

# **Public-Private Partnerships, Government Guarantees, and Fiscal Risk**

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## Acronyms and Abbreviations

BBO	buy-build-operate
BDO	build-develop-operate
BLOT	build-lease-own-transfer
BOO	build-own-operate
BOOT	build-own-operate-transfer
BOT	build-operate-transfer
BROT	build-rent-own-transfer
BTO	build-transfer-operate
CAPM	capital asset pricing model
CBO	Congressional Budget Office (United States)
DBFO	design-build-finance-operate
DBFT	design-construct-manage-finance
ESA	European System of Accounts
EU	European Union
Eurostat	Statistical Office of the European Communities
FAD	Fiscal Affairs Department of the IMF
FCCEE	Contingent Liabilities Fund (Colombia)
FCRA	Federal Credit Reform Act (United States)
FSBR	Financial Statement and Budget Report (United Kingdom)
GDP	gross domestic product
GFSM	Government Finance Statistics Manual
IAS	International Accounting Standard
IASB	International Accounting Standards Board
IFAC	International Federation of Accountants
IFAC-PSC	International Federation of Accountants Public Sector Committee
IFRIC	International Financial Reporting Interpretations Committee
IFRS	International Financial Reporting Standards
IPSAS	International Public Sector Accounting Standards
IPSASB	International Public Sector Accounting Standards Board
ISWGNA	Inter-Secretariat Working Group on National Accounts, comprising Statistical Office of the European Communities (Eurostat), International Monetary Fund (IMF), Organization for Economic Cooperation and Development (OECD), United Nations (UN), and World Bank
LDO	lease-develop-operate
MIDEPLAN	Ministry of Planning and Cooperation (Chile)
MRG	minimum revenue guarantee (Chile)
NDP	National Development Plan (Ireland)
OECD	Organization for Economic Cooperation and Development

OMB	Office of Management and Budget (United States)
PIDIREGAS	(Spanish for) long-term productive infrastructure projects with deferred impact in the recording of expenditures
PFI	Private Finance Initiative (United Kingdom)
PPP	public-private partnership
RSA	revenue-sharing agreement (Chile)
SGP	Stability and Growth Pact (euro area)
SNA	System of National Accounts
SPV	special purpose vehicle
STPR	social time preference rate
UF	<i>Unidad de Fomento</i> (Chile)
VaR	value at risk
VFM	value for money
WAA	wrap-around addition

## Preface

This IMF Special Issues paper is based on two papers—on public-private partnerships and on government guarantees and fiscal risk—discussed by the IMF Executive Board in April 2004 and May 2005 as part of a wider-ranging discussion of issues related to public investment and fiscal policy. The paper has been prepared by a staff team from the Fiscal Affairs Department of the IMF led by Richard Hemming and comprising Max Alier, Barry Anderson, Marco Cangiano, and Murray Petrie. Teresa Ter-Minassian, Director of the Fiscal Affairs Department, has been closely involved with the work of the team. The team is grateful to IMF and World Bank colleagues for their contributions and comments, and especially to Ana Corbacho, Tim Irwin, Gerd Schwartz, and Ethan Weisman. Linda Griffin Kean of the IMF's External Relations Department edited and coordinated the production of the publication.



# Introduction

Public-private partnerships (PPPs) refer to arrangements under which the private sector supplies infrastructure assets and infrastructure-based services that traditionally have been provided by the government. PPPs are used for a wide range of economic and social infrastructure projects, but they are mainly used to build and operate roads, bridges and tunnels, light rail networks, airports and air traffic control systems, prisons, water and sanitation plants, hospitals, schools, and public buildings. PPPs can be attractive to both the government and the private sector. For the government, private financing can facilitate increased infrastructure investment without immediately adding to government borrowing and debt, and user charges can be a source of revenue for the government. At the same time, the private sector can be more efficient than the public sector because of its superior management capabilities and greater capacity to innovate, which in turn can translate into a combination of better-quality and lower-cost services. For the private sector, PPPs can open up business opportunities in new areas.

PPPs offer benefits similar to those offered by privatization, which is the sale of government-owned enterprises or assets. Privatization became a fairly common tool for governments seeking to increase the use of markets to allocate resources, following its introduction in the early 1980s in the United Kingdom by Prime Minister Margaret Thatcher (Megginson and Netter, 2001). Privatization was taken furthest where the public sector was heavily involved in supplying goods and services to private individuals and firms, and where competition was both feasible and desirable. Thus, there was extensive privatization of trading establishments, local transportation, and small and medium enterprises during the 1980s and 1990s. The large sunk costs associated with providing economic infrastructure and the tendency of the private sector to undervalue social infrastructure have been obstacles to competition, and hence to privatization, in these areas. As a result, the privatization of large public enterprises engaged in key areas of infrastructure—electricity, gas, and water utilities; oil and airline companies—was, on a global scale, not as widespread, primarily because of the monopoly position and/or the strategic importance of many of the companies involved. The principal exception in this regard has been in the area of telecommunications (and to a lesser extent power), where technological progress significantly increased opportunities for competition across the world (e.g., to provide cellular phone services). Moreover, some countries—primarily the advanced member countries of the Organization for Economic Cooperation and Development (OECD), and in Central and

Eastern Europe and Latin America—have successfully privatized public enterprises across many sectors.

By the late 1990s privatization was losing much of its earlier momentum, yet concerns about infrastructure remained in many countries. It was at this time that PPPs began to be widely seen as a means of obtaining private sector capital and management expertise for infrastructure investment, both to carry on where privatization had left off and as an alternative where there had been obstacles to privatization. After a modest start, a wave of PPPs is now beginning to sweep the world. Yet, as in the early days of privatization, the driving force behind the expansion of PPPs may be a quest not only to increase economic and social efficiency, but also to bypass expenditure controls, to move public investment off budget, and to move public debt off the government balance sheet.

Chapter 1 provides an overview of some of the issues raised by PPPs, with a particular focus on their fiscal consequences. Following a description of the main characteristics of PPPs, there is a brief discussion of country experiences with PPPs. Chapter 1 then provides some economic analysis that is relevant to the major issues raised by PPPs and outlines the institutional framework that is needed for their success. One key to success is the transfer of risk to the private sector, and Chapter 1 discusses the challenges involved in assessing who bears PPP risks and the implications of limited risk transfer. The chapter concludes with coverage of the important topic of fiscal accounting and reporting, offering interim guidance while an internationally accepted accounting and reporting standard for PPPs remains under development. Three appendices augment the discussion in Chapter 1: Appendix 1 provides more information on country experiences with PPPs, Appendix 2 summarizes the statistical reporting framework used to discuss fiscal accounting and reporting, and Appendix 3 addresses in more detail accounting for risk transfer.

Chapter 2 looks more closely at government guarantees, which are used fairly widely to shield the private sector from risk and are a common feature of PPPs. Public disclosure of information about guarantees is a good fiscal transparency practice, but it is unclear how best to reflect in the fiscal accounts the financial impact of fiscal risk associated with guarantees. Chapter 2 looks beyond narrow accounting or statistical questions, however, to address a wider range of fiscal issues raised by guarantees. The discussion places guarantees and other contingent liabilities in the context of the government's broader obligations, addresses the public policy purpose and design of guarantees, and outlines the problems associated with guarantees. Following a discussion of fiscal accounting and reporting, the chapter turns to managing the fiscal risk posed by guarantees. Appendix 4 covers modeling and estimating the value of guarantees in Chile, and Appendix 5 summarizes international accounting and reporting standards for contingent liabilities.

Although Chapter 2 refers mainly to guarantees provided in connection with PPPs, much of the discussion is relevant to a wider range of guarantees and to other contingent liabilities, including government support of the financial sector and governments' response to natural disasters. For a discussion of some of these topics, and of guarantees and contingent liabilities more generally, see Brixi and Schick (2002).

Chapter 3 looks at the consequences of PPPs and guarantees for debt sustainability, focusing on the appropriate approach to debt sustainability analysis and addressing the uncertainty created by guarantees. Chapter 4 summarizes and concludes with a list of measures that can maximize the benefits and minimize the fiscal risks associated with the use of PPPs.

# 1

## Public-Private Partnerships

There is no clear agreement on what does and what does not constitute a PPP. A PPP has been defined as “the transfer to the private sector of investment projects that traditionally have been executed or financed by the public sector” (European Commission, 2003, p. 96). But in addition to private execution and financing of public investment, PPPs have two other important characteristics: first, there is an emphasis on service provision and investment by the private sector; and, second, significant risk is transferred from the government to the private sector. Some or all of these four features also characterize other means by which the role of government in the economy has been reduced over the last 20 years—including privatization, joint ventures, franchising, and contracting out.<sup>1</sup> However, PPPs are distinct in that they represent cooperation between the government and the private sector to build new infrastructure assets and to provide related services. In fact, two methods that have been used specifically to reduce the role of government in the economy in favor of the private sector—concessions and operating leases—are in the first case a form of PPP and in the second case can be structured like a PPP.

### A. Basic Features of PPPs

A typical PPP takes the form of a design-build-finance-operate (DBFO) scheme. Under such a scheme, the government specifies the services it wants the private sector to deliver, and then the private partner designs and builds

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<sup>1</sup>Joint ventures are usually set up to exploit the commercial potential of existing government assets; franchising involves competition between private companies to be a monopoly supplier (often in a local market); and contracting out refers to the outsourcing of supply to the government. The terms franchising and contracting out are often used interchangeably.

an asset specifically for that purpose, finances its construction, and subsequently operates the asset (i.e., provides the services deriving from it). This contrasts with traditional public investment projects, under which the government contracts with the private sector to build an asset but provides the design and financing itself and, in most cases, then operates the asset once it is built. The difference between these two approaches reflects a belief that giving the private sector responsibility for designing, building, financing, and operating an asset leads to increased efficiency in service delivery. More specifically, such “bundling” is believed to provide an incentive for the private sector to design and build assets with features that enhance the quality or lower the costs of service provision over the long term.

The government is, in many cases, the main purchaser of services provided under a PPP. These services can be purchased either 1) for the government’s own use (a prison), 2) as an input to provide another service (a school), or 3) on behalf of final consumers (a free-access road). Private operators also sell services directly to the public, as with a toll road or railway. Such arrangements are often referred to as concessions, and the private operator of a concession (the concessionaire) pays the government a concession fee and/or a share of profits. Typically, the private operator owns the PPP asset while operating it under a DBFO scheme, and the asset is transferred to the government at the end of the operating contract, usually for less than its true residual value (and often at zero or a small, nominal cost). In this case, a PPP is often referred to as a build-operate-transfer (BOT) or build-own-operate-transfer (BOOT) scheme.

The term PPP is sometimes used to describe a wider range of arrangements. In particular, some PPPs exclude functions that characterize DBFO schemes. Most common in this respect are schemes that combine traditional public investment and private sector operation of a government-owned asset (note that the builder and the operator of the asset are not the same). This arrangement sometimes takes the form of an operating lease, although it can be considered a PPP if the private operator has responsibility for asset maintenance and improvement.<sup>2</sup> Private sector involvement in asset building alone—which can take the form of a design-build-finance-transfer (DBFT) scheme or a financial lease—is not, strictly speaking, a PPP because it does not involve service provision by the private sector. This paper does not seek to explicitly exclude any type of arrangement from the definition of a PPP, and refers to cases in which the public sector partner is a public enterprise

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<sup>2</sup>This may limit efficiency gains insofar as a private operator cannot tailor an asset to meet service requirements. However, in Chile, most PPP projects are tendered with detailed design and engineering studies provided by the government, with a view to promoting small firms’ participation in PPPs and thus increasing competition.

**Box 1. PPP Schemes and Modalities**

Schemes	Modalities
Build-own-operate (BOO) Build-develop-operate (BDO) Design-construct-manage-finance (DCMF)	The private sector designs, builds, owns, develops, operates, and manages an asset with no obligation to transfer ownership to the government. These are variants of design-build-finance-operate (DBFO) schemes.
Buy-build-operate (BBO) Lease-develop-operate (LDO) Wrap-around addition (WAA)	The private sector buys or leases an existing asset from the government; renovates, modernizes, and/or expands it; and then operates the asset, again with no obligation to transfer ownership back to the government.
Build-operate-transfer (BOT) Build-own-operate-transfer (BOOT) Build-rent-own-transfer (BROT) Build-lease-operate-transfer (BLOT) Build-transfer-operate (BTO)	The private sector designs and builds an asset, operates it, and then transfers it to the government when the operating contract ends, or at some other prespecified time. The private sector partner may subsequently rent or lease the asset from the government.

rather than the government.<sup>3</sup> However, it pays most attention to PPPs that involve both investment and service delivery by the private sector, as well as private financing and ownership. Hence the focus is on DBFO schemes.<sup>4</sup> Box 1 describes some of the many variants of PPP schemes.

<sup>3</sup>This is the case for many PPPs in Italy and Spain. The PIDIREGAS scheme in Mexico includes PPPs between public enterprises in the electricity sector and private companies for the provision of assets and services. PIDIREGAS is the Spanish acronym for “long-term productive infrastructure projects with deferred impact in the recording of expenditure.” Most PIDIREGAS projects are for the provision of assets only.

<sup>4</sup>While a focus on DBFO schemes accords with common usage of the term PPP, the United Kingdom considers PPPs to encompass broad private sector involvement in government activities, including privatization and contracting out. DBFO schemes are part of the U.K. program. Accountants include PPPs under a range of schemes referred to as service concession arrangements, which also cover contracting out and franchising.

## **Uses for PPPs**

PPPs appear to be particularly well-suited to providing economic infrastructure. This is primarily for three reasons. First, sound projects that address clear bottlenecks in roads, railways, ports, power, and other infrastructure are likely to have high economic rates of return and therefore to be attractive to the private sector. Second, in economic infrastructure projects, the private sector can be made responsible not only for constructing the infrastructure asset but also for providing the principal services related to it, allowing them to tailor asset design specifically to this purpose. Third, to the extent that these services are supplied directly to final users, charging is both feasible and, from an efficiency standpoint, desirable.

Social infrastructure is somewhat different in these regards. Although many social investment projects are clearly worthwhile, the private sector is not usually the principal supplier of social services. Thus, while PPPs may be formed to build and maintain public schools and hospitals, the government tends to continue to be the provider of the education and health care services deriving from them. Moreover, charging for government-supplied social services is not commonplace. Hence, social infrastructure PPPs offer smaller potential efficiency gains than either economic infrastructure PPPs or schemes that combine public investment and subsequent contracting out of the operation and maintenance of schools, hospitals, and other social infrastructure.<sup>5</sup> That said, there are many examples of successful PPPs in social sectors.

## **Financing**

The private sector can raise financing for PPP investment in a variety of ways. When services are sold to the public, the private sector can go to the market using the projected income stream from a concession (e.g., toll revenue) as collateral. Where the government is the main purchaser of services, collateral can comprise shadow tolls paid by the government (i.e., payments related to the demand for services) or service payments by the government under operating contracts (which are based on continuity of service supply, rather than on service demand). The government may also make a direct contribution to project costs. This can take the form of equity (where there is profit sharing), a loan, or a subsidy (where social returns justify a project). The government also can guarantee private sector borrowing.

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<sup>5</sup>With prisons, private construction and operation are possible. There are doubts, however, as to whether all prison services can be contracted; clearly, detention can, but this is less obviously true for rehabilitation.

PPP financing is often provided via special purpose vehicles (SPVs). An SPV can be a consortium of companies responsible for all aspects of a PPP, and as such it can be a means of exploiting the advantages from bundling. In practice though SPVs are often a group of banks and other financial institutions that combine and coordinate the use of their capital and financial expertise. Insofar as this is their purpose, an SPV can facilitate a well-functioning PPP.<sup>6</sup> However, an SPV can also serve as a veil behind which the government controls a PPP either via the direct involvement of public financial institutions, an explicit government guarantee of borrowing by an SPV, or a presumption that the government stands behind it. Where this is the case, the risk is that the SPV will be used to shift debt off the government balance sheet. Private sector accounting standards require that an SPV be consolidated with an entity that controls it; by the same token, an SPV that is controlled by the government should be consolidated with the latter, and its operations should be reflected in the fiscal accounts.<sup>7,8</sup>

Where the government has a claim on future project revenue, it can contribute to the financing of a PPP by securitizing that claim. With a typical securitization operation, the government sells a financial asset—its claim on future project revenue—to an SPV. The SPV then sells securities backed by this asset to private investors and uses the proceeds to pay the government, which in turn uses them to finance the PPP. Interest and amortization are paid by the SPV to investors from the government's share of project revenue. Because the investors' claim is against the SPV, government involvement in the PPP appears limited. However, the government is in effect financing the PPP, although this fact can be masked by the recording of sale proceeds received from the SPV as revenue.<sup>9</sup>

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<sup>6</sup>SPVs are specific to individual PPP projects and should therefore be distinguished from institutions set up to facilitate PPPs and infrastructure investment in general. The National Development Finance Agency in Ireland and *Infrastruttura Spa* in Italy are examples of the latter.

<sup>7</sup>The International Financial Reporting Interpretations Committee (IFRIC) of the International Accounting Standards Board (IASB) identifies four criteria for consolidation: SPV operations are decided by the originator; the originator controls the SPV; the originator benefits most from the SPV; and the originator assumes SPV risk (IFRIC, 1999).

<sup>8</sup>While there are as yet no obvious examples of problems created by SPVs set up in connection with PPPs, SPVs have been a concern in other spheres. A recent proposal to establish an SPV to facilitate the leasing of 100 Boeing aerial refueling tankers by the United States Air Force is a case in point. The Congressional Budget Office (CBO) concluded that the SPV would, in effect, be substantially controlled by the federal government and that its transactions should therefore be reflected in the federal budget (U.S. CBO, 2003a).

<sup>9</sup>For further discussion of securitization, see Chalk (2002). While they are not connected to PPPs, securitization operations in Italy have raised questions as to their appropriate accounting treatment. In one case, the government sold real estate at a below-market price to an SPV to use as collateral in issuing bonds on its own account to pay the government. Eurostat decided that the bonds should be counted as debt and the sale of the real estate should be recorded on budget, because the risks and rewards related to ownership had not been transferred to the SPV.

## B. Country Experience

A number of advanced OECD member countries now have well-established PPP programs. Undoubtedly the best developed of these is the United Kingdom's Private Finance Initiative (PFI), which began in 1992. The PFI is currently responsible for about 14 percent of public investment, with projects in most key infrastructure areas. Other countries with significant PPP programs include Australia (and in particular the state of Victoria) and Ireland, while the United States has considerable experience with leasing.<sup>10</sup> Many Western European countries now have PPP projects, including Finland, Germany, Greece, Italy, the Netherlands, Portugal, and Spain, although their share in total public investment is quite small.<sup>11</sup> Reflecting a need for infrastructure investment on a large scale and weak fiscal positions, a number of countries in Central and Eastern Europe have embarked on PPPs, including Croatia, the Czech Republic, Hungary, and Poland.<sup>12</sup> There are also fledgling PPP programs in Canada and Japan. PPPs in most of these countries are dominated by road projects. In addition, greater use of PPP-type arrangements has been proposed to develop a trans-European road network (European Council, 2003).

In the rest of the world, PPPs have made fewer inroads. In Latin America, however, Chile, Colombia, and Mexico have used PPPs to promote private sector participation in public investment projects. Chile has a well-established PPP program that has been used mainly for the development of roads, airports, prisons, and irrigation. In Colombia, PPPs have been used since the early 1990s, but early projects were not well-designed. A relaunched PPP program emphasizes road projects. In Mexico, PPPs were first used, though unsuccessfully, in the 1980s to finance roads. Since the mid-1990s, Mexico has used PPPs with greater success for public investment projects in the energy sector through the PIDIREGAS scheme, and they are beginning to be extended to the provision of other services.<sup>13</sup> Some other Latin American

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<sup>10</sup>The limited use of PPPs in New Zealand may come as a surprise given that the country has been at the forefront of public sector reform. This is due to their association with privatization, which has not proved popular in New Zealand in the wake of problems in the privatized electricity sector.

