation of PD: F-IRB approach If does not meet requirements for estimation of PD: slotting criteria approach (70%–250%)		F-IRB approach is eliminated Slotting criteria approach (70%–250%)

Source: Authors' elaboration.

variability in the capital requirements for credit risk when using internal models.

Based on this document, project finance will be treated under the standardized approach or the supervisory slotting approach. This does not seem to impact significantly project finance in the LAC region, given that the IRB approach is not generally used, but it may affect international banks that participate in project finance in LAC.

Table A2.2 shows the mentioned changes in Basel approaches for project finance credit risk since 2010.

In summary, at present there would be three alternatives:

- ❖ Standardized approach when external ratings are available and allowed: project finance will have the same risk weights as corporate finance

- ❖ Standardized approach when external ratings are not allowed or not available: project finance will have higher risk weights than corporate finance (100 percent and 150 percent)
- ❖ Slotting approach: risk weights between 70 percent and 250 percent.

In conclusion, if the proposed changes to Basel standards of 2015 and 2016 are approved, the participation of banks in project finance may be affected when external ratings are not allowed or not available, given that project financing may be more costly (especially during the construction phase) and with the elimination of the IRB approach. However, the exact impact is still unknown, and these two documents are still under analysis within the BCBS.



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