<sup>11</sup>PPP's are growing especially rapidly at the subnational level. Torres and Pina (2001) report that about 30 percent of services provided by larger subnational governments in Europe are delivered through PPPs.

<sup>12</sup>European Commission (2004b) and Brenck and others (2005) provide details about PPP projects in a number of European countries.

<sup>13</sup>After the bailout of private road operators in the 1980s, road concessions are now being reconsidered as a means of addressing the poor quality of the road network in Mexico, based in part on the fact that rail concessions have been a moderate success. While urban water supply and sanitation are open to the private sector and candidates for PPPs, there has been little private investment in these areas. Beyond the energy sector, most progress has been made with respect to telecommunications, ports, and airports, but this mainly takes the form of privatization. See World Bank (2003) for more details on private infrastructure investment in Mexico.

countries, most notably Brazil, are planning significant use of PPPs. There has also been some discussion of a regional approach to infrastructure development that would involve PPP-type arrangements.<sup>14</sup>

PPPs are beginning to take off in Korea, the Philippines, and Singapore (and, as noted above, also in Japan), but progress elsewhere in Asia is limited, despite strong interest in PPPs in some other countries, including India, Indonesia, and Thailand. In Africa, South Africa, a clear regional leader, has embarked upon or is developing PPPs in a number of sectors. Few other African countries have much experience with PPPs, although Mozambique has embarked on concessions to rehabilitate rail terminals and a port, while other countries have tried alternative forms of private sector involvement in infrastructure, especially in the water and power sectors (e.g., in Côte d'Ivoire and Senegal). Appendix 1 outlines the experience with PPPs in Chile, Ireland, South Africa, and the United Kingdom. Selected experiences of other countries are included elsewhere in the paper.

Although a number of countries have developed PPP programs, it is too early to draw meaningful lessons from their experiences. The U.K. government published a comprehensive assessment of the PFI (H.M. Treasury, 2003), which was informed in part by the results of independent studies and was favorable in terms of both the program's procedures and its outcomes. Overall, however, while particular aspects of country experiences support some of the conclusions in this paper, few general lessons can be drawn yet, especially from the experiences of emerging market economies and developing countries.

## **C. Economic Principles**

PPPs themselves have not been subject to extensive economic analysis. However, there is a good deal of analytical work that can be brought to bear on the issues raised by PPPs.<sup>15</sup>

### **Ownership and Contracting**

The standard arguments for and against government ownership are relevant to PPPs. As a general rule, private ownership is to be preferred where

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<sup>14</sup>This has been included as part of a wider development financing strategy proposed by the Rio Group of Latin American countries. The Rio Group was set up in 1986 to enhance consultation and coordination between Latin American countries on political, economic, and social issues.

<sup>15</sup>Many useful papers are collected together in Grimsey and Lewis (2005).

competitive market prices can be established. Under such circumstances, the private sector is driven by competition in the product market to sell goods and services of a quality and price that is acceptable to consumers and by the discipline of the capital market to make profits. Various market failures (natural monopoly, externalities) can justify government ownership, although the result can be that government failure simply substitutes for market failure.<sup>16</sup> Even then, there are those who argue that private ownership should be preferred because more often than not it offers potential efficiency benefits (Shleifer, 1998), and it leans against a possible bias in favor of government ownership. Against this background, PPPs can be seen as a means, on one hand, to combine the relative strengths of the government and the private sector in the ownership of assets and the provision of services that respond to market failure and, on the other hand, to minimize the risks of government failure.

Recent advances in the theory of ownership and contracting provide a more specific analytical justification for PPPs. The trade-off facing a government seeking to arrange for the provision of a particular service is between quality and efficiency. The government has the capacity to achieve a desired quality standard, but it may have difficulty doing so while also containing costs. The private sector can use its superior management skills and greater capacity for innovation to more actively pursue opportunities to reduce costs, but service quality may be compromised in the process. However, private sector provision of the service may be workable if the government can award a fully specified, enforceable (i.e., complete) operating contract to a private sector partner. Hence PPPs are well-suited to situations in which the government can clearly identify the quality of services it wants the private sector to provide and can translate these into measurable output indicators. The government can contract with the private sector in a way that links service payments to monitorable service delivery. As a result, PPPs tend to be better suited to cases where service requirements are not expected to vary substantially over time and where technical progress is unlikely to radically change the way in which the service is provided.

The case for PPPs is weaker when the government cannot write complete contracts. In general, services for which overall quality is not inherently suited to objective measurement (e.g., national defense, public law and order, diplomatic missions) are not candidates for PPPs. That said, elements of these services may be contracted (including the construction and maintenance of military bases, police stations, courts, and embassies), although the scope for efficiency gains may be limited for the reasons given above in connection with social infrastructure. A specific concern with PPPs is that even when service quality can be defined in a contract, asset quality is

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<sup>16</sup>For an analysis of market and nonmarket failure, see Wolfe (1993).

more difficult to define because poor construction may become apparent only after many years when the government is forced into costly repairs or difficult contract renegotiations (Grout, 1997). However, bundling can help address this problem by giving a private operator a clear interest in the quality of an asset (Hart, 2003).<sup>17</sup>

### **Risk Analysis**

PPP projects involve a range of different risks. These can be usefully divided into five, somewhat overlapping categories:

- construction risk, which is related to design problems, building cost overruns, and project delays;
- financial risk, which is related to variability in interest rates, exchange rates, and other factors affecting financing costs;
- availability risk, which is related to the continuity and quality of service provision (which in turn depends on the “availability” of an asset);
- demand risk, which is related to the ongoing need for services; and
- residual value risk, which is related to the future market price of an asset.<sup>18</sup>

These risks are present in public, private, and PPP projects, but PPPs specifically seek to transfer some of them from the government to the private sector. While public projects can benefit from an inflow of private capital and a change in management responsibility alone, it is necessary to achieve significant risk transfer in order to derive the full benefits from such changes. The impact of risk transfer on financing costs and the need to price risk so as to ensure it is transferred efficiently then have to be addressed.

### ***Risk Transfer and Financing Costs***

Transferring project risk from the government to the private sector should not affect the cost of financing a project. This follows from the Modigliani-Miller theorem, which says that the cost of capital depends only on overall project risk. With complete markets in risk bearing, project risk is independent of whether a project is financed by the government or the

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<sup>17</sup>Bundling clearly places a premium on the private sector’s ability to make integrated bids for PPP contracts covering each element of a DBFO project. This being the case, an SPV with responsibility for all aspects of a PPP project can contribute to effective bid integration.

<sup>18</sup>These five main risks can be further subdivided. Detailed risk matrices, together with indications of who should bear each type of risk, are provided in South Africa and the state of Victoria, Australia.

private sector. However, with incomplete markets in risk bearing, project risk depends on how widely the risk can be spread, in which case the source of financing can influence overall project risk. Because the government can spread risk across taxpayers in general, the usual argument is that this gives the government an advantage over the private sector in terms of managing risk (Arrow and Lind, 1970). But the private sector can spread risk across financial markets, which means that it may not be at a significant disadvantage, and private sector risk managers may be more skilled than those in government. The outcome could often be that project risk is lower in the private sector.<sup>19</sup>

This result may appear to rest somewhat uneasily with the fact that private sector borrowing generally costs more than government borrowing. However, this mainly reflects differences in default risk. The government's power to tax reduces the likelihood that it will default on its obligations, and investors are therefore prepared to lend to the government at close to the risk-free interest rate, even to finance risky projects. This being the case, when PPPs substitute private borrowing for government borrowing, financing costs will in most cases rise even if project risk is lower in the private sector. The key issue then becomes whether PPPs result in efficiency gains that more than offset the higher private sector borrowing costs.<sup>20</sup> The impact of PPPs on efficiency is taken up below.

### ***Pricing of Risk***

When considering the PPP option, the government has to compare the cost of public investment and government provision of services with the cost of providing services through a PPP. Since risk transfer is key to realizing the increased efficiency available through PPPs, the government seeks to relieve itself of risks that it believes the private sector can manage better. To do this, the price that the government is prepared to pay to be relieved of these risks must be set at a high enough level that the private sector willingly assumes them. In this connection, it is important to distinguish between project-specific risk and market risk. Project-specific risk reflects variations in outcomes for individual projects or groups of related projects. Thus for a road, the project-specific risk could derive from interrupted supplies of building materials, labor problems, unfavorable weather, or obstruction by environmental groups. Project-specific risk is diversifiable across a large

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<sup>19</sup>The government's ability to forcibly spread risk across taxpayers, while financial markets have to be provided with an incentive to accept risk, may put the private sector at more of a disadvantage as far as large and very risky projects are concerned. The scope for the private sector to spread risk also will be somewhat limited in countries with less developed financial markets.

<sup>20</sup>The private sector may in some cases face lower borrowing costs than the government, for example, when there are serious concerns about government liquidity and/or solvency and for foreign partners of many developing country governments.

number of government or private sector projects and does not need to be priced by the government. Market risk reflects underlying economic developments that affect all projects, and it is not diversifiable and therefore has to be properly priced.

The government and the private sector typically adopt different approaches to pricing market risk. The government tends to use the social time preference rate (STPR) or some other risk-free rate to discount future cash flows when appraising projects, while private bidders for PPP projects typically include a risk premium in the discount rate they apply to future project earnings.<sup>21</sup> Given this mismatch, the government may reject reasonable private sector bids for a PPP project. This may produce a bias against PPPs and in favor of public investment, which is counterproductive if the objective is to promote PPPs as a more efficient alternative to public investment and government provision of services.<sup>22</sup> Moreover, even if the PPP route is chosen (maybe because of political preference), the allocation of risk between the government and the private sector may not be efficient, because the private sector may choose techniques of production or other project design features that are less efficient simply because they carry lower risk.<sup>23</sup> Also, the private sector partner may respond to the underpricing of risk by compromising on quality to the extent possible without violating its contract with the government. On the other hand, it is also possible for the government to overprice risk and to overcompensate the private sector for taking it on, which raises the cost of PPPs relative to direct public investment. Finally, there may be incentives for the government to compensate for the underpricing of risk by extending guarantees, which may end up costing the government more over the longer term.

### **Competition, Regulation, and Efficiency**

Much of the case for PPPs rests on the relative efficiency of the private sector. While there is an extensive literature on this subject, the theory is

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<sup>21</sup>For example, under the capital asset pricing model (CAPM), which is widely used by the private sector, the expected rate of return on an asset is defined as the risk-free rate of return plus a risk premium, and the risk premium is the product of the market risk premium and a beta coefficient which measures the covariance between the returns on that asset and market returns.

<sup>22</sup>In those cases where the government uses a discount rate that includes a market risk factor, this is usually arbitrary and low. It therefore changes the size of the bias but does not remove it. Grout (1997) concludes that the long-standing practice of using a STPR of 6 percent in the United Kingdom, which includes a risk factor, created a bias against the PFI projects. This bias should have been removed with the reduction in the STPR to 3½ percent and the requirement for more systematic assessment of risk in comparing public investment and PFI options.

<sup>23</sup>While not a PPP, the channel tunnel between the United Kingdom and France illustrates this point; it was chosen over a road tunnel that would have offered better service to users because private investors favored the lower-cost option offering quicker, more secure returns (see Kay, 1993).

ambiguous and the empirical evidence is mixed. If there is a common theme, it relates to the importance of competition as a source of efficiency in both the private and public sectors. This explains the use of franchising as a means of having the private sector engage in repeated competition for markets that are inherently monopolistic yet still contestable (which is distinct from having continuous competition in a market). As explained, the scope for competition in the activities undertaken by PPPs is more limited because they tend to be less contestable—economic infrastructure involves large sunk costs and social infrastructure is undervalued—and because the provision of single-use assets inevitably creates a bilateral monopoly situation. One area where competition is clearly feasible is the award of construction and service contracts, and fostering competition in this area is crucial for realizing the benefits of PPPs in substituting private sector for public sector capital, improving management, and fostering innovation.

Incentive-based regulation is also important. Where a private operator can sell to the public, but there is little scope for competition, the government usually regulates prices. However, the challenge is to design well-functioning regulation that increases output (toward the social optimum), holds down prices, and limits monopoly profits while preserving the incentive for private firms to be more efficient and reduce costs. The two most common forms of regulation are rate of return regulation and price regulation. The former suffers from the problems involved in establishing appropriate cost benchmarks in a monopolistic situation and is therefore weak on incentive grounds. The latter caps price increases and therefore has potential for success on both counts. However, the fact that price caps are often adjusted to reflect rate of return considerations means that both types of regulation tend to be quite similar in their effects. Another type of regulation that has more promise is yardstick competition, in which rate of return regulation is based on costs in closely related domestic or international firms or in a hypothetical efficient firm, although this type of regulation is informationally demanding. Finally, profit sharing between the government and the private partner is an alternative form of regulation that preserves incentives, although it can still lead to excessive profits. This being the case, it tends to work better when the government is the main purchaser of services (Laffont and Tirole, 1999).

## **D. Institutional Framework**

Successful PPPs deliver high-quality services to consumers and the government at costs that are significantly lower than those available through public investment and government provision of the same services. The preceding discussion suggests that PPPs are more likely to result in efficiency gains that offset higher private sector borrowing costs if they have the following three characteristics: 1) the quality of services can be readily

**Box 2. PPP Policy Framework in Victoria, Australia<sup>1</sup>**

Victoria has developed a detailed and explicit policy on PPPs, Partnerships Victoria. An emphasis on value for money and the public interest is the key feature of the policy. There is, however, no presumption that the private sector (or, for that matter, the public sector) can deliver projects more efficiently or effectively. Instead, decisions are made on their merits and outcomes are judged on the basis of the public benefits obtained.

The policy stipulates that PPP projects should focus on the specification of the end result, rather than the means of delivery, and that performance measures should be established to ensure that the quality of services delivered meets the needs of the community. Private participation is to be the subject of competitive bidding, consistent with the government's procurement policies, and there should be an emphasis on transparency and disclosure of processes and outcomes, while acknowledging the need to protect commercial confidentiality when appropriate. Moreover, standardized approaches are to be used whenever possible to minimize transaction costs, and, if needed, incentives should be provided to encourage high-level performance.

Partnerships Victoria projects are required to have a number of features. Outputs should be clearly specified (including measurable performance standards), and one or more private parties must be fully accountable to the government for the delivery of services. The clear specification of required outputs allows bidders to compete in devising creative means of delivering those outputs, with a view to reducing costs. Public agencies should limit detailed specification of inputs, such as the design of infrastructure or the means by which outputs are to be generated. There must also be a clear articulation of the government's responsibilities, including the monitoring of outcomes. Finally, payments are due only upon delivery of the specified services, if they meet the required standards.

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<sup>1</sup>Based on Victoria (2000, 2001) and material available at the Partnerships Victoria website (<http://www.partnerships.vic.gov.au/>).

defined and measured; 2) there is adequate risk transfer to the private sector; and 3) there is either competition or incentive-based regulation. These features should be reflected in the policy framework for PPPs, along the lines of that provided by the state of Victoria, Australia, which is summarized in Box 2. However, the success of PPPs is also dependent on the existence of an appropriate institutional framework. The challenges in this regard are greater in emerging market economies and developing countries, but they are also faced by advanced OECD countries. A PPP program should proceed with caution in the absence of an adequate institutional framework, which should be characterized by political commitment, good governance, government expertise, and effective project appraisal and selection.

## **Political Commitment**

Political commitment is a prerequisite for success. A PPP is a major commitment on the part of the private sector partner, who needs to know that politicians are also committed to the partnership. Uncertainty in this regard gives rise to political risk, which is not conducive to making long-term business decisions. Potential private sector partners also need to know that the government is fair in its dealings with the private sector and will meet its commitments under PPPs. In addition, it is also important to establish clear channels of responsibility and accountability for government involvement in PPPs.

## **Good Governance**

Good governance is another prerequisite for success. Widespread corruption in government is a serious obstacle to successful PPPs, in the same way that it prevents successful privatization (Lora and Panizza, 2003). An appropriate legal framework provides reassurance to the private sector that contracts will be honored. This may require changes or additions to existing laws. This was the case in Italy and Spain, which recently revamped legal frameworks that for many years created obstacles to PPPs. In Italy, the 1994 Merloni Law has undergone a number of changes designed to facilitate private participation in infrastructure investment, while the 2001 *Legge Obiettivo* established a fast-track system for strategically important infrastructure projects.<sup>24</sup> In Spain, the 2003 Concessions Law supplements a number of laws that already allow PPPs by extending private financing options.<sup>25</sup> In both Italy and Spain, the laws have also been amended to better secure creditor rights.

The comparative success of Chile's concessions program can be attributed in significant measure to the fact that it is backed by a comprehensive concessions law that addresses not only the basic requirements for effective concessions (the bidding process, rights and obligations of parties, property appropriation), but also the treatment of possible disputes and the cancellation and transfer of contracts. Brazil has recently enacted a PPP law, although some forms of PPP were already governed in part by legislation on concessions and procurement and by the transparency requirements of fiscal responsibility legislation. The provisions of the Brazil legislation are summarized in Box 3. The legal framework for PPPs should be

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<sup>24</sup>The Merloni Law deals specifically with concessions. One requirement of the law is that the winner of a concession contract is required to set up an SPV, with a structure and capitalization established by the public agency that awards the contract. For further discussion, see De Pierris (2003).

<sup>25</sup>The law facilitates private financing by allowing a number of financing techniques, including securitization and shadow tolls. Concessions can also be used for practically any kind of infrastructure and not only for roads as previously. See Montesinos and Benito (2000) and Acereite (2003) for further discussion of PPPs in Spain.

### **Box 3. PPP Legislation in Brazil**

The Brazilian law applies to PPPs at all levels of government, and it complements existing legislation in the fiscal area, including the Concessions Law and the Procurement Law.<sup>1</sup> The law creates a new contractual modality through which a private partner is responsible for the construction and financing of a public asset that supports the provision of a contracted service. The law prohibits the use of PPPs to hire personnel, purchase equipment, or carry out public works and sets a minimum value for PPP contracts (R\$20 million, about US\$9 million). At the expiration of the contract, with a maximum duration of 30 years, the asset must be transferred to the public sector, with or without a final payment (depending on the contract).

The law includes safeguards for public finances by limiting the exposure to PPPs. Specifically, for all levels of government, the law limits total financial commitments undertaken in PPP contracts to a maximum of 1 percent of annual net revenue. If subnational governments exceed this limit, the federal government is authorized to withhold voluntary transfers. The law also limits financing for PPP projects that can be provided by the national development bank (BNDES) and public pension funds. Accounting rules for PPPs are being defined, including the valuation of guarantees and their treatment in relation to compliance with the 1 percent of net revenue limit.

The law contains provisions to minimize the exposure of private partners to institutional risk and reduce the implicit financial cost in PPP contracts. The key provision is the creation of a guarantee fund made up of government assets (e.g., equity shares of public enterprises, real estate, and budgetary contributions). The guarantee fund will be managed by a public commercial bank with an initial endowment of R\$6 billion (about US\$2.7 billion). The law also allows the earmarking of revenue to meet PPP contract payments.

The federal PPP program will be managed by a council (Conselho Gestor) formed by the ministers of finance and of planning, and the president's chief of staff. The council will be in charge of establishing the criteria to select projects and designing the contracts. The authority to tender PPP projects resides in the council. A PPP unit has been established at the Ministry of Planning to provide support to the Conselho Gestor, and a working group at the National Treasury is working on macroeconomic issues related to PPPs, including the accounting.

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<sup>1</sup>Law Instituting General Rules on Public–Private Partnerships Within the Realm of the Public Administration. Several states have approved their own PPP laws, which need to be compatible with the federal law. Under the Concessions Law, the private sector can build and operate public infrastructure, but the government cannot make payments to a concessionaire. Under the Procurement Law, the private sector is supplier to the public sector, but it cannot charge user fees, and contracts can have a maximum duration of five years.

supplemented by clear, credible, and efficient dispute-resolution mechanisms. Finally, it is important that PPPs should face nondiscriminatory taxation and regulation regimes. In India, while there is recognition of the need for a comprehensive legal framework, the current emphasis is more on reducing regulatory barriers and demonstrating sustained political commitment to private sector involvement.

## Government Expertise

PPPs require the development of expertise in the government across the full range of skills required to manage a PPP program. One common complaint about PPPs from the private sector is that bidding and contracting take much longer than in the private sector. Thus one of the functions of Partnerships UK, a joint private sector–government agency in the United Kingdom, is to promote PFI projects among government departments by providing financial, legal, and technical advice and assistance to support contract negotiations and procurement. The PPP Unit of the National Treasury of South Africa also provides detailed guidance and technical assistance related to assessing the feasibility and management of PPPs.<sup>26</sup> In both of these agencies, however, the focus is on facilitating new PPP projects, even though managing a large stock of ongoing projects represents an equal or more demanding challenge. Particular attention also needs to be paid to developing PPP–related skills within subnational government agencies, because in many countries responsibility for spending in areas that are likely candidates for PPPs is devolved to them.

## Effective Project Appraisal and Selection

Governments also must refine their project appraisal and selection processes. First and foremost, a decision to undertake a project, and the choice between traditional public investment and government supply of services or a PPP to implement it, should be based on technically sound cost-benefit comparisons. It is particularly important to avoid a possible bias in favor of PPPs simply because they involve private finance and, in some cases, generate a revenue stream for the government.<sup>27</sup> The decision about whether a worthwhile project should be undertaken by the government directly or through a PPP should be informed by a *public sector comparator* indicating the cost of public provision. This should be used as a benchmark for determining whether the best private sector bid for a PPP contract—which will reflect the efficiency gains from private provision, higher private sector borrowing costs, and the costs to be borne by the government under the PPP—offers better value for money (VFM) for the government. The use of public sector comparators is the norm in advanced economies with considerable experience with PPPs, and Chile is making increased use of them to ensure that PPP projects offer good VFM.

<sup>26</sup>The *Unità Tecnica per la Finanza di Progetto* (UTPF) in Italy, which began operating in 2000, is by name a project financing unit, but in practice it also helps the public administration to identify projects that could attract private sector investment.

<sup>27</sup>Partly in response to such concerns, in Chile and Italy private sector entities are allowed to propose projects to be developed as PPPs.

## **E. Risk Transfer, Leasing, and Ownership**

Risk transfer from the government to the private sector has a significant influence on whether a PPP is a more efficient and cost-effective alternative to public investment and government provision of services. This is clearly something the government should consider in deciding whether to embark upon a PPP and in negotiating the terms of a PPP contract. It should also be a focus of those seeking to assess whether a PPP will indeed yield the benefits claimed of it, and in particular whether it is being put forward mainly to move public investment off budget. Risk transfer is also relevant to determining the proper accounting and reporting treatment of PPPs, and indeed the discussion of risk transfer that follows draws in part on international accounting standards. However, risk transfer is an important topic in itself, which will be discussed before accounting and reporting issues are addressed.

### **Assessing Risk Transfer and Ownership**

The private operator is typically the legal owner of a PPP asset for the period of the operating contract. However, if the government bears the risks (and derives the rewards) that are normally associated with ownership, it is in effect the economic owner of the asset. When this is the case, PPP investment is largely indistinguishable from traditional public investment, except that the payment profile for the government is different. Specifically, instead of the government making an upfront payment to cover the cost of building an asset, the private sector partner bears this cost and the government covers the opportunity cost of capital as part of its service payment to the private sector. This is how PPPs can be used to record lower government borrowing and debt than with traditional public investment.

In general, there are different risks entailed in owning an asset and in operating it. When the PPP contract distinguishes between the rights and obligations of the private partner in its capacity as the asset's owner, as distinct from being its operator, risk transfer can be assessed by reference to these rights and obligations.

### ***Leasing***

Private sector accounting standards provide guidance on how to assess risk transfer for leases. A standard lease contract is between the owner of an asset (the lessor) and the user of an asset (the lessee). An operating lease is similar to a rental arrangement in that a payment is made by the lessee to use an asset, and the lessor bears the risks related to ownership. A financial lease is a form of borrowing by the lessee to obtain the asset, and the lessee bears

#### Box 4. Factors Determining the Substance of a Lease<sup>1</sup>

According to the IASB, the following factors would normally lead to a lease being classified as a financial lease:

- The lease transfers ownership of the asset to the lessee by the end of the lease term.
- The lessee has the option to purchase the asset at a price that is expected to be sufficiently lower than the fair value at the date the option becomes exercisable such that, at the inception of the lease, it is reasonably certain that the option will be exercised.
- The lease term is for the major part of the economic life of the asset even if the title is not transferred.
- At the inception of the lease, the present value of the minimum lease payments approximates the fair value of the leased asset.
- Leased assets are of a specialized nature such that only the lessee can use them without major modifications being made.

Individually or in combination, the following factors could also lead to a lease being classified as a financial lease:

- The lessee can cancel the lease and the lessor's losses associated with the cancellation are borne by the lessee.
- Gains or losses from the fluctuation in the fair value of the residual fall to the lessee (for example, in the form of a rent rebate equaling most of the sales proceeds at the end of the lease).
- The lessee has the ability to continue the lease for a secondary period at a rent that is substantially lower than market rent.

<sup>1</sup>Based on International Accounting Standard (IAS) 17, *Leases* (International Accounting Standards Board, 1999).

these risks. Whether a lease is an operating or a financial lease depends on the substance of the transaction rather than on the form of the contract. Factors that should influence decisions in this context are discussed in a number of private sector accounting standards for leases, such as those issued by the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) in the United States. The factors relevant to lease classification included in the relevant IASB standard are summarized in Box 4.

PPPs can be specifically set up as operating leases, but it is unusual for them to take the form of financial leases. Financial leases tend to be used by governments to obtain major items of capital equipment such as airplanes, rather than to build infrastructure. Indeed, with a DBFO or similar scheme, the PPP asset is built and legally owned by the private operator, and this

arrangement cannot on the face of it be a financial lease. However, an examination of the substance of a PPP transaction may indicate that the government, rather than the private owner, actually bears most of the risks associated with ownership. When this is the case, the view can be taken that the asset is in effect being acquired by the government through a financial lease and that the government is the economic, as distinct from legal, owner of the PPP asset.

Some criteria have been devised to assess the degree of risk transfer involved in PPPs. To a large extent, these derive from the private sector approach to classifying leases; indeed, the International Federation of Accountants (IFAC) has issued a standard for the public sector on leases that is closely related to the IASB standard for the private sector.<sup>28</sup> However, IFAC acknowledges that the public sector may enter into a variety of arrangements for the provision of goods and services involving the use of dedicated assets for which it is unclear whether a financial lease is involved. Some national standards include quantitative criteria to establish the existence of a financial lease. For instance, the state of Victoria in Australia focuses on three criteria to determine whether a Partnerships Victoria PPP contract should be classified as a financial lease: 1) Does the government finance 90 percent or more of asset costs? 2) Does the service contract cover 75 percent or more of the useful life of the asset? and 3) Does the contract include a “bargain basement provision” whereby the government can purchase the asset at the end of the contract for substantially less than its residual value?<sup>29</sup>

### ***Risk Transfer***

Where PPP contracts do not provide a basis for applying the criteria for establishing the distribution of risks associated with ownership, the extent of risk transfer can be assessed by reference to the overall risk characteristics of the PPP. This is done in the United Kingdom, where the specific aim is to determine whether the government or the private operator “has an asset in a PFI property.” For nonseparable contracts (i.e., those where ownership and service elements of the contract cannot be distinguished), which are the norm, the U.K. approach is based, first and foremost, on the balance of

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<sup>28</sup>International Public Sector Accounting Standards (IPSAS) 13, *Leases*, issued in December 2001. IFAC is a global accountancy organization whose main purpose is to establish high-quality accounting standards and to promote international convergence of standards. It also recommends accounting standards for the public sector through the International Public Sector Accounting Standards Board (IPSASB), which was formerly IFAC’s Public Sector Committee (IFAC-PSC).

<sup>29</sup> Since 1990, the U.S. Office of Management and Budget (OMB) has used these three criteria, and three others—1) who owns the asset during the contract period, 2) whether the asset is a general- or specific-purpose asset, and 3) whether there is a private market for the asset—to distinguish an operating lease from a financial lease (or in U.S. terminology, a capital lease). See U.S. OMB (2002) and U.S. CBO (2003b) for more details.

demand risk and residual value risk borne by the government and the private operator. Demand risk, which is an operating risk and is the dominant consideration, is borne by the government if service payments to a private operator are independent of future need for the service. Residual value risk, which is an ownership risk, is borne by the government if a PFI asset is transferred to the government for more or less than its true residual value.<sup>30</sup> Reference can also be made to various qualitative indicators, including government guarantees of private sector liabilities, and the extent of government influence over asset design and operation. The final conclusion is a professional judgment based on all relevant factors.

The Statistical Office of the European Communities (Eurostat) also provides guidance on the classification of PPP assets based on risk transfer. To this end, Eurostat recently issued a decision that a private partner will be assumed to bear the balance of PPP risk if it takes on most construction risk and either most availability risk—which is also an operating risk and relates to the continuity of service supply—or most demand risk. Further detail is provided in Box 5. While focusing on a few key risk categories for the purpose of assessing risk transfer is understandable, the Eurostat decision is problematic.<sup>31</sup> Because the private sector typically bears most construction risk and availability risk, the decision is likely to result in the majority of PPP assets being classified as private sector assets, even if the government bears most demand risk. This being the case, the decision appears to be more liberal than Eurostat itself has been in practice. Thus, in the case of Ireland, Eurostat indicated that early PPP projects involved insufficient risk transfer and that investment in these projects would be classified as public investment. Subsequently, all PPP projects in Ireland were treated in this way. A concern is that the decision could open the door to PPPs that are intended mainly to circumvent the fiscal rules of the euro area's Stability and Growth Pact (SGP).

Assessing risk transfer is likely to remain a difficult exercise. Certainly, it is essential that there be full disclosure of the relevant terms of original and renegotiated PPP contracts, and contract simplification and standardization would also help. However, the legal complexity of PPP contracts means that they will always be hard to interpret, and this will complicate assessments of

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<sup>30</sup>Residual value risk is borne by the government because the private operator reflects the difference between the expected residual value of the asset and the price at which the asset will be transferred to the government in the price it charges the government for services, or in the revenue the government receives from a project. If the asset ends up being worth more or less than the amount reflected in the service payment or government revenue, any resulting gain benefits the government and any resulting loss is borne by the government.

<sup>31</sup>It is interesting that Eurostat does not place any emphasis on residual value risk, given that it is a clear ownership risk.

**Box 5. Eurostat Decision on the Treatment of PPPs<sup>1</sup>**

The Eurostat decision covers long-term contracts in areas where the private partner builds an asset and delivers services mainly to the government.

Eurostat recommends that assets built by public-private partnerships be classified as nongovernmental assets and therefore recorded off the balance sheet for government, if both of the following conditions are met: 1) the private partner bears the construction risk, and 2) the private partner bears one of either availability or demand risk. An accompanying opinion of the Committee on Monetary, Financial and Balance of Payments Statistics indicates that these conditions refer to the private partner bearing “most of the risk” concerned.

Construction risk covers events such as late delivery, low standards, additional costs, technical deficiency, and external negative effects. If the government makes payments to the private partner irrespective of the state of the asset, this indicates that the government bears most of the construction risk.

Availability risk relates to the ability of the private partner to deliver the agreed volume and quality of service. Government payments to the private partner that are independent of service delivery indicate that the government bears most of the delivery risk.

Demand risk covers the impact of the business cycle, market trends, competition, and technological progress on the continued need for the service. Government payments to the private partner that are independent of demand indicate that the government bears most of the demand risk. Changes in demand due to changes in government policy are excluded.

It is the responsibility of national statistical offices to implement the Eurostat decision, based on information that is judged to be easily obtained from PPP contracts. However, when a clear classification is difficult to make, other contract provisions can be taken into account. In particular, if the government has an obligation to buy the asset at the end of the contract at a predetermined price, this would indicate that the government bears most PPP risk when other considerations are unclear.

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<sup>1</sup>Based on Eurostat (2004).

risk transfer even when the focus is on a few key risks. Moreover, PPP contracts may not tell the whole story, because they only cover ex ante risk transfer. Political pressure for the government to bail out both large projects (those that are too big to fail) and providers of essential services may mean that the government in fact bears more risk than PPP contracts suggest.

## **F. Fiscal Accounting and Reporting for PPFs**

There is not a comprehensive fiscal accounting and reporting standard specifically for PPPs. The accounting profession is taking steps to develop an internationally accepted standard, but the likely features are not yet

clear.<sup>32</sup> The absence of such a standard makes it difficult to close loopholes that enable PPPs to be used to bypass expenditure controls, to move public investment off budget and debt off the government balance sheet, or to hide the potentially high costs of using guarantees to secure private financing. An internationally accepted accounting and reporting standard could promote transparency about the fiscal consequences of PPPs, and in the process ensure that increased efficiency, rather than a desire to meet fiscal targets, is their main motivation. In any event, as PPPs become more commonplace, market analysts and rating agencies are developing the expertise to assess the fiscal risks involved and, in particular, the implications for debt sustainability of future commitments under PPPs and contingent liabilities. Thus any misuse of PPPs is unlikely to escape market scrutiny for long.

Existing standards provide a starting point to address the accounting and reporting treatment of PPPs. The 1993 System of National Accounts (1993 SNA) and the 1995 European System of National and Regional Accounts (ESA 95) cover some operations that characterize PPPs, including leases, while ESA 95, supplemented by the ESA 95 Manual on Government Deficit and Debt, covers public infrastructure built and operated by the private sector.<sup>33,34</sup> The fiscal reporting framework in the Government Finance Statistics Manual 2001 (GFSM 2001)<sup>35</sup>—which integrates flows and stocks and shifts the emphasis toward accrual reporting and balance sheets—is also well-suited to reporting on PPPs, although it does not currently provide comprehensive coverage of such operations. For a description of the GFSM 2001 analytical framework, see Appendix 2.

### ***Current Treatment of PPPs***

The recording of the following PPP operations is covered by existing accounting and reporting standards and is fairly straightforward: operating contracts, concessions and operating leases, financial leases, and the transfer

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<sup>32</sup>This is being done for service concession arrangements under the auspices of IPSASB. An Interagency Task Force on Harmonization of Public Sector Accounting is also addressing this topic. With the exception of Donaghue (2002), little has been written about the accounting treatment of PPPs.

<sup>33</sup>See, respectively, Inter-Secretariat Working Group on National Accounts (ISWGNA, 1993), European Communities (2003), and Eurostat (2002).

<sup>34</sup>Although ESA 95 is accepted only in the European Union, while the 1993 SNA is internationally accepted, it is likely that a harmonization of the two standards will move the 1993 SNA in the direction of ESA 95 as far as PPPs are concerned.

<sup>35</sup>IMF (2001a).

of PPP assets to the government.<sup>36</sup> This treatment is described below following the GFSM 2001 fiscal reporting framework.

- Operating contracts: Payments under operating contracts to private sector partners for services provided to the government are recorded in the government operating statement as an expense.<sup>37</sup>
- Concessions and operating leases: Concession fees and other payments by concessionaires to the government (e.g., profit shares) are recorded in the operating statement as revenue.<sup>38</sup> When the government leases an asset it owns to a private operator, lease payments to the government by a private operator are also recorded as revenue.<sup>39</sup>
- Financial leases: The acquisition of a nonfinancial asset under a financial lease is recorded in the operating statement, together with incurrence of a lease liability to the private sector. The asset and liability are also recorded on the government balance sheet. Subsequent depreciation of the asset, and interest and amortization payments on the lease, are then recorded in the operating statement. As the lease liability is reduced, the PPP net asset value builds up on the balance sheet.<sup>40</sup> When the lease concludes, the asset is recorded on the government balance sheet at its residual value.<sup>41</sup>
- Transfer of PPP assets to government: If there is provision for a PPP asset to be transferred at zero cost to the government, the asset transfer is recorded in the operating statement as the acquisition of a nonfinancial asset at its residual value, balanced by a capital transfer from the private owner. Any purchase price involved is an expense, and the capital transfer is reduced by the corresponding amount.<sup>42</sup> The asset is also recorded on the balance sheet at its residual value when the transfer takes place, and subsequent depreciation of the asset is recorded in the operating statement.

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<sup>36</sup>Existing accounting and reporting standards also cover government guarantees. Their recording is covered in Chapters 2 and 3.

<sup>37</sup> The term “operating statement” refers to the GFSM 2001 Statement of Government Operations.

<sup>38</sup> The treatment of concessions has been questioned. Because a concession involves the transfer of the government’s monopoly power to the private sector, one view is that concessions should be considered nonfinancial assets. This view can be seen as an extension of the discussion about how to treat mobile phone licenses. However, in the case of mobile phone licenses, it was agreed that the government retained ownership of an underlying asset, the spectrum, whereas in the case of concessions no such asset exists.

<sup>39</sup>When the government leases an asset from a private owner, lease payments by the government are recorded as an expense; however, this is not usually regarded as a PPP since it does not involve private service provision.

<sup>40</sup>Provided that the liability is reduced at a faster rate than that at which the asset is depreciated.

<sup>41</sup>As noted below, PPPs do not typically take the form of financial leases, although they can be treated as such.

<sup>42</sup>If the government pays more than residual value for an asset, the asset is still acquired by the government at its true residual value, and there is also a capital transfer from the government to the private operator.

Many countries are still working with the cash-based predecessor of GFSM 2001, *A Manual on Government Finance Statistics 1986* (GFSM 1986).<sup>43</sup> Under this framework, which is the basis of traditional fiscal accounts, only cash flows are recorded. However, with the exception of depreciation, other noncash transactions could be recorded in adjusted cash accounts (see Diamond, 2006). Since balance sheets are not part of GFSM 1986, PPP assets are not recorded as such, but the liability under a financial lease is recorded as government debt.

### ***Accounting for Risk Transfer***

When PPP projects involve limited risk transfer to the private sector, the practice of Eurostat and a number of countries is to classify PPP assets as government assets. This is done with a view to recognizing that the government plays a role in the economy and conducts fiscal policy through PPPs. For accounting purposes, Eurostat considers PPP investments that expose the government to significant risk to be public investment, while the state of Victoria in Australia and the United Kingdom consider them to involve acquisition by the government of the PPP asset through a financial lease.<sup>44</sup> These two approaches—which are formally the same—raise some technical issues that are of concern to the accounting profession (discussed in Appendix 3).

More important, however, is the question of whether this binary approach, under which PPP assets are classified either as government assets or as private assets, is an appropriate way of accounting for risk transfer. The specific concern is that such an approach is insensitive to the fact that PPPs are intended to share risk according to which party can best manage it. The fact is that government exposure to PPP risk will vary widely across projects, and the accounting profession ideally should be seeking to develop a workable approach to identifying and quantifying the risk to which the government is exposed under PPPs and for assessing and disclosing the fiscal consequences of such risk. While this is a difficult task, Chapter 2 of this paper illustrates how this can be done for guarantees, which are the principal source of explicit risk for the government associated with PPPs.

Nevertheless, accounting bodies seem more likely to refine the current binary approach—probably by shifting the focus from ownership to control as the principal basis for establishing whether PPPs create government or private sector assets—and less likely to develop a new approach that is sensitive to

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<sup>43</sup>IMF (1986).

<sup>44</sup>In the case of the United Kingdom, this practice has resulted in 57 percent of PFI assets being classified as government assets (H.M. Treasury, 2003).

### **Box 6. Detailed Disclosure Requirements for PPPs**

For each PPP project or group of similar projects, government budget documents and year-end financial statements should provide information on the following:

- Future service payments and receipts (such as concession and operating lease fees) by government specified in PPP contracts for the following 20–30 years.
- Details of contract provisions that give rise to contingent payments or receipts (e.g., guarantees, shadow tolls, profit-sharing arrangements, events triggering contract renegotiation), with the latter valued to the extent feasible.
- Amount and terms of financing and other support for PPPs provided through government on-lending or via public financial institutions and other entities (such as SPVs) owned or controlled by government.
- How the project affects the reported fiscal balance and public debt, and whether PPP assets are recognized as assets on the government balance sheet. It should also be noted whether PPP assets are recognized as assets on the balance sheet of any SPV or the private sector partner.<sup>1</sup>

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<sup>1</sup>The suggested disclosure of the private sector partner's accounting treatment has been made by Heald (2003). While there is no question of enforcing symmetrical accounting treatment by the government and the private sector, any lack of symmetry may point to areas worthy of scrutiny, especially if no part of the PPP asset is on either balance sheet.

the degree of risk transfer.<sup>45</sup> If this is the case, there is a risk either that PPPs will be discouraged in cases where the private sector is prepared to bear significant but not the larger share of project risk or, more seriously, that governments will be tempted to tailor PPPs to meet the requirements for classification as private investment by trading off higher project costs for increased risk transfer to the private sector. This would defeat the objective of using PPPs for efficiency gains and disguise the medium- to long-term fiscal implications of many PPPs. To minimize these problems, it is important that governments disclose comprehensive information about PPPs, including their known and potential future costs.

#### ***Disclosure Requirements for PPPs***

Government budget documents and year-end financial statements should include an outline of the objectives of current or planned PPP programs and a summary description of projects that have been contracted or are at an advanced stage in the contracting process (their nature, the private partner or

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<sup>45</sup>A shift in focus from ownership to control in determining private sector accounting is proposed in IFRIC (2005), which has been circulated for public comment.

partners, and capital value). They should also disclose the type of detailed information specified in Box 6. In countries with sizable PPP programs, disclosure could be in the form of a separate *Statement on PPPs*. Within-year fiscal reports should indicate major new contracts that have a significant short-term fiscal impact. PPP contracts, or summaries of their key features (preferably in standardized format), should also be made publicly available. More detailed disclosure requirements for guarantees are suggested in Chapter 2.

# 2

## Government Guarantees and Fiscal Risk

PPPs often involve the use of government guarantees, which are a form of government intervention intended to reduce the financial costs of risks faced by the private sector and/or by other public sector entities, should they materialize. The use of government guarantees in PPPs and elsewhere raises some important issues related to the apportionment of risk, fiscal transparency, incentives, and governance, among others. This chapter describes and discusses these issues, but first, it clarifies some terminology.

### A. Guarantees, Contingent Liabilities, and Government Obligations

- A government guarantee legally binds a government to take on an obligation if a clearly specified uncertain event should occur. Thus with a loan guarantee, the government is committed to making loan repayments on behalf of a nonsovereign borrower should that borrower default. Governments provide a variety of loan guarantees (e.g., to farmers, small businesses, home buyers, and students) and other financial guarantees, including trade and exchange rate guarantees; income, profit, and rate of return guarantees; and minimum pension guarantees. Guarantees are a common feature of PPP contracts and other purchase arrangements between the government and the private sector.
- Guarantees are part of a broader set of obligations on a government that give rise to explicit contingent liabilities. In addition to the types of loan and financial guarantees already mentioned, explicit contingent liabilities arise mainly from government insurance schemes, including deposit, pension, war-risk, crop, and flood insurance. However, they can also result from warranties and indemnities provided by the government and from outstanding and potential legal actions against the government. It should be noted that pension and social security obligations of the government (as distinct from guaranteed minimum pensions under private pension schemes or government insurance of pension savings)

are not contingent liabilities, because while these may be contingent for individuals given their uncertain life expectancies, aggregate pension and social security obligations can be measured with some precision based on known benefit formulas and fairly stable demographic patterns.

- Implicit contingent liabilities arise when there is an expectation that the government will take on an obligation despite the absence of a contractual or policy commitment to do so. Such an expectation is usually based on past or common government practices, such as providing relief in the event of uninsured natural disasters and bailing out public enterprises, public financial institutions, subnational governments, or strategically important private firms that get into financial difficulties. The government also may be expected to cover some costs that are extraordinary (e.g., those related to war reparations and national reconciliation and reunification).<sup>46</sup>

A defining characteristic of guarantees and other contingent liabilities is uncertainty about whether the government will have to pay and, if so, about the timing and amount of spending. It is this uncertainty that is the principal source of the problems guarantees and other contingent liabilities pose for accountants and statisticians, and for fiscal management. In this regard, they differ somewhat from government debt, for which interest and amortization payments are clearly specified. However, most government obligations have elements of uncertainty, including government debt that has floating rates or is denominated in foreign currency. Table 1 attempts to characterize the range of government obligations by reference to their degree of certainty and provides examples of different types of obligations.<sup>47</sup> The more certain an obligation, the more likely it will meet recognition criteria established by accountants and followed by statisticians, and thus be recorded as a liability in the government's budget documents, within-year fiscal reports, and end-year financial statements. Table 1 also summarizes the treatment of different types of obligation under international accounting and statistical standards.

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<sup>46</sup>An obligation arising from an expectation that the government will behave in a particular manner is more generally referred to as a *constructive obligation*, although this term can usefully be restricted to the government's obligation to continue ongoing policies (as distinct from one triggered by an uncertain event).

<sup>47</sup>For further discussion of how different government obligations are characterized, see Heller (2004).

<b>Table 1. Government Obligations by Degree of Certainty <sup>1</sup></b>							
		→ → → → →			→ → → → →		
		More certainty			Less certainty		
Nature of obligation	Obligations with fixed timing and amounts	Obligations with fixed amounts, but uncertain timing	Obligations with estimated timing and amount	Obligations under mutually unexecuted contracts	Constructive obligations	Explicit contingent obligations	Implicit contingent obligations
<b>Example of obligation</b>	Debt instruments; invoiced accounts payable.	Uninvoiced accounts payable; payment arrears.	Civil service pensions; some guarantees; <sup>2</sup> decommissioning costs.	Financial and operating leases; payments under PPP contracts.	Social security schemes; medical benefits for retirees.	Some guarantees; government insurance schemes; warranties and indemnities; legal action against government.	Disaster relief; assistance to public enterprises, public financial institutions, and subnational governments; reunification costs.
<b>Accounting treatment<sup>3</sup></b>	Recognize as liabilities.	Recognize as liabilities.	Recognize as liabilities.	Recognize financial leases as liabilities; disclose commitments under operating leases; PPPs not covered.	Consideration being given to recognizing some social security obligations as liabilities.	Not recognized; disclose as contingent liabilities.	Not covered.
<b>Statistical treatment<sup>4</sup></b>	Liabilities.	Liabilities.	Rights accrued under civil service pension schemes are liabilities; guarantees are not liabilities; decommissioning costs offset assets.	Financial leases reported as liabilities; commitments under operating leases reported as a memorandum item. PPPs not covered.	Present value of social security pensions reported as a memorandum item.	Report as a memorandum item.	Not covered.

<sup>1</sup>This table adapts the private sector framework provided in Exhibit 9.1 of Stickney and Weil (2000).

<sup>2</sup>Guarantees that are highly likely to be called.

<sup>3</sup>The accounting treatment referred to in the table is taken from International Accounting Standards and International Public Sector Accounting Standards.

<sup>4</sup>The statistical treatment referred to in the table is taken from the Government Finance Statistics Manual 2001 (IMF, 2001a).

## **B. The Public Policy Purpose and Design of Guarantees**

Guarantees are a form of government intervention intended to alter the incentives faced by the private sector and other public sector entities. As such, their general motivation is to respond to market failure, tempered by concerns that inappropriate or excessive intervention can lead market failure to give way to government failure. However, government intervention can take a variety of forms apart from guarantees, including subsidies, in-kind grants, tax breaks, and capital injections, among others. The general principle should be that the type of intervention is appropriate to the source of market failure and serves the government's objectives for intervening. For instance, if the objective is to promote an activity characterized by positive externalities (e.g., education or health care), or to assist poor consumers of a particular service (e.g., local transportation), in most cases a targeted subsidy will work best.

Irwin (2003) discusses the circumstances under which particular instruments of government intervention should be used in connection with infrastructure projects. He notes that guarantees can be an effective response to the inability of markets to distribute risk optimally, although in practice guarantees are used in a much wider range of circumstances. Specifically, guarantees are often used simply to make viable projects or activities that have significant social returns, even though guarantees are not the optimal form of intervention for this purpose.

In general, risk should be borne by those who are best placed to manage it, in the sense of being able to anticipate risk, control exposure to risk, and thereby minimize the cost of risk. The private sector is clearly in a stronger position to anticipate many project risks, in particular the construction and operating risks that typically characterize PPP projects. Availability and demand risks (discussed in Chapter 1) are examples of operating risk. The private sector also has a range of options when it comes to controlling these risks, including diversification and insurance. At the same time, there are risks that the private sector cannot control and which cannot be diversified away or insured against. When the government can influence certain risks, it makes sense to shield the private sector from such risks. Political and policy risks—which, among other things, arise from the ability of the government to appropriate property, exert control over entities it owns, and amend laws and regulations—fall into this category. However, some political risks, such as war and civil unrest, cannot be controlled by the private sector or in most cases by the government, and they should not be borne by either party alone.

Some guarantees can be viewed as a response to the heavy costs that political and policy risks may impose on the private sector. This is especially true for PPP contracts, which usually involve the provision of high-cost, single-use,

long-lived assets. In the absence of protection against such risks, which could be provided by a single guarantee or a combination of guarantees, the private sector may be unwilling to enter into PPPs and other long-term arrangements with the government. However, the government should not provide guarantees to protect the private sector against all the risks it controls. For instance, it should not compensate for the impact of legal or regulatory changes that apply across the economy or to broad sectors of the economy. The focus should be on risks that affect individual projects or groups of similar projects (e.g., the possibility that the government will allow competition in a previously protected market or change pricing policy in a market to a degree that undermines profitability). Moreover, the government should take advantage of opportunities to modify its behavior with a view to containing the impact of the risks it controls. Providing for impartial arbitration, regulatory independence, and/or contract renegotiation can lower the probability that political and policy risk guarantees will be called.

There are some risks that neither the private sector nor the government has an obvious advantage in managing. Natural disaster risk is a case in point; here, the commercial availability of catastrophe insurance is likely to determine whether the private sector bears this risk. Other types of risk are more problematic, including financial risk, residual value risk, and to some extent demand risk. While demand risk is normally considered to be an operating risk that should be borne by the private sector, if the government is the sole or main consumer of a service, it should bear demand risk. This is clearly the case with building services (maintenance and cleaning) deriving from social infrastructure such as schools and hospitals. Moreover, if infrastructure such as a toll road is built and operated by the private sector on terms that reflect demand projections made by the government, or on the understanding that a competing road or other means of transportation will not be built, then a case can be made for demand risk to be borne at least in part by the government. This is why many PPP transportation projects include minimum revenue or income guarantees.

Private operators are sometimes provided guarantees to accommodate unanticipated macroeconomic developments. Exchange rate guarantees are widely used, especially when opportunities to hedge foreign currency exposure are limited. Loan guarantees are fairly common either in connection with specific debts or as a more general guarantee in respect of financial risk and potential insolvency. Residual value risk relates to the market price of assets that are typically transferred to the government at the end of PPP contracts. In principle, this is a market risk that could be borne by the private sector, but because the government is often the sole potential buyer of assets

provided by PPPs, fixed transfer prices are set in PPP contracts which are akin to guarantees.<sup>48</sup>

Efficiency considerations call for guarantees to be limited in scope and duration. A careful assessment of the specific risk is required to ensure that the government guarantees are not more wide-ranging than required to achieve their objective. For instance, demands by a PPP operator for a minimum revenue guarantee may reflect a justifiable concern that a future government will undertake a competing project. However, this source of risk would be better addressed by a guarantee that is triggered should this specific event occur, rather than by a minimum revenue guarantee that requires the government to meet revenue shortfalls independently of their cause (which may be partly under the influence of the operator). That said, being too precise in defining covered contingencies could lead to a plethora of guarantees targeting each and every risk faced by a particular project, which might be efficient but could entail considerable administrative costs.

The need for guarantees can change over time. For example, governments often provide extensive and costly guarantees in the early stages of PPP programs.<sup>49</sup> With time, experience accumulates, the policy framework is strengthened, and the uncertainties surrounding the PPP modality are reduced; as a result, guarantees can be confined in scope and more risk can be transferred to the private sector. Eventually, however, there comes a point, as with any investment program, at which a mature PPP program is selecting new projects from candidates that are more marginal in terms of financial viability. This is more likely with projects that have a larger social component, in which case continuing to favor PPPs will probably give rise to renewed requests for guarantees. Of course, the bigger issue is whether PPPs are more efficient in these cases than traditional public investment and government (or contracted-out) service provision.

Whatever the type of guarantee, the private sector should be left bearing some risk at the margin. Partial guarantees limit moral hazard and adverse selection problems. Some approaches that provide incentives for the private sector to manage risk efficiently include deductibles, ceilings on government exposure (loan guarantees covering only a proportion of loan principal or interest), collateral requirements, delays before paying compensation, and asserting the seniority of government claims to assets in the event of default. These also limit the government's overall risk exposure and ultimately the fiscal impact of called guarantees.

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<sup>48</sup>This is because contract prices for services provided by the private sector to the government take into account the transfer price. Whatever the transfer price, as long as it is fixed, the government loses if the asset is worth less than the transfer price and gains if the asset is worth more than the transfer price.

<sup>49</sup>Regarding the experience with infrastructure guarantees in the Asian crisis countries, see Mody (2002).

### **C. Problems Associated with Guarantees**

While guarantees may be an appropriate form of government intervention, they are not usually subject to the same degree of scrutiny through the budget process as regular spending. This causes a number of problems:

- It is difficult to verify that a guarantee is the best fiscal policy instrument to meet a particular objective, in the sense of being more efficient and cost-effective than alternatives.
- The door is open to use guarantees to bypass external or self-imposed fiscal constraints, in which case they can have a hidden and even unintended impact on the stance of fiscal policy (and in particular can be a source of harmful procyclicality).
- Allowance is not usually made in the budget to cover the costs of called guarantees, and little prior consideration is generally given to the best way to reorient spending or mobilize revenue should this prove necessary to meet these costs.
- A “guarantee culture” can be created, leading the private sector (and in some cases international financial institutions and bilateral lenders) to seek guarantees as an alternative to properly managing risk themselves.
- Because guarantees are valuable to beneficiaries and provided at the discretion of government, they can undermine good governance.

These problems are compounded by the fact that guarantees often have potentially significant fiscal consequences. This is clearly the case when countries extend numerous guarantees, as many countries in transition have done in order to shift the costs of structural reforms to the future (in particular, to encourage and support enterprise restructuring).<sup>50</sup> Implicit contingent liabilities are potentially the most costly for these countries given that there is an expectation that their governments will stand behind privatized firms and financial sectors that are newly exposed to competition. Fiscal costs also can be significant in countries with explicit or implicit deposit insurance, especially if a large bank or a group of banks fails (as with the U.S. savings and loan crisis in the 1980s), and in federal systems when there is an assumption that the central government will bail out subnational governments that get into financial difficulties (often despite a firm commitment not to do so).<sup>51</sup>

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<sup>50</sup>Similarly, public enterprises privatized during the 1990s in Argentina were granted revenue guarantees, many of which were called when the economy stagnated.

<sup>51</sup>European Commission (2004a) discusses the fairly extensive guarantees and other contingent liabilities in the new EU member states. Table II.8 in particular provides some quantitative estimates, but these are not comparable across countries. However, a number of countries have explicitly guaranteed debt (and therefore a maximum risk exposure) in the range of 10-15 percent of GDP (Cyprus, Czech Republic, Slovakia), and guaranteed debt is of a similar order of magnitude elsewhere (India, Thailand). The table also quantifies some other significant contingent liabilities, including the debt of privatized enterprises and decommissioning costs in Lithuania (6¼ and 7 percent of GDP, respectively) and reprivatization in Poland (5½ percent of GDP).

A further concern is that the fiscal costs of guarantees and other contingent liabilities are often exposed during crises, when the consequences are most severe. The recent financial crises in emerging market economies indicate that different types of crises—currency, banking, and fiscal—tend to be triggered by one another. Thus a currency crisis weakens the banking system, which receives fiscal support in the form of recapitalization; this in turn compounds public debt sustainability problems (which may themselves have been made worse by the currency crisis). This has been the pattern in a number of crisis countries (see Hemming and Ter-Minassian, 2003), and recapitalization costs have in some instances been very high (e.g., almost 40 percent of 2000 GDP in net terms since 1997 for Indonesia). The upshot is that the government is often forced into a large fiscal adjustment which has to be implemented quickly; however, under such circumstances, institutional impediments can result in some combination of low-quality measures, arrears (including on guarantee payments), and restructuring.

These potential problems place a premium on developing a rational, forward-looking policy toward guarantees. The key is full transparency about fiscal risks and potential fiscal costs, but such transparency is hampered by the fact that guarantees and other contingent liabilities pose serious challenges from a fiscal accounting and reporting standpoint.

## **D. Fiscal Accounting and Reporting for Guarantees**

The main accounting and reporting challenge is that the contingent nature of guarantees makes valuing them difficult. This is one reason why the financial impact of guarantees tends to be recorded in the fiscal accounts only when a guarantee is called, even though it is widely acknowledged that the potential cost of guarantees should be taken into account when the decision is taken to provide them. The valuation problems are admitted but rarely discussed. Because it is important, this section begins with a discussion of valuation, before turning to the current treatment of guarantees under cash and accrual accounting. It then suggests disclosure requirements for guarantees.

### **Approaches to Valuing Guarantees**

A number of analytical techniques are available to value guarantees. This section highlights two techniques—Monte Carlo simulation analysis and the Black-Scholes options pricing formula—for modeling the behavior of the variable that represents the underlying source of risk, such as toll revenue in the case of a minimum revenue guarantee, as the basis for valuation.

- Monte Carlo simulation analysis: The value of the underlying risky variable at any time is assumed to depend on its initial value, the mean and variance of its growth rate, and the value taken by a normally distributed random variable. The probability distribution of guarantee payments for a particular period, and the expected guarantee payment for that period, can be generated by taking a large sample of outcomes for the random variable and calculating the guarantee payment in each case. The value of the guarantee is the discounted present value of expected risk-adjusted guarantee payments over the life of the guarantee.
- The Black-Scholes options pricing formula: Guarantees can be thought of as options, in the sense that a guarantee provides the beneficiary with the option to make a claim against the government should some specific event occur. The Black-Scholes formula makes similar assumptions and uses much the same information as a Monte-Carlo simulation analysis to price options, and it can also be applied to the valuation of guarantees. Merton (1977) describes how to do this in the case of deposit insurance, where the option can be exercised by depositors should a bank fail, and loan guarantees, where the option can be exercised by a lender should a borrower default. These are both examples of a *put option*—that is, the beneficiary has the right to sell its claim (to its deposits or its loan repayments) to the government for a specified price.

These techniques are described in more detail in Irwin (2003) and Arthur Andersen (2000).

The choice of valuation technique depends on the structure of the guarantee and the information that is available about the determinants of guarantee payments. The Black-Scholes formula produces a precise valuation but can only be used for fairly simple guarantees (more specifically, those that can be exercised only once at a specific date). Monte Carlo simulation analysis can be applied to more complex guarantees, but the result is only an approximation. There are of course other techniques that can be applied, including fairly simple numerical methods whereby expected costs are estimated by applying approximate risk weights to future calls on guarantees, more complicated numerical techniques such as binomial trees (see Appendix 4), and sophisticated mathematical techniques (such as finite-difference methods). Furthermore, some specific contingent liabilities lend themselves to the application of certain techniques. For example, contingent claims analysis can be used to assess government exposure to balance sheet risks in the corporate, financial, and public sectors.<sup>52</sup> The emphasis on Monte Carlo simulation analysis and the Black-Scholes options pricing formula derives in part from recent experience with their use to value guarantees in Chile.

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<sup>52</sup>See Gray, Merton, and Bodie (2003) and Gapen and others (2004).

The Chilean government uses these methods to value the minimum revenue and exchange rate guarantees it provides to operators of highways and other concessions. Minimum revenue guarantees kick in when toll revenue is below the guaranteed minimum level, but they are partially offset by revenue sharing with the government that occurs when toll revenue is above a certain level. The exchange rate guarantee operates symmetrically. The contingent liabilities and assets created by the minimum revenue guarantee and revenue sharing are estimated using Monte Carlo simulation analysis, while the exchange rate guarantee is valued using the Black-Scholes options pricing formula. Estimates are contained in the Report on Public Finances, which is part of the annual budget documentation. The latest estimates are that the net contingent liability (in expected value terms) resulting from the minimum revenue guarantee and revenue sharing is about ¼ percent of 2004 GDP, while the maximum exposure is close to 5 percent of 2004 GDP. The exchange rate guarantee is the source of a very small contingent asset, because the peso has appreciated since the guarantee was offered.<sup>53</sup> Further details about modeling and estimating the value of guarantees in Chile are provided in Appendix 4.

The Chilean approach to valuing guarantees provided in connection with concessions is presently the state of the art. Although some other countries adopt similar techniques (Colombia being notable in this regard), valuation is not the norm, even in advanced OECD countries with sizable PPP programs. Of course, many countries have neither the technical expertise, the experience, nor the information to implement this approach. Indeed, the Chileans have accomplished what they have only with technical assistance from the World Bank. However, there is no reason why many countries cannot start valuing guarantees and other contingent liabilities using simple techniques. In this connection, the experience of the Federal Deposit Insurance Corporation in the United States with producing expected loss estimates (which are derived using historical risk weights) is instructive.<sup>54</sup>

Even the Chilean work, however, is still at a developmental stage and has its limitations. In particular, some concessions have minimum revenue guarantees that do not involve any expenditure when they are called, but instead involve an extension to the term of the contract; similarly, some

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<sup>53</sup>The Report on Public Finances also provides information on expected cash flows through 2024 under the minimum revenue guarantee, revenue sharing, the exchange rate guarantee, and the minimum pension guarantee. The minimum pension guarantee is estimated to be considerably more costly than the guarantees provided to concession operators.

<sup>54</sup>Lithuania has used a similar approach to value loan guarantees provided to private firms.

beneficiaries have the option to cancel their exchange rate guarantees. Both of these features complicate valuation and are not taken into account in the Chilean estimates. Finally, the very long time horizons of PPPs can make it difficult to judge the government's overall risk exposure, particularly in countries that have a history of political and economic volatility.

### **Accounting for Guarantees**

Under cash accounting, guarantees are recorded in the fiscal accounts when a covered contingency occurs and a cash payment is made. It is only at this time that the existence of a guarantee becomes apparent. The full amount of any payment is recorded as an expenditure, and the assumption of a loan is recorded as a liability. Future interest and amortization payments are recorded as such.<sup>55</sup>

Under accrual accounting, it is necessary to judge whether a guarantee should be treated as a liability. As discussed in more detail in Appendix 5, international accounting standards require that a contingent obligation be recognized as a liability only when the probability that a payment will be made is considered more than 50 percent and when a reasonably reliable estimate of the payment can be made. While many individual guarantees are unlikely to be called, accounting standards allow the probability that an expense will occur to be determined by considering a number of similar guarantees as a whole. This makes the calling of at least some guarantees probable. When a reasonably reliable estimate can be made of the expected cost of called guarantees (for the group that are more than 50 percent likely to be called), governments that prepare their budgets, fiscal reports, and financial statements on an accrual basis should recognize that expected cost as a liability at the time the guarantees are issued.

Guarantees and other contingent liabilities are formally recognized as a liability by creating a *provision*. Under accrual accounting, a provision is used to recognize a liability of uncertain amount and timing when a decision is taken that could lead to a future expense. Creating a provision thus involves recording on the balance sheet both a liability and a corresponding expense. However, the term is more often used to refer to the practice of setting funds aside to meet a specific payment when it falls due. But whether to earmark funds to meet future payments is a financial management decision, rather than an accounting issue. GFSM 2001 does not cover provisions

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<sup>55</sup>If a guarantee fee is charged at origination, this is recorded as nontax revenue. Guarantee fees are discussed below.

because, while international accounting standards rely on the likelihood of an event's occurrence as the basis for recognizing a contingent obligation, statistical reporting in general (and GFSM 2001 in particular) relies on the actual occurrence of the event, although it does record some fairly narrowly defined contingencies as liabilities.<sup>56</sup>

If a provision is not made for guarantees, they are recorded under accrual accounting only when they are called (as under cash accounting). When guarantees are called, their treatment under GFSM 2001 depends on the circumstances. The key determinants are whether the government assumes debt, whether the original debtor is a public or private entity, and whether a claim is acquired against the original debtor. If none of these are operative, guarantee payments are recorded as an expense in the operating statement. If the government assumes the debt of a public entity, either the increase in liabilities is matched by an increase in equity or the assumption of debt is treated as a loan (if there is documentary evidence that this is indeed the case). If the government assumes the debt of a private entity, the government can stake a claim to its assets; alternatively, an imputed capital transfer to a domestic entity or a capital grant to a foreign entity can be recorded in the operating statement.

### **Disclosure Requirements for Guarantees**

International accounting standards require governments reporting on an accrual basis to disclose information on contingent liabilities, including guarantees, but transparency with respect to guarantees can be strengthened under any basis of accounting by disclosing supplementary information in budget documents, fiscal reports, and financial statements. There has been a general trend in this direction over the last decade or so. This often takes the form of a schedule on the stock of outstanding guarantees that accompanies financial statements, and some countries (also or instead) provide information on guarantees and other contingent liabilities with their annual budgets.<sup>57</sup> Fiscal transparency standards actually call for the provision of such information in budget documents. More specifically, the IMF Code of Good

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<sup>56</sup>In general, contingent contracts are not recognized as liabilities under GFSM 2001 because they are not unconditional claims or obligations. Only where a contingent contract relates to a financial arrangement that has value because it is tradable (a financial derivative) does GFSM 2001 treat the contingent obligation as a liability.

<sup>57</sup>Of the countries that provide examples of good practice, the detailed assessment of various guarantee programs in the United States is the most easily accessible (see U.S. OMB, 2004a). Other country examples include Brazil, Czech Republic, Pakistan, and South Africa.

Practices on Fiscal Transparency (IMF, 1998) requires that budget documentation provide details of the nature and fiscal significance of contingent liabilities. Finally, GFSM 2001 follows the 1993 SNA by requiring information on contingent liabilities to be recorded as memorandum items to the balance sheet.<sup>58</sup> Appendix 5 contains details of selected international reporting standards for guarantees.

While current international standards share common features, there is merit in combining their various elements into a set of comprehensive reporting requirements for guarantees. Box 7 outlines a set of requirements that could be applied irrespective of the basis of accounting and could be included in an accounting and reporting standard for guarantees and other contingent liabilities that specifies in detail the required format, content, timeliness, acceptable methods of valuation, periodicity of disclosure, and audit arrangements.<sup>59</sup> Quantification should be undertaken wherever feasible, at a minimum of the gross exposure and also of the likely fiscal impact as more capability is developed to value guarantees.<sup>60</sup>

Compiling even the basic information required for disclosure, however, can be a challenge. In many countries, guarantees are poorly documented (and in some, may not be documented at all). Information on guarantees is generally held by individual government departments and agencies, which means that this information must be centralized to compile government-wide disclosure statements. This might be best achieved by incorporating information on guarantees in the budget submissions and fiscal reports provided by individual departments and agencies to the ministry of finance. To this end, it must be made clear that department and agency managers are responsible for providing this information and that records of guarantees will be subject to audit. (Of course, a requirement that agencies provide information about guarantees does not imply they have carte blanche to offer guarantees.)

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<sup>58</sup>However, inclusion as contingent liabilities of the net present value of obligations under social security schemes (in addition to the stock of explicit government guarantees) is a mistake for the reasons outlined earlier.

<sup>59</sup>Information on guarantees (and other contingent liabilities) is subject to audit by the supreme audit institutions in Canada, New Zealand, and the United States.

<sup>60</sup>There may be some situations in which disclosure of an estimate of the likely fiscal cost may prejudice the government's position in a dispute with third parties—for example, estimating the expected cost of legal action being brought against the government. In these situations, which will be infrequent, it may be sufficient to disclose just the gross exposure (accompanied, in the case of potential legal liabilities, by a disclaimer that this in no way reflects an admission of liability).

### Box 7. Disclosure Requirements for Guarantees

Irrespective of the basis of accounting, information on guarantees should be disclosed in budget documents, within-year fiscal reports, and year-end financial statements. Guarantees ideally should be reported in a fuller Statement of Contingent Liabilities which is part of the budget documentation and accompanies financial statements, with updates provided in fiscal reports.

A common core of information to be disclosed annually for each guarantee or guarantee program:

- A brief description of its nature, intended purpose, beneficiaries, and expected duration.
- The government's gross financial exposure and, where feasible, an estimate of the likely fiscal cost of called guarantees.
- Payments made, reimbursements, recoveries, financial claims established against beneficiaries, and any waivers of such claims.
- Guarantee fees or other revenue received.

In addition, budget documents should provide:

- An indication of the allowance made in the budget for expected calls on guarantees, and its form (e.g., an appropriation, a contingency).
- A forecast and explanation of new guarantees to be issued in the budget year.

During the year, details of new guarantees issued should be published (e.g., in the Government Gazette) as they are issued. Within-year fiscal reports should indicate new guarantees issued during the period, payments made on called guarantees, and the status of claims on beneficiaries, and update the forecast of new guarantees to be issued in the budget year and the estimate of the likely fiscal cost of called guarantees.

Finally, a reconciliation of the change in the stock of public debt between the start and end of the year should be provided, showing separately that part of the change attributable to the assumption of debt arising from called guarantees.

## E. Managing the Fiscal Risk Posed by Guarantees

The potential fiscal costs associated with guarantees argue in favor of them being carefully controlled. However, guarantees are only one source of fiscal risk, and controlling them should ideally be seen as one component of the government's overall system for managing its liabilities and assets. The attention devoted to guarantees therefore should be proportional to their significance in comparison to other sources of fiscal risk, including other explicit contingent liabilities, implicit contingent liabilities, and policy-based risk (for example, from social security obligations). Measures to control guarantees also should be appropriate to both the level of risk they pose for a particular country and the sophistication of its financial management system.

### **Box 8. Management Framework for Loan Guarantees in Canada**

To control the growth of loan guarantees (and loans), Canada requires that:

- The sponsoring public entity must demonstrate that the project could not be financed on reasonable terms and conditions without a government loan or guarantee.
- An economic analysis is made demonstrating that the project's cash flows are sufficient to cover repayment of the guaranteed debt and other costs and to yield a sufficient rate of return.
- Project sponsors must supply a substantial portion of equity funds from their own resources.
- Lenders must bear at least 15 percent of the net loss associated with any default.
- When the government is requested to bear substantial downside risks, consideration must be given to allow parallel sharing of the upside potential.
- Fees are set that cover the estimated cost of future losses and administrative costs.
- All new loans and guarantees must be approved by the Ministry of Finance.
- Parliament sets a maximum limit on new loans and guarantees.

### **Direct Control of Guarantees**

Centralized control over the granting of guarantees is often appropriate. Depending on the individual country, this may involve requiring the prior approval of the minister of finance, the cabinet, or the legislature, under guidance provided by a well-articulated policy framework that covers the justification, design, analysis, and approval of guarantees. Box 8 summarizes the management framework for loan guarantees in Canada. Decisions about guarantees should be integrated with the annual budget cycle and with analysis of sectoral policies and budgets, so that guarantee proposals are considered alongside alternative instruments and programs with similar objectives. In general, the central government should control the granting of guarantees by subnational government agencies, because the central government is usually understood to stand behind subnational units, even in the absence of explicit counterguarantees. The only exception should be when there is a clear and credible no-bailout provision.

The government should have access to specialized advice in exercising control over guarantees and should conduct its oversight in a transparent manner. The issues involved in evaluating, designing, and valuing guarantees are complex and require financial, legal, and sector-specific technical expertise. Moreover, those seeking guarantees from the government are often well-positioned to value them; at the same time, however, they have an incentive to underestimate the potential cost to government. This is certainly true of the private sector beneficiaries, and to some extent of sectoral

ministries sponsoring projects and associated guarantee proposals. It is therefore important that the ministry of finance plays an active role in developing and reviewing guarantee proposals, as well as in monitoring and managing guarantees, and that these functions are subject to independent audit.

A government seeking to assert firm control over guarantees should consider limiting them through a quantitative ceiling. A ceiling on the stock of guarantees or on the issuance of new guarantees can create a quasi-budget constraint, generating increased scrutiny and spurring the prioritization of individual proposals. Any ceiling should be approved by the legislature. It can be expressed in various ways—for example, on the face value of the stock of new guarantees or as a proportion of total government revenue or expenditure, or (in more advanced systems) on expected cost. The ceiling might apply across the entire government, or it could apply only to specific individual entities.<sup>61</sup> It could also be specified in terms of well-defined sources of contingent liabilities, such as government insurance programs (although it would probably work better if the ceiling were applied to an entity responsible for administering these programs).<sup>62</sup> A ceiling has particular merit where the government's risk exposure from guarantees is difficult to quantify.

It is especially important to control implicit contingent liabilities, although doing so is particularly challenging. Such liabilities can have sizable financial implications, especially when the government backstops public enterprises, public financial institutions, subnational governments, and private firms. Moreover, PPPs are in many cases responsible for the monopoly supply of essential services, and the government can be exposed to significant costs if a private operator fails to perform and an alternative source of supply has to be secured. One way to control implicit contingent liabilities is to make them explicit.<sup>63</sup> For example, the government could announce a ceiling on the total costs it is willing to cover. However, while this may work for bank deposits or disaster recovery, such ceilings are less credible for entities owned or controlled by the government or for strategically important private firms. An alternative is for the government to monitor the financial position of these entities if they pose major implicit risks and, if necessary, to place restrictions on their activities. In the case of PPPs, the government could set minimum

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<sup>61</sup>Whether the central government specifies a ceiling that covers subnational governments will depend primarily on whether the central government explicitly or implicitly stands behind subnational governments.

<sup>62</sup>In addition to Canada, other countries that have quantitative ceilings on guarantees include Hungary, Israel, Japan, Kazakhstan, Latvia, the Netherlands, Portugal, and Tunisia.

<sup>63</sup>It is also important that the government make it clear when it does not stand behind a project or an entity; in other words, it should be explicit about the lack of an implicit contingent liability.

performance standards for private operators, require performance bonds to be posted, or establish step-in rights.<sup>64</sup>

### **Budgeting for Guarantees**

Governments should appropriate in their annual budgets the expected cost of meeting called guarantees. This ensures that the legislature is fully informed about such expenses at the time the budget is presented, that the expense does not crowd out other priority spending during budget implementation or add to the fiscal deficit, and that it is pre-authorized.<sup>65</sup> It also ensures that any debt incurred or assumed will be consistent with the government's overall debt management strategy. The budget documents should contain an explanation of the basis for the appropriation and should identify the main guarantees or guarantee programs that are expected to result in calls. The guarantee appropriation should be increased in a supplementary budget during the year if necessary. Any unused portion of the appropriation can be reallocated if it becomes clear that it will not be needed; otherwise, it should lapse at the end of the year.<sup>66</sup>

Budgeting only for the expected cash cost each year still leaves a bias in favor of the use of guarantees. In the absence of any immediate impact on the budget of the sponsoring government entity, guarantees remain something of a free good, and such an entity will have an incentive to propose a guarantee when a direct expense or loan may be more efficient and effective. Moreover, the budgetary costs to the government can be artificially reduced in the initial years of a PPP by packaging some elements into government guarantees that increase the costs in later years. Presenting ex ante estimates of their expected lifetime cost at the time decisions are made to grant guarantees, and disclosing comprehensive information on guarantees ex post, helps to reduce these incentives.

When reasonably reliable estimates of the expected lifetime cost of a guarantee can be made, governments should reflect this in the budget at

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<sup>64</sup>For example, in South Africa the Municipal Finance Act 2003 stipulates that municipal debt guarantees can only be issued with national government approval and only if the municipality creates a cash-backed reserve or purchases insurance to cover the debt. This limits the national government's implicit counterguarantee.

<sup>65</sup>This appropriation might be a general contingency appropriation, covering a variety of contingent and unexpected events, but in countries where payments on called guarantees are significant, a separate guarantee appropriation is likely to improve transparency and accountability. This is the practice, for instance, in Hungary, Japan, Kazakhstan, Malaysia, Mexico, and the Slovak Republic.

<sup>66</sup>Policies will be required to establish the point at which payments under called guarantees are treated as public debt service and cease to be a charge against the guarantee appropriation.

the time the guarantee is granted.<sup>67</sup> It should also seek an appropriation that reflects the stream of expected guarantee payments, an allowance for administration costs, and a margin to cover the potential variance in the expected cost.<sup>68</sup> In principle, budgeting for the expected lifetime cost of a guarantee at the time it is granted would bring guarantees fully into the discipline of the budget process and leave departments neutral in choosing between guarantees and other forms of fiscal assistance. It would also ameliorate incentives to use guarantees as a way of shifting costs to the future. The appropriation should be recorded under the expenditure category relating to the activity concerned, and the amount should be reviewed periodically and adjusted if necessary. Colombia budgets for contingent liabilities resulting from guarantees provided for infrastructure projects, while the United States budgets for the expected cost of loan guarantees. Details are provided in Boxes 9 and 10.<sup>69</sup>

Budgeting for guarantees does not mean that the government has to set aside funds to meet the cost of called guarantees. Whether to set aside cash for this purpose is a financial management issue, analogous to the decision about whether to set up a sinking fund to finance future debt repayments. Thus a full appropriation for the expected lifetime cost of a guarantee could be used to set up a reserve fund out of which future payments on called guarantees would be made, as in Colombia.<sup>70</sup> Alternatively, the expected lifetime cost can be recorded as a memorandum item, as in the United States. The key objective of budgeting for the expected lifetime cost is to engender discipline at the time the decision is taken to grant a guarantee.

Nor does the government have to earmark funds (e.g., from guarantee fees or revenue-sharing proceeds) to meet the cost of future calls on guarantees. Those in favor of earmarking argue that 1) it can assist with the management

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<sup>67</sup>For the very small number of countries that both report and budget on an accrual basis, and where the calling of a guarantee is not expected to result in a liability that is matched by an asset, a decision to recognize a guarantee as a liability will mean that an expense equivalent to the full expected cost is automatically recorded in the budget.

<sup>68</sup>Where uncertainty over expected costs is high, the level of existing exposures is high, and/or guarantees have proliferated out of control, a government may wish to adopt a cautious approach to deciding the margin. At the limit, it would be possible to budget for the full gross exposure under new guarantees, as the Netherlands did at one stage before moving to budgeting for a measure based on expected cost.

<sup>69</sup>For a description of how the federal credit guarantee operates, see U.S. OMB (2004b). Similar issues arise with respect to government-provided insurance, and it has been proposed in the United States to introduce for insurance programs the same sort of expected cost budgeting that operates for the credit guarantee, although this has not been adopted to date.

<sup>70</sup>Future payments from such a fund would not impact the budget measured on an accrual basis at the time they are made, as the money in the fund would already have been appropriated and incorporated in the budget at the time the guarantees were initially granted.

### **Box 9. Budgeting for Contingent Liabilities in Colombia**

The legal framework in Colombia has required budgeting for explicitly contracted contingent liabilities since 1998 and also provides policy guidelines on risk allocation to ensure that the use of guarantees reflects efficient risk transfer principles. Each government entity providing a guarantee must include the estimated cost in its budget at the time a guarantee is granted, using valuation methodologies established by the Contingent Liabilities Division in the Ministry of Finance. Appropriations are based on a coverage of costs under 95 percent of possible outcomes for each guarantee. The entity pays the appropriated amount into a centralized Contingent Liabilities Fund (FCCEE) according to an agreed deposit plan. The deposit plan takes into account the cash flow of the entity and the risk profile of the guarantee and attempts to smooth out deposits over time. The law allows the use of temporary liquidity mechanisms to cover the appropriations to the FCCEE. FCCEE assets (which can only be invested in government securities and AAA-rated instruments) are managed by a fiduciary. An estimate of contingent liabilities has begun to be reported annually to congress as part of the medium-term fiscal framework.

Entities maintain a separate account with the FCCEE for each project and for each type of risk within a project. The estimates of the expected value of each risk are reviewed annually by the Ministry of Finance to take into account new information, and the corresponding deposit plans are revised if necessary. If the guarantee is called, the FCCEE covers only up to the amount in the respective account, with the difference being met by the responsible entity. Money in an account cannot be transferred to cover the costs of calls arising from guarantees issued by other entities. Once a specific risk has lapsed, the funds associated with that risk are transferred to other risk accounts within the same project; once the project is completed, funds are transferred to other projects undertaken by the same entity; and finally, if the entity has no other projects, funds are reimbursed to the entity.

of the uncertain future cash impact of calls on guarantees; 2) it may provide a useful means to keep track of and control the disposition of any revenue generated by guarantees; and 3), in some countries, it may also provide added assurance to guarantee holders that funds will be there if and when required (increasing the government's credibility as a contracting partner, for example, in the early stages of a PPP program).<sup>71</sup> However, earmarking reduces flexibility in cash management and may increase costs.<sup>72</sup> In practice, the funds may be held in government securities, effectively unwinding the transaction. There are also other means available to countries to assist with

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<sup>71</sup>The amount to be set aside will not necessarily be the same as the amount budgeted. This would depend on the anticipated distribution of costs over time and the extent to which the government wishes to ensure there will be sufficient funds to meet the costs of possible calls or guarantees under various eventualities. The size of the fund should be subject to regular actuarial review to ensure that it is sufficient to meet its intended objectives.

<sup>72</sup>For instance, overall risk may be reduced by pooling unrelated risk exposures, so that earmarking funds for the expected cost of each individual guarantee and guarantee program may result in over-reserving of funds.

### Box 10. Budgeting for Loan Guarantees in the United States

With the Federal Credit Reform Act (FCRA) of 1990, the United States introduced present value cost budgeting for federal government loans and loan guarantees within an otherwise essentially cash-based budget. The budget records the expected net cost to the government when loans are disbursed or guarantees granted. This enables the fiscal effects of loans, guarantees, and grants to be compared directly with each other and removes the bias in favor of guarantees under cash budgeting.

The cost is estimated as the present value of disbursements over the term of the loan less the present value of expected collections (administration costs are omitted). The budget records these costs in credit program accounts. No payments actually leave the Treasury, and no cash reserve is created. When a loan is disbursed or a loan guarantee issued, the program account outlays the expected cost to a nonbudgetary credit financing account. The financing accounts record the actual transactions with the public (e.g., loan disbursements and repayments, interest, guarantee fees). Each agency responsible for a credit program must reestimate the cost of outstanding loans and guarantees each year, although the Office of Management and Budget has overall responsibility for the estimates. If the estimated amount increases or decreases, a transaction takes place between the program account and the financing account. The FCRA provides for permanent indefinite appropriations to pay for upward reestimates (provided that the terms of the original loan or guarantee remain unchanged).

The transactions of the financing accounts do not appear in the government budget, although the transactions of the financing and program accounts are presented in budget documents for information and analytical purposes.

managing the uncertain cash-flow impact of guarantees. For instance, concession contracts in Chile provide for a lag between calls on guarantees and government payments (although this provision will be priced into contracts).

#### Guarantee Fees

Charging guarantee fees improves incentives. Charging an origination fee against the budget of the sponsoring government department at the time a guarantee is issued may help to internalize the cost of the guarantee, although only if it means the department has to forgo some other expenditure at the margin. In addition, the sponsoring department might be required to meet a (small) portion of the cost of any subsequent call on a guarantee.<sup>73</sup> This might reduce somewhat the scope for imprudent use and poor monitoring of guarantees. However, the major gains come from charging the guarantee recipient a fee that bears some relationship to the expected cost of the guarantee. Through such “pricing” mechanisms, the recipient is made to bear

<sup>73</sup>Origination fees may at least help to establish a link to the annual budget process; also, the sponsoring department could be required to report a contingent liability on its books with respect to the copayment (it would be required to do so under accrual accounting).

the cost of the guarantee to a significant extent, which reduces the incentive to include guarantees in contracts as a means to disguise the true cost or gain at the government's expense.<sup>74</sup> Guarantee fees also reduce the likelihood of governance problems. When governments seek to share in the upside risk, as in Chile where minimum revenue guarantees are combined with revenue sharing, best practice is to separately value upside and downside risks, given that even a net expected cost of zero may mask significant risk being borne by government.

### **Institutional Development**

Well-functioning institutions are key to the effective management of guarantees. In countries with weak institutions, the priority should be to set up a public debt management unit in the ministry of finance that maintains a central register of debt and guarantees (and not only guaranteed debt) and assesses requests for new guarantees against appropriate debt and liability management guidelines. This in effect provides a basis for centralized control over guarantees and for the integration of guarantee exposure into debt and cash management. Denmark and Sweden are examples of countries that do the latter well, while Ireland does it for PPP financing more generally. Where institutions are stronger, the emphasis should be on developing the capacity to measure guarantee exposure more precisely and on adopting approaches to accounting, reporting, and budgeting that properly reflect this exposure.

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<sup>74</sup>This also improves allocative efficiency by fully costing all inputs to infrastructure projects and by removing implicit untargeted subsidies to consumers.

## PPPs, Guarantees, and Debt Sustainability

This chapter looks at the consequences of PPPs and guarantees for debt sustainability, focusing on the appropriate approach to debt sustainability analysis and the uncertainty created by guarantees.

Debt sustainability analysis is usually based on a fairly narrow concept of public debt. Often this is restricted to gross debt in the form of government securities and loans to government, and possibly liabilities created under financial leases. Sometimes, however, the focus is on net debt, excluding government deposits, government securities held by social security funds and other government entities, and loans made by government. Even under GFSM 2001, which extends the concept of debt (and assets) significantly, public debt does not cover the wide range of obligations referred to in Table 1. Yet judgments about debt sustainability are not independent of the government's nondebt obligations, and this is illustrated by PPPs.

### A. PPPs

PPPs give rise to obligations on the government to purchase services from a private operator and to honor calls on guarantees. These known and potential future costs for the government can influence debt sustainability in much the same way as if the government had incurred debt to finance public investment and provide a service itself, in that more fiscal adjustment is needed to stay on a desired debt path. These costs should therefore be taken into account when undertaking debt sustainability analysis. There are two ways to do this.

- PPP obligations could be added to public debt. These obligations would comprise the present value of 1) future service payments under PPP contracts (less any contractual receipts from private operators) and 2) calls on guarantees (less any contingent receipts from private operators). Debt sustainability would then be judged by reference to public debt plus PPP obligations, and the use of PPPs when debt is

unsustainable would call for a larger primary surplus (or smaller primary deficit).

- An analytically equivalent approach is to count known and potential future PPP costs as future primary spending. In this case, debt sustainability is judged by reference to public debt alone, and the use of PPPs when debt is unsustainable would require additional fiscal measures to meet the original primary surplus/deficit target.

On balance, the latter is probably the better approach because it avoids treating the present value of future service payments by the government under PPP contracts as a liability, which has little immediate prospect of being accepted by accountants or statisticians.<sup>75</sup> While this approach could be applied to other legal obligations, the case for extending it to constructive obligations and implicit contingent liabilities is weaker, because there may always be scope for the government to constrain spending that it is not legally bound to undertake. Moreover, while the government may in effect be committed to providing a certain minimum level of many services and to stepping in when disasters hit, spending incurred in doing so should not be protected from the type of scrutiny that could reveal the potential for cost savings.

There are, however, some limitations on this approach to debt sustainability analysis. First, information on future payments under PPP contracts has to be available, which requires that the disclosure requirements outlined in Chapter 1 are met.<sup>76</sup> Second, for PPPs that are accounted for as public investment (in the sense that PPP debt and the associated interest payments and amortization are reflected in the fiscal data used for debt sustainability analysis), only the pure service component of payments under PPP contracts should be counted as primary spending. Attempts to separate this from the debt service component of these payments often must be approximate. And, third, as discussed in Chapter 2, in many cases valuing guarantees is difficult. The emphasis should then be on conducting scenario analyses to test debt projections under different assumptions about calls on guarantees, with a general presumption that, all other things being equal, judgments about debt sustainability should be more cautious in countries that have provided extensive guarantees.

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<sup>75</sup>However, financial markets in the United Kingdom are aware that these payments—which are fully disclosed—are a liability and there have been some calls for this liability to be added to public debt.

<sup>76</sup>Indeed, it will require the disclosure of additional information about guarantees, beyond that recommended in Box 7. To ensure consistency with the debt sustainability analysis, economic and financial assumptions used for valuation, together with the currency composition of guarantees, would have to be disclosed, while the disclosure of the riskiness of expected guarantee payments would facilitate sensitivity analysis.

Despite the fact that there is inevitably a fair degree of imprecision in debt sustainability analysis that takes PPPs into account, the presence of contractual service payments and guarantees is likely to have an impact on policy advice only when debt sustainability is already fragile. When this is the case, borrowing to finance traditional public investment would also be a concern, and it is more likely that governments will be tempted to use PPPs to circumvent fiscal targets. In such circumstances, a conservative approach to debt sustainability is warranted.

Finally, if debt sustainability analysis indicates that a proposed PPP program entails significant risks, a ceiling could be placed on the overall size of the program. Such a ceiling could usefully be specified in relation to the capacity of the country to service future obligations under the PPP program, proxied by its future stream of revenues. Noteworthy in this respect is the stipulation in the recently enacted PPP law in Brazil that prohibits undertaking new PPPs if the projected stream of payments under the program exceeds 1 percent of government revenue in any future year.

## **B. Guarantees and Uncertainty**

Even if guarantees can be valued using techniques such as those described in Chapter 2, they remain subject to uncertainty that can complicate debt sustainability analysis. If events transpire that lead many more guarantees to be called than expected, debt sustainability can be undermined, increasing the likelihood of serious fiscal problems and possible fiscal crises. A cautious approach is to take the government's maximum risk exposure under guarantees into account in assessing debt sustainability, although this could unnecessarily limit fiscal policy flexibility.<sup>77</sup> A more reasonable approach is to construct scenarios that correspond to alternative degrees of risk exposure arising from guarantees, with a view to determining the additional fiscal adjustment that would be required under each scenario and ideally to identifying measures that could be used to address a worse-than-expected outcome. This is more sophisticated than the approach to debt sustainability analysis currently used by the IMF, which stress tests baseline debt projections for a step increase in liabilities derived from called guarantees and other contingent liabilities, in that it requires consideration of both the events that might trigger guarantees and their likely impact. The IMF is considering a stochastic simulation approach to computing a probability distribution of possible debt paths around a baseline that would acknowledge more explicitly the possibility of extreme outcomes.

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<sup>77</sup>Moreover, such an approach could end up being tantamount to a blanket prohibition of new guarantees when the aim of being alert to fiscal risks is to filter out unjustifiable guarantees.

An alternative approach to assessing debt sustainability under uncertainty is to apply Value-at-Risk (VaR) methodology. If a probability distribution of calls on guarantees can be derived using the techniques discussed in Chapter 2 and Appendix 4, this can provide the basis for deriving a probability distribution for net worth that can be used to measure value at risk. For example, if there is a 5 percent probability that net worth will fall by 10 percent of GDP because of called guarantees, all other things being equal, VaR from guarantees at the 95 percent level is 10 percent of GDP. The larger the VaR, the more cautious government needs to be in planning for fiscal adjustment should guarantees be called and (better still) in strengthening the fiscal position in advance so that this and similar shocks can be accommodated without the need for fiscal adjustment. The VaR approach underlies the decision in Colombia to budget for 95 percent of the expected cost of guarantees.<sup>78</sup>

The information requirements for full-fledged VaR analysis, however, are demanding. In particular, few countries have comprehensive public sector balance sheets, which are required to estimate net worth at risk. However, VaR can be applied to the liability side of the balance sheet alone. This is done by Garcia and Rigobon (2004) in assessing debt sustainability in Brazil. They show that even though debt is sustainable according to traditional measures in the absence of risks, there is a nontrivial probability that underlying macroeconomic variables will evolve in a manner that produces unsustainable debt paths. As an alternative to the VaR approach, Alvarado, Izquierdo, and Panizza (2004) examine debt sustainability in Ecuador applying the Mendoza-Oviedo probabilistic model, which says that the government can only make a credible commitment to service its debt if it would not default under any feasible revenue path. It is shown that revenue volatility could be source of a fiscal crisis given expenditure rigidity, and that oil shocks and sudden stops in capital flows could have substantial fiscal costs. In principle, these approaches can be used to assess the threat to debt sustainability posed by guarantees.

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<sup>78</sup>Barnhill and Kopits (2004) also apply the VaR approach to assess government balance sheet risks and fiscal sustainability in Ecuador, and they conclude that traditional debt sustainability significantly understates fiscal vulnerability in the face of volatile sovereign yield spreads, exchange rates, and oil prices, combined with fiscal rigidities.

## Summary and Conclusions

PPPs involve private sector supply of infrastructure assets and services that have traditionally been provided by the government. An infusion of private capital and management can ease fiscal constraints on infrastructure investment and increase efficiency. In recognition of these advantages, PPPs are taking off around the world: there are well-established programs in a number of countries, and less developed programs or a good deal of interest in many others.

### A. Realizing the Promise of PPPs

A successful PPP can deliver high-quality services at lower cost than the government. For this promise to be realized, not only must the private sector be more efficient, but the efficiency gains must be large enough to compensate for the fact that private sector borrowing costs are often higher than those of the government. The required efficiency gains are more likely to materialize if PPPs have the following characteristics.

- The quality of services is contractible. If the government can specify the quality of services it wants the private sector to supply, and can translate these into measurable output indicators, then it can enter into a contract with the private sector that links service payments to service delivery. The less clearly specified the contract conditions, the greater the risk of a costly renegotiation of the contract during implementation.
- Risk is transferred to the private sector. PPP projects are exposed to a range of different risks, including construction delays and cost overruns; problems with service availability and quality; uncertainty about the future need for a service; and changing asset values. Adequately transferring risk (and rewards) from the government to the private sector is essential to realize the full benefit from an inflow of private capital and a change in management responsibility.
- There is either competition or incentive-based regulation. There tends to be only limited scope for competition in the supply of infrastructure

assets and services, because sunk costs are often large, many infrastructure services require establishing extensive networks (which introduces an element of natural monopoly), and the government is in many cases the main purchaser. Open bidding for contracts provides the principal opportunity for fostering competition in a PPP setting. Where a private sector monopolist is free to sell services to the public (for example, where it charges road tolls), regulation is also necessary to contain monopoly profits and otherwise protect consumer interests.

- An appropriate institutional framework is in place. In this connection, political commitment, good governance, and supporting legislation will enable the private sector to enter into long-term contracts knowing that its interests are protected and that the government will honor its commitments (which often stretch over many years).
- The government develops its own technical expertise. In particular, it must be able to manage a PPP program, conduct thorough project appraisal and prioritization, and ensure that PPPs are consistent with broader fiscal and economic policy objectives.
- The fiscal implications of PPPs are properly accounted for and reported. While PPPs can help ease fiscal constraints, they also offer opportunities to bypass expenditure controls and to move public investment off budget and debt off the government balance sheet, mainly to meet fiscal rules or targets. However, the government may still bear considerable risk and may face potentially large fiscal costs, especially over the medium to long term. Full transparency about the fiscal consequences of PPPs can help to prevent their misuse and to make increased efficiency a principal motivation.

## **B. Managing the Fiscal Risks Arising from Guarantees**

Guarantees are usually provided in connection with PPPs. However, they create a variety of problems and can pose potentially significant fiscal risks, particularly during crises. This places a premium on developing a rational, forward-looking policy toward guarantees which reflects the following considerations.

- While guarantees are a legitimate public policy response in the face of risks that the government bears or at least shares with the private sector, guarantees need to be compared with alternative forms of government intervention, and they need to be tailored to meet their specific objectives. The private sector should generally be left bearing some risk.

- Government accounting and budgeting systems typically create a bias in favor of guarantees over other forms of spending that are subject to budget scrutiny. It is therefore important to be transparent about the fiscal risks created by guarantees. Decisions concerning guarantees should be taken in the context of the annual budget, based on reviews of guarantee proposals by the ministry of finance that are subject to independent audit.
- Valuation of the contingent liabilities resulting from guarantees is the key to full transparency, but this is a technical and informational challenge. That said, Chile has achieved a high standard in estimating and reporting on guarantees, and all countries that provide extensive guarantees should aim to achieve a similar standard. Where valuation is difficult, the other disclosure practices recommended in this paper for guarantees and PPP programs should still be adopted.
- Guarantees must be controlled in order to manage fiscal risk, and quantitative ceilings should be placed on guarantees and other explicit contingent liabilities where risk exposure is high. One way to control implicit contingent liabilities is to make them explicit, although this is difficult in the case of the government's implicit obligation to stand behind entities it owns or controls or behind strategically important private firms.
- Governments should always appropriate in the annual budget the expected cost of guarantees for that year. Where valuation is possible, governments should also budget for the full cost of guarantees. This does not mean that funds should be earmarked for this purpose; while this may impose discipline on the budget process, it does so at the cost of limiting budgetary flexibility. Charging guarantee fees may help control the use of guarantees by governmental agencies.

### **C. Assessing Debt Sustainability**

Debt sustainability analysis should take into account known and potential future PPP costs arising from the obligations on the government to purchase services from a private operator and to honor calls on guarantees, as well as other guarantees and legal obligations of government. However, the uncertainty created by guarantees is a significant source of complication for debt sustainability analysis. While techniques assessing debt sustainability under uncertainty are being developed, greater use should be made of scenario analysis to stress test debt projections under alternative assumptions about calls on guarantees.

# 1

## Country Experiences with PPPs

This appendix provides an overview of experiences with PPPs in Chile, Ireland, South Africa, and the United Kingdom.

### Chile<sup>79</sup>

By the early 1990s, a sizable infrastructure gap had emerged in Chile, and significant investment was needed to prevent transportation and other bottlenecks from becoming a major obstacle to future growth. In common with other countries in Latin America, fiscal adjustment under economic stabilization programs during the 1980s had weighed heavily on public investment in infrastructure and on infrastructure maintenance. Rapid growth during the second half of the 1980s and into the 1990s then quickly exposed infrastructure inadequacies. Traffic speeds markedly declined, road accident rates increased, and ports and airports became congested. Official estimates suggested that the infrastructure gap for the second half of the 1990s was over 20 percent of 1993 GDP.

A challenge for the government was to close this gap while maintaining the fiscal discipline that had placed public debt on a rapidly declining path. The solution lay in promoting private sector involvement in the provision of some public infrastructure through PPPs, whereby private firms would be given concessions to build infrastructure assets and operate them for a number of years before transferring the assets to the government. Chile thus embarked on an ambitious concessions program in 1994, centered around a number of projects to develop the highway network.

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<sup>79</sup>Based on discussions with officials at the Ministry of Finance, Ministry of Public Works, Ministry of Planning, representatives of the financial and nonfinancial private sector, and academics. It also draws on Cruz, Barrientos, and Babbar (2000); Gómez-Lobo and Hinojosa (2000); and Engel, Fischer, and Galetovic (2003).

The concessions program in Chile covers 44 contracted projects with a total value of US\$5.7 billion (about 6¼ percent of 2004 GDP). These include: 8 projects to rehabilitate and upgrade the Route 5 highway which runs the length of Chile, with financing from tolls (US\$2 billion); 11 other highway projects for connecting roads to Route 5 (US\$1.3 billion); 10 airport projects (US\$240 million); 6 urban road projects (US\$1.8 billion); and 9 other projects (including prisons, public buildings, and a reservoir, for US\$360 million).

A key aim of the government is to ensure that the Route 5 project is financially viable, while having similar tolls per kilometer across all segments of the highway. However, not all segments are equally profitable, with the outer segments being less profitable than the segments near Santiago. The government therefore set up an Infrastructure Fund, which is consolidated with the budget, through which various payments by firms operating profitable highway concessions are used to cross-subsidize operators of unprofitable highway concessions.

The government also provides guarantees to concession operators. A minimum revenue guarantee is provided for highway and airport concessions, under which concession firms are compensated when traffic or traffic revenue falls below an annual threshold. In return for the minimum revenue guarantee, the concession firm enters into a revenue-sharing agreement in which it shares a percentage of revenue with the government once a threshold is exceeded.<sup>80</sup> Under the terms of the exchange rate guarantee, which applies to debt service payments, the government compensates the concession firm if the Unidad de Fomento—a unit of account that is adjusted daily for past inflation—depreciates against the U.S. dollar by more than 10 percent, and the concession firm pays the government if the Unidad de Fomento appreciates by more than 10 percent. This guarantee is, in effect, a real exchange rate guarantee.

Chile has a well-developed institutional framework to support the concessions program. Its key features include:

- The 1991 Concessions Law, which requires competitive bidding for concession contracts, establishes the rights and obligations of parties to contracts, facilitates private property appropriation with full compensation, specifies dispute-resolution procedures, and provides for the cancellation and transferability of contracts.

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<sup>80</sup>As an alternative to the minimum revenue guarantee, since 2002, highway concession firms have been allowed to switch to a revenue distribution mechanism whereby the concession contract is changed from fixed to variable term, with the duration of the contract depending on future revenue. A least-present-value-of-revenue franchising mechanism has also been tried, where the concession ends when the contracted present value of revenue is reached. Only a few concession firms have opted for these alternatives.

- Thorough evaluation of public investment projects involving the Ministry of Public Works, the Ministry of Planning and Cooperation (MIDEPLAN), the Ministry of Finance, and the Comptroller General. The objectives are to ensure that projects are consistent with a broad infrastructure plan, are subjected to rigorous social cost-benefit analysis, are undertaken by the private sector or the public sector depending on which is in a better position to carry them out, and are acceptable from a macroeconomic and fiscal sustainability perspective.
- Project tendering based on detailed design and engineering specifications, a careful assessment of bidders' financial soundness and technical capacity, and flexibility in the structure of concession contracts.
- Recognition that concession firms can run into financial or other difficulties and that contracts may have to be renegotiated. This being the case, the emphasis is on addressing the liquidity difficulties of concession firms rather than their solvency problems.
- Clear specification of the risks that are to be borne by the government and a high level of fiscal transparency about government's exposure to contingent liabilities due to the provision of guarantees. Fiscal transparency practices are especially noteworthy.

In addition to the cash payments to and from concession firms, the government has started to report the contingent liabilities arising from guarantees provided to concession firms. In 2003, the government commissioned a study from the World Bank that analyzes the government's exposure to risk under the concessions program, values some of the main sources of risk, and offers options for managing risks. The study focuses on the minimum revenue guarantee, the revenue-sharing agreement, and the exchange rate guarantee. The value of the guarantees is estimated by modeling the variables that are the underlying sources of risk—revenue and the real exchange rate—and then using Monte Carlo simulations in the case of the minimum revenue guarantee and the revenue-sharing agreement, and the Black-Scholes options pricing model in the case of the exchange rate guarantee.

Based on these approaches, the government first reported estimates of the contingent liabilities in the October 2003 Report on Public Finances. These covered not only the guarantees provided to concession firms, but also the minimum pension guarantee. However, in contrast to the latter, the methodology used to estimate the contingent liabilities associated with guarantees provided to concession firms was not described. Moreover, future subsidy payments were not reported, which made it difficult to get a complete picture of the long-term costs and risks associated with the concessions program. The October 2004 Report on Public Finances addresses the first of these shortcomings by providing a detailed description

of the analytical approach taken to valuing guarantees. It also reports the present value of future subsidy payments. In view of Chile's strong fiscal position, commitments under the concessions program are not a significant source of fiscal risk.

Chile's experience with concessions has so far been successful and contains useful lessons for countries interested in PPPs. In particular, it is important to have an appropriate institutional framework in place before embarking on a PPP program, and there should be a commitment to fiscal transparency, including explicit recognition and full disclosure of longer-term fiscal costs and risks.

## Ireland<sup>81</sup>

The PPP program in Ireland began in 1998. However, cooperation between the public and private sectors in providing public services is not new; there is a long history of hospitals and schools being set up and run by religious orders, and toll roads have been operated by the private sector for a number of years.<sup>82</sup> A decision to pursue the PPP approach was taken in early 1998, prompted by an emerging infrastructure deficit, support from the Irish Business and Employers Confederation and the Construction Industry Federation, and a recommendation of the National Economic and Social Council. PPPs were then formally incorporated into public expenditure planning in the context of the National Development Plan 2000–06 (NDP), which was launched in December 1999.

Infrastructure inadequacies are a key obstacle to sustained economic growth. After a decade of relatively slow expansion, economic activity picked up in the 1990s, and from 1995 Ireland was among the fastest growing OECD economies. Increasing any country's stock of infrastructure in line with an extremely rapid pace of growth is difficult, and Ireland's real GDP rose by a cumulative 40 percent over the four years to 1998. As a consequence, an infrastructure deficit became increasingly evident during the second half of the 1990s. A recognition of the need for major investment to address this deficit, and a determination to ensure the efficiency of investment, led to adoption of the PPP approach.

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<sup>81</sup>Based on material available on the Department of Finance Public-Private Partnership website (<http://www.ppp.gov.ie>) and on discussions with Pat O'Neill and Cormac Gilhooly of the Central PPP Unit in the Department of Finance.

<sup>82</sup>Most notable are the Eastlink and Westlink bridges on the M50 in Dublin, which have been operated by the private National Toll Roads Company (NTRC) on a concession basis since 1984 and 1990, respectively.

Implementation of the PPP program was initially quite cautious. In June 1999, the government announced that the program would commence with eight pilot projects for schools, public transport, roads, and waste management. However, the NDP contained an ambitious target for PPP investment, and ministerial statements during the first half of 2000 made clear the political commitment to the PPP program.<sup>83</sup> This target was increased in the five-year multi-annual spending envelope announced in the 2004 budget.<sup>84</sup>

This pickup in enthusiasm for PPPs can be put down to three factors. First, there was quick buy-in on the part of all PPP stakeholders. Most important, the government made it clear that its social partners (and most notably employees and trade unions) would be consulted on the approach taken to selecting PPP projects.<sup>85</sup> Second, government finances were showing a strong improvement, which allowed the government to pay more attention to the efficiency benefits of PPPs instead of to just their fiscal advantages. And third, while the pilot projects certainly presented some institutional challenges, it was concluded early that they would be a success and that the PPP program would get off to a good start.

The PPP program has picked up fairly rapidly in recent years. As of March 2005, about 70 PPP projects had been approved or were in the procurement phase. The vast majority of these were relatively small water projects. Only road projects are large.<sup>86</sup> Most projects are undertaken by the private sector in conjunction with local authorities. In addition, grants are made available to local authorities to help them develop small PPP projects outside the main infrastructure areas (e.g., business parks; cultural, leisure, and tourist facilities; affordable housing). Nevertheless, progress on a number of PPP projects has been slow, mainly because contracting (especially in connection with road projects) has taken longer than anticipated. Moreover, PPP investment at present accounts for only 5 percent of infrastructure investment, and current projections suggest that it will fall well short of the NDP target of over 10 percent. To facilitate the PPP process, the NDFA was set up to mobilize

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<sup>83</sup>Of total infrastructure investment amounting to I£17.6 billion for 2000–06 (about 22 percent of annual GDP), I£1.85 billion was to be in the form of PPP projects.

<sup>84</sup>In addition to PPP projects financed by user charges amounting to €1.35 billion targeted for 2004–08, the National Development Finance Agency (NDFA) would raise an additional €3.6 billion in private finance for infrastructure investment, including through PPPs.

<sup>85</sup>This was subsequently reaffirmed in Framework for Public Private Partnerships in Ireland, a statement of high-level principles for the conduct of PPPs, which was published in November 2001.

<sup>86</sup>The two largest ongoing public transportation construction projects, the Dublin light rail system (LUAS) and the port tunnel, involve traditional public investment and are therefore not part of the PPP program. The concession contract to operate the LUAS is one of the PPP program pilot projects.

resources to finance PPP projects and to provide financial advice to government agencies seeking to form PPPs.

Accounting and reporting of PPP projects is fairly straightforward. Consultation with Eurostat revealed that the first batch of school projects did not involve sufficient risk transfer to the private sector, and investment in connection with these projects would count against the SGP deficit limits. This being the case, and pending a general decision from Eurostat on the classification of PPP assets, all PPP assets in Ireland have been classified as government assets. PPP investment is then recorded as capital expenditure in the general government accounts used for SGP purposes, but in the Exchequer accounts only if cash spending is involved. Unitary charges—the service payments under PPP contracts—are recorded as current expenditure. The February 2004 Eurostat decision is seen to remove uncertainty from the accounting treatment of PPPs, but it has yet to be applied in Ireland.

## South Africa<sup>87</sup>

The South African government set up a task force to explore the possible use of PPPs in 1997 and, based on its findings, began to develop a PPP program in 2000. The view was that South Africa's well-developed capital markets, vibrant private sector, and promising economic outlook were conducive to PPPs. The only opposition came from trade unions, which associated PPPs with privatization. As of March 2005, contracts for 12 projects were signed and another 53 projects were at various stages of preparation. These are sponsored by departments of the national government and provincial governments, public entities, and municipalities. Many different types of project are involved, including public transportation, roads, hospitals, public housing, prisons, government buildings, and ecotourism.

The legal framework for PPPs at the national and provincial levels is provided by the Public Financial Management Act, 1999, as amended in Treasury Regulation 16, while the Municipal Finance Management Act, 2003, applies at the municipal level. With a view to establishing that PPP projects are affordable, offer value for money (VFM), and transfer risk to the private sector, the government established a PPP Unit in the National Treasury, supported by technical assistance from the United Kingdom and other countries. The PPP Unit publishes a detailed manual to guide the PPP process. The manual pays particular attention to risk management, identifying 24 categories of risk and indicating how to mitigate each risk and who should bear it. The PPP Unit is also drafting municipal PPP guidelines.

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<sup>87</sup>Based on information on the website of the PPP Unit of the National Treasury ([www.ppp.za.gov](http://www.ppp.za.gov)).

Evaluation reports are prepared for all projects, and the Treasury has to approve PPP contracts, management plans, and procurement documentation before any PPP can proceed. The rationale for such strict control is the recognition that PPPs are not viewed as a “magic bullet” solution to service delivery problems and that they can have hidden costs. Another feature of the PPP program in South Africa is that projects are also assessed by reference to their contribution to Black Economic Empowerment (BEE), that is, the extent to which projects benefit people who live close to where they operate. A priority for the government is to strengthen the capacity in government to manage PPP projects, particularly at the municipal level.

The PPP Unit publishes detailed information on signed projects, including the sponsoring government department and private partner, the type of project, BEE participation, financing, and present value of the costs and benefits to the government. PPPs are currently accounted for on a cash basis, but the government is considering how to account for PPPs under accrual accounting and reporting.

## **The United Kingdom<sup>88</sup>**

The first private financing proposals for public sector investment projects in the United Kingdom date back to the early 1980s. These were part of the Thatcher government’s initial moves to reduce the role of the public sector in the economy. These proposals were motivated primarily by a desire on the part of some public enterprises and local governments to bypass expenditure controls imposed by the central government. In response, rules were put in place in 1981 requiring that public sector projects should be privately financed only if this was more cost-effective than public financing, and that privately financed public investment should still be treated as public expenditure. These rules turned out to be an obstacle to private financing and were abolished in 1989. However, private financing did not subsequently pick up. Against the background of mounting concern about the consequences of a prolonged decline in public investment and maintenance spending for social and economic infrastructure, the Private Finance Initiative (PFI) was launched in 1992.

The expected flood of PFI projects did not materialize. The response was first to establish a number of government agencies to promote the scheme, and then to put in place a “universal testing rule” requiring consideration of private financing for all public sector projects. The number of new PFI

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<sup>88</sup>Based primarily on H.M. Treasury (2003) and discussions with David Goldstone of Partnerships UK and Larry Pinkney of H.M. Treasury.

projects began to increase after 1995, despite an overcomplicated institutional structure and delays in both PFI and conventional public investment projects because of the universal testing rule. The former was subsequently revamped, while the latter was withdrawn. The number of new PFI projects peaked in 2000, but the number of projects in progress has continued to increase. Annual PFI investment has grown to about 14 percent of public investment, although it is expected to stabilize eventually at around 11 percent.

The PFI is now an established part of the U.K. government's PPP program, which also comprises privatization and other forms of cooperation between the public and private sectors, including the provision of guarantees.<sup>89</sup> The defining features of the PFI are the following:

- PFI projects are viewed primarily as being about the provision of services, and not about the acquisition of assets.
- The private sector makes a long-term commitment to maintain assets and provide services, and the government makes a long-term commitment to procure those services.
- Significant risk is transferred to the private sector.
- Public sector investment projects are considered for PFI when they are likely to represent VFM (value for money), and when they meet the U.K. government's criteria for efficiency, equity, and accountability.
- A VFM test is used to determine whether a public sector project should be privately or publicly financed; VFM should not be achieved at the expense of terms and conditions of employed staff.
- Private financing is judged to be best suited for large capital projects when the government can define service outputs that can be contracted, the private sector has the expertise to provide these services and to manage the associated risks, and assets and services can be costed on a "whole-of-life" basis (which would be precluded, for example, by rapid technological change).

PFI projects in the United Kingdom are varied. They cover traditional public service assets (schools, hospitals, prisons, courts, police and fire stations, public housing, waste-management facilities), transportation infrastructure, military equipment and support systems, information technology, and leisure centers. Transportation projects tend to be the largest. The modernization of the London Underground (which involve the biggest PFI contracts to date),

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<sup>89</sup>For more details about the PPP program, see H.M. Treasury (2000).

the expansion of the motorway network, and the construction of major bridges being notable in this regard, although some military projects (for air-to-air refueling, airfield services, and flight training) are also large.<sup>90</sup> While these projects are undertaken in conjunction with central government (the Department of Transport and the Ministry of Defense, respectively), the majority of public service PFI projects involve local governments.

Accounting and reporting of the PFI is transparent.<sup>91</sup> Unitary charges are included in the current expenditure totals in the Financial Statement and Budget Report (FSBR) and in departmental accounts. The FSBR also contains estimates of capital spending by the private sector under signed PFI contracts, the capital value of PFI projects at preferred bidder stage that are expected to be signed within three years, and future payments to the private sector under signed PFI contracts, although the reported figures include some PPP transactions that are not, strictly speaking, PFI projects. The balance sheet treatment of PFI assets is determined by who derives the benefits from owning an asset and who bears the associated risks; at present, 57 percent of PFI projects by total capital value have completed assets that are included on the government balance sheet.<sup>92</sup> While there is full reporting of guarantees and other contingent liabilities in the United Kingdom, formal guarantees are not provided in connection with PFI projects. However, by committing to future payments under PFI contracts, the government

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<sup>90</sup>The largest transportation project in the United Kingdom has been the Channel Tunnel Rail Link (CTRL), for which the government guarantees bonds issued by CTRL consortia members. Major investment in National Air Traffic Services (NATS), which runs the air traffic control system, was achieved by selling part of NATS to a consortium of U.K. airlines. Both of these projects are PPPs (according to the broad U.K. definition), but they are not regarded as part of the PFI.

<sup>91</sup>Accounting for the PFI is guided by the Accounting Standards Board Financial Reporting Standard 5 (FRS5)—Reporting the Substance of Transactions: Application Note F—Private Finance Initiative and Other Similar Contracts, supplemented by Treasury Technical Note 1 (TTN1) on the use of this application note in the public sector. It is also subject to audit by the Comptroller and Auditor General or the Audit Commission (for local government and health sector projects) or other audit body.

<sup>92</sup>TTN1 provides guidance on how to judge whether the government or the private sector “has an asset in the property.” This is discussed in Section VI. If the government is judged to be the owner of a PFI asset, the transaction is accounted for as a financial lease. TTN1 indicates that the fair value of the asset and a corresponding liability should be recorded on the government balance sheet, the asset should be depreciated, capital repayments and finance charges should be imputed, and unitary charges less capital repayments and finance charges should be reported as an operating expense. This treatment is reflected in relevant budget aggregates reported in the FSBR, except that the liability referred to above is not reflected in official public debt figures (although the Office of National Statistics has said that these figures should be amended in respect of on-budget PFI projects), and imputed capital repayments and finance charges are not deducted from future payments under signed PFI contracts as reported in the FSBR.

assumes demand risk related to the ongoing need for the services.<sup>93</sup> Actual payments depend on project performance against agreed outputs.

The government generally regards the PFI to be well-designed and -managed. A rigorous approach is taken to assessing VFM, based on the government investment appraisal manual (the “Green Book”). There is effective risk transfer: the private sector typically assumes risk related to asset building and delivering contracted services, as well as demand risk when it has right of use of an asset; the government bears demand risk for services it purchases and by convention inflation risk. As noted, when the government bears a large share of overall PFI risks, this is reflected in the government accounts. Outcomes are also viewed favorably. In particular, government external audit reports suggest that more than two-thirds of PFI projects have been delivered on time, and no cost overruns have been borne by the government; by contrast, less than a third of traditional public investment projects are typically delivered on time and within budget. Independent studies confirm that PFI projects offer significant cost savings over publicly financed alternatives.<sup>94</sup> Finally, while the PPP program has had some failures—the government provided assistance when CTRL, NATS, and two major privatized companies, Railtrack and British Energy, ran into severe financial difficulties—the PFI program has so far not required any project to be bailed out.<sup>95</sup>

The government is nonetheless seeking to improve certain aspects of the PFI. The VFM test for PFI projects has already been refined. In particular, the use of the same test discount rate to compare a PFI project with a publicly financed alternative has been discontinued.<sup>96</sup> Instead of using a test discount rate of 6 percent, which was the STPR plus a risk factor (included mainly to account for optimism bias), the “Green Book” now specifies an STPR of 3½ percent and calls for risk to be systematically taken into account on a project-by-project basis. Looking forward, the priorities are: 1) to strengthen procurement skills in government, and it has set up a PPP,

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<sup>93</sup>One criticism of U.K. accounting and reporting practice is that the future service payments under PFI contracts amount to an explicit off-balance-sheet liability totaling £100 billion, which has significant implications for future borrowing or taxes (see, for example, *The Times*, July 7, 2003). It has therefore been suggested by some financial market observers that these liabilities should be disclosed as such, rather than as a stream of future payments.

<sup>94</sup>One widely quoted report estimates an average saving of 17 percent (Arthur Anderson and Enterprise LSE, 2000).

<sup>95</sup>There still remain suspicions about the PFI program. For example, Spackman (2002) argues that the main attractions of the PFI are that it fits in with prevailing political ideology and that private financing is off budget. This being the case, he suggests that there will be insufficient recognition of the fact that the benefits attributed to the PFI could be achieved with public financing.

<sup>96</sup>This was judged by some to be a source of bias against PFI projects (see Grout, 1997).

Partnerships UK, to do this and to help smoothen the PFI process in other ways; 2) to develop standard PFI contracts in order to ensure greater consistency in PFI projects, reduce transaction costs, and increase transparency; 3) to further improve transparency through more comprehensive reporting; and 4) to experiment with credit guarantee finance, an arrangement whereby the government borrows and on-lends to the private sector company, with a guarantee of the loan from a private financier who takes on the project's risks. This latter arrangement attempts to reduce overall financing costs by saving the spread between the cost of private sector funding itself in the market and the government's cost of funds.

# 2

## The Government Finance Statistics Manual 2001 Analytical Framework

The GFSM 2001 analytical framework is a set of well-defined relationships that formally integrate flows and stocks. More specifically, the government's opening and closing balance sheets are reconciled by reference to the flows deriving from government operations and other economic flows that link them.

### Transactions and Other Economic Flows

A distinction between transactions and other economic flows is a key feature of GFSM 2001. Transactions cover all exchanges or transfers that take place by mutual agreement and consumption of fixed capital; the latter is an internal accounting flow that is analytically useful to treat as a transaction. Mutual agreement does not mean that transactions have to be entered into voluntarily (the payment of taxes is treated as a transaction despite being compulsory), and transactions cover monetary flows and in-kind activity (such as the receipt of commodity grants and noncash remuneration). Other economic flows are the result of events that affect the value of nonfinancial assets, financial assets, and liabilities but which are not exchanges or transfers. These flows can reflect either price changes (including exchange rate movements) or volume changes due to one-time events such as mineral discoveries and natural disasters.

Transactions and other economic flows are recorded on an accrual basis. This means that they are recorded when the economic consequences associated with an event occur, or when there are future consequences that can be measured reliably. Thus an expense should be recorded when the government uses resources, which in practice is usually when it incurs an obligation to pay for them rather than when it actually pays for them. It should be noted that an obligation to pay is distinct from a commitment, which occurs when contracts are signed, or orders are placed. In principle, revenue should be recorded when a liability to government is created, and not when payment is made. However, there are difficulties in identifying

revenue on an accrual basis, especially in determining precisely when an activity gives rise to a tax liability. In practice, a tax liability would normally be recorded at the time of assessment. Transactions in nonfinancial assets, financial assets, and liabilities are also recorded at the time assets change ownership and liabilities are incurred.

## **Financial Statements**

The relationships that underpin the GFSM 2001 analytical framework are summarized in three accrual-based statements relating to transactions, other economic flows, and the balance sheet, and in a cash-based statement.

- The Statement of Government Operations distinguishes between revenue and expense transactions, transactions in nonfinancial assets, and transactions in financial assets and liabilities. Revenue covers all transactions that increase net worth, and expense covers all transactions that decrease net worth. Transactions in nonfinancial assets, financial assets, and liabilities are not included. The difference between revenue and expense is the net operating balance. Subtracting the net acquisition of nonfinancial assets from the net operating balance yields net lending/borrowing, which in turn is equal to the net acquisition of financial assets less the net incurrence of liabilities.
- The Statement of Other Economic Flows presents information on changes in net worth that arise from flows other than transactions, as described above.
- The Balance Sheet shows the government's net worth at the end of a fiscal year, which is equal to the stock of nonfinancial assets plus net financial worth (i.e., the difference between financial assets and liabilities). The change in net worth during a year is the sum of changes due to revenue and expense transactions and to other economic flows.
- The Statement of Sources and Uses of Cash shows cash flows associated with revenue and expense transactions and transactions in nonfinancial assets, and their net impact in terms of the cash surplus/deficit. Adding the cash flow from transactions in financial assets and liabilities to the cash surplus/deficit gives the net change in the stock of cash.

## **Valuation**

All flows and stocks are valued at market prices. This is the amount for which the goods, services, assets, labor, or the provision of capital are in fact exchanged or the cash value of in-kind transactions. Flows are valued at the

prices current on the dates when they are recorded. Stocks are valued at the prices current on the balance sheet date.

Consumption of fixed capital is the economic equivalent of depreciation. It is the decline in the current market value of the stock of fixed assets during the accounting period as a result of physical deterioration, normal obsolescence, and accidental damage. Consumption of fixed capital accrues continuously over the accounting period; it is treated as an expense under accrual accounting; and it is taken into account in calculating the net operating balance.<sup>97</sup> Because information on consumption of fixed capital is not readily available, GFSM 2001 defines the difference between revenue and expense excluding consumption of fixed capital as the gross operating balance, which can be used in place of the net operating balance when this is the case.

Although the balance sheet is to be valued at market prices, provision is made in GFSM 2001 for reporting the nominal value of the debt as a memorandum item. The nominal value of the debt reflects the original value of the debt and the impact of subsequent economic flows such as transactions (e.g., accrual of interest, repayment of principal), revaluations, and other flows. As such, it measures the amount that debtors owe to creditors, which is relevant from the point of view of assessing the fiscal policy implications of debt and, in particular, for debt sustainability analysis.

## Fiscal Indicators

Net lending/borrowing, the net operating balance, and the cash surplus/deficit are the main GFSM 2001 fiscal indicators.<sup>98</sup>

- Net lending/borrowing is perhaps the most important indicator because it reflects the government's financing operations. As such, it summarizes the way in which fiscal policy affects the rest of the economy and the rest of the world via its impact on both the government's use of resources and aggregate demand.
- The net operating balance is an indicator of the impact of fiscal policy on net worth. Net worth and the change in net worth are relevant to the analysis of fiscal sustainability in that, instead of focusing on debt alone, they take it into account both the government's assets and its liabilities. However, debt and debt sustainability remain important: governments

<sup>97</sup>However, consumption of fixed capital is offset by the disposal of a nonfinancial asset in calculating net lending/borrowing, which is therefore unaffected.

<sup>98</sup>GFSM 2001 refers to them as "core balances."

can run into solvency and liquidity problems independently of their net worth because most nonfinancial assets are not marketable.

- The cash surplus/deficit measures the change in the government's liquidity position due to revenue and expense transactions and transactions in nonfinancial assets. It is thus the cash equivalent of net lending/borrowing. The net change in the stock of cash, which also reflects transactions in financial assets, measures the change in the government's overall liquidity position, and as such is a better indicator of the cash flow implications of government operations.

GFSM 2001 recognizes that a wider range of fiscal indicators may continue to be useful in particular circumstances. The most notable indicator in this regard is the overall balance (on an accrual basis), which is derived from net lending/borrowing by grouping transactions in financial assets undertaken for public policy purposes together with transactions in nonfinancial assets, and treating sales of nonfinancial assets as transactions in financial assets. Commonly used indicators that are based on the overall balance follow directly (e.g., the adjusted overall balance, the non-oil balance, the operational balance, and the primary balance). Other indicators are also derived in a straightforward way, including government saving and investment.

# 3

## Alternative Approaches to Accounting for Risk Transfer

When PPPs result in limited risk transfer to the government, Eurostat and a number of countries classify PPP assets as government assets. Although this is not the ideal way to proceed because the accounting profession is likely to focus on refining the current approach to accounting for limited risk transfer, this appendix describes some alternative approaches to recording PPP assets on the government balance sheet.

The state of Victoria in Australia and the United Kingdom recognize that limited risk transfer might imply that a PPP is similar to a financial lease, even if it is not in fact such a lease. In this case, the accounting and reporting would be the same as for an actual financial lease. Thus the acquisition of an asset under a financial lease would be recorded in the operating statement at cost, together with incurrence of a lease liability to the private sector. The asset and liability would also be recorded on the government balance sheet. Subsequent depreciation of the asset, and interest and amortization payments on the lease, would then be recorded in the operating statement. However, all the entries in the operating statement and on the balance sheet would be imputed. If the financial lease transactions are replaced by loan transactions, the financial lease approach can be seen to be formally equivalent to treating PPP investment as public investment, which is the Eurostat practice.

While the financial lease approach clearly records PPP investment in the operating statement and PPP assets on the balance sheet from the outset, it has two major drawbacks. First, it leaves open the basis on which the private operator continues to use the asset to provide services; and, second, imputation can distort the fiscal accounts and complicate the interpretation of fiscal indicators.<sup>99</sup> With an alternative lease and lease-back approach, the

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<sup>99</sup>A further problem is that, from the standpoint of the national accounts, the transfer of the asset to the government balance sheet has to be matched by its removal from the private sector balance (even though it remains on the private operator's own balance sheet), otherwise it would lead to double counting of PPP investment in the national accounts.

**Table A.1. Accounting for Risk Transfer**

	Acquisition of Nonfinancial Asset (Year 1)	Lease and Financial Lease (Year 2)	Lease-Back (Year 2)	Public Investment and Liability Write Off (Year 2)
Statement of Government Operations				
Revenue			240	
Lease payment			240	
Expense		190	190	150
Depreciation		150	150	150
Interest		40	40	
Net operating balance		-190	50	-150
Net acquisition of nonfinancial assets	200			
Depreciation		-150	-150	-150
Net lending/borrowing	-200	-40	200	0
Net acquisition of financial assets		-240		
Net incurrence of liabilities	200			
Amortization		-200	-200	
Statement of Other Economic Flows				
Other changes in net worth				200
Changes in nonfinancial assets				
Changes in financial assets				
Changes in financial liabilities				-200
Government Balance Sheet				
Net worth	0	-190	50	50
Nonfinancial assets	200	50	50	50
Financial assets		-240		
Financial liabilities	200			

Assumptions:

Asset cost = 200 in year 1

Depreciation = 150 in year 2

Interest = 40 in year 2 under the financial lease and the lease and lease-back approaches.

Amortization = 200 in year 2 under the financial lease and the lease and lease-back approaches.

Write-off = 200 in year 2 under public investment and liability write-off approach.

government is assumed to obtain the PPP asset under a financial lease, exactly as above, but is assumed then to lease it back to the private operator under an operating lease. The private sector makes imputed lease payments under the operating lease to the government to cover the government's imputed interest and amortization payments to the private sector under the financial lease. This alternative approach addresses the issue of how to reflect the continued use of the asset by the private sector, but the number of imputed entries is larger than in the case of the financial lease approach.

A public investment and liability write-off approach is a simpler alternative. Under this approach, PPP investment is recorded as public investment, and it is assumed that the private operator continues to use the PPP asset because it is the legal owner. Since the private sector does not have a financial claim on the government with respect to the asset, the imputed financial liability of the government to the private operator can be written off, which involves very little imputation.<sup>100</sup> These three approaches are illustrated in more detail below.

Assume that the government enters into a PPP with a private operator for the construction and operation of an infrastructure asset. Based on a risk assessment, the asset is judged to be owned by the government, although legally it is owned by the private operator over the contract period. In Table A.1, the asset is built in year 1 and, using the GFSM 2001 fiscal reporting framework, it is recorded in the Statement of Government Operations as the acquisition of a nonfinancial asset costing 200. This entry is offset by the incurrence of an imputed financial liability of 200. An increase in net borrowing (or reduction in net lending) of 200 correctly attributes the aggregate demand impact of PPP investment to the government (since net lending/borrowing is the GFSM 2001 counterpart to the overall balance). The net operating balance is zero, which indicates that this transaction has no impact on government net worth.

The asset is operated in year 2. For each of the three alternative accounting approaches—financial lease, lease and lease-back, and public investment and liability write-off—the PPP asset is depreciated by 150, and this is imputed in the Statement of Government Operations. Moreover, under the financial lease and the lease and lease-back approaches, lease interest of 40 and amortization of 200 are imputed, while a lease payment to the government of 240 is imputed under the lease and lease-back approach.

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<sup>100</sup>It is important to note that the government is not repudiating a liability, because neither the private operator nor the government acknowledges the existence of a liability.

- Under the financial lease approach, an increase in net borrowing occurs in year 2 to cover imputed interest of 40, but there is no government operation producing this higher borrowing and the associated aggregate demand stimulus. Note also that there is a large fall in net worth (which is reflected in the net operating balance), due to the fact that lease interest and amortization have to be matched by an imputed drawdown of financial assets.
- Under the lease and lease-back approach, the imputed lease payment to the government of 240 produces an increase in net lending (or a reduction in net borrowing) equal to the imputed amortization of 200, and an associated withdrawal of aggregate demand by the government in year 2, which again do not correspond to any government operation. But note that net worth increases by 50, which is the residual value of the PPP asset.
- Under the public investment and liability write-off approach, the imputed financial liability of 200 is written off in year 2 via an accounting entry in the Statement of Other Economic Flows (which records changes in net worth that reflect price and volume changes rather than transactions). There is no impact on net lending/borrowing and therefore no aggregate demand impact in year 2. Also, net worth increases by 50 (the net operating balance is  $-150$  but this is offset by the 200 reduction in financial liabilities in the Statement of Other Economic Flows).

Table A.1 is highly simplified, especially in collapsing asset operation into one year. To allow a smooth buildup of the PPP asset on the government balance sheet over a number of years, these approaches require that the imputed financial liability is either paid down or written off faster than the rate at which the asset is depreciated.

## 4 Modeling and Estimating the Value of Government Guarantees in Chile

This appendix outlines the analytical approaches to modeling and estimating guarantees used in Chile and reports the results. The World Bank has provided technical assistance to the Chilean authorities in this area.

The concessions program in Chile covers 44 contracted projects with a total value of US\$5.7 billion (about 6¼ percent of 2004 GDP). These include: 8 projects to upgrade the Route 5 highway which runs the length of Chile, with financing from tolls (US\$2 billion); 11 other highway projects for connecting roads to Route 5 (US\$1.3 billion); 10 airport projects (US\$240 million); 6 urban road projects (US\$1.8 billion); and 9 other projects (including prisons, public buildings, and a reservoir, for US\$365 million).

A minimum revenue guarantee (MRG) is provided for nearly all highway and airport concessions. Under the terms of the guarantee, the government will compensate concession firms when traffic or traffic revenue falls below an annual threshold, which is generally set to provide around 70 percent of projected revenue over time. In return for the MRG, the concession firm enters into a revenue-sharing agreement (RSA) in which it shares a percentage of revenue (or in some cases profits) with the government once a certain threshold is exceeded. Triggers for the RSA are calibrated at a level that is consistent with profitability of 15 percent in real terms.

Under the terms of the exchange rate guarantee, which applies to debt service payments, the government compensates the concession firm if the Unidad de Fomento (UF)—a unit of account that is adjusted daily for past inflation—depreciates against the U.S. dollar by more than 10 percent relative to a rate locked in at the time of debt placement, and the concession firm pays the government if the UF appreciates by more than 10 percent. Concession firms have 1–2 years from the date of a contract to opt for coverage under the exchange rate guarantee, and they can opt out at any time. Firms opting for the foreign exchange guarantee have been required to

carry out additional work equivalent to 0.1 percent of the project cost and are charged a 2 percent premium if the guarantee is called.

For the MRG (RSA), the underlying risky variable—revenue in any period ( $R_t$ )—is assumed to follow geometric Brownian motion with drift, in which case:

$$dR_t = R_t (\mu dt + \sigma \sqrt{dt} Z)$$

where  $\mu$  = the growth rate of  $R$ ,  $\sigma$  = the variance of  $R$ ,  $dt$  = an increment of time, and  $Z$  = a normally distributed random variable with a mean of 0 and variance of 1. It therefore follows that:

$$R_t = R_0 \exp [(\mu - \sigma^2/2) dt + \sigma \sqrt{dt} Z]$$

where  $R_0$  = the starting level of  $R$ .

Monte Carlo simulation analysis involves taking a large sample of drawings from  $Z$  to produce a probability distribution for  $R_t$  based on estimates of  $\mu$  and  $\sigma$  that can be derived from past or comparable experience, but if necessary set by assumption. The expected guarantee payment for period  $t$  then follows directly. This is repeated for each period that the guarantee is in force.<sup>101</sup>

The value of the guarantee is the present value of expected guarantee payments over the life of the guarantee. The value of the guarantee can be computed using a risk-free interest rate, but this ignores the risk characteristics of expected guarantee payments. An alternative approach is to convert the risky revenue variable to a certainty equivalent, as follows:

$$R_t = R_0 \exp [(\mu - \sigma^2/2 - \lambda\sigma) dt + \sigma \sqrt{dt} Z]$$

where  $\lambda$  = the market price of revenue risk. The market price of revenue risk can be estimated using the capital asset pricing model (CAPM), in which case:

$$\lambda = \rho[(m - r)/\sigma_m]$$

where  $m$  = the expected return on the market portfolio,  $r$  = the risk-free interest rate,  $\sigma_m$  = the standard deviation of the return on the market portfolio, and  $\rho$  = the correlation coefficient between the market return and

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<sup>101</sup>The model used in Chile is more sophisticated than this and allows for correlations between the revenue generated by different projects and between revenues and macroeconomic variables such as GDP and the exchange rate.

revenue. The value of the guarantee can then be calculated using a risk-free interest rate to discount expected guarantee payments.

While the majority of beneficiaries of the MRG receive a cash payment when they call the guarantee, some highway concession firms have been allowed to opt for a revenue distribution mechanism whereby the concession contract is changed from fixed to variable term, with the duration of the contract depending on revenue collected. A least-present-value-of-revenue franchising mechanism also has been used, where the concession ends when the contracted present value of revenue is reached. While this clearly imposes a financial cost on the government, in that there is an opportunity cost in not being able to either tender a new franchise or take control of the asset and the revenue it generates, this complication is not taken into account in valuing guarantees.

For the exchange rate guarantee, it is assumed that the underlying risky variable—the US\$–UF exchange rate in period  $t$  ( $E_t$ )—follows geometric Brownian motion with drift, and that drift (i.e., the expected rate of appreciation or depreciation) is equal to the interest rate differential. This implies that:

$$dE_t = E_t [(r_{UF} - r_{US\$}) dt - \sigma_E \sqrt{dt} Z]$$

where  $r_{UF}$  = the UF risk-free interest rate,  $r_{US\$}$  = the US\$ risk-free interest rate, and  $\sigma_E$  = the volatility of the US\$–UF exchange rate. If this is the case, the exchange rate guarantee can be valued as an option using the Black-Scholes options pricing formula.

The exchange rate guarantee in effect gives the concession firm a call option on U.S. dollars when the UF depreciates by more than 10 percent, and the government a put option on U.S. dollars when the UF appreciates by more than 10 percent. Because the Black-Scholes formula applies to options that can be exercised only once at a specific maturity date (i.e., European options), and the exchange rate guarantee can be exercised at any time a debt service payment falls due, it is necessary to view the guarantee as a sequence of options to apply the model.

The value of the exchange rate guarantee in period  $t$  ( $G_t$ ) is:

$$G_t = \sum S_i (P_{it} - C_{it})$$

where  $S_i$  = US\$ debt service payment in period  $t+i$ ,  $P_{it}$  = value of a put option of maturity  $i$  in period  $t$ , and  $C_{it}$  = value of a call option of maturity  $i$  in period  $t$ . Summation is over the life of the guarantee.  $P_{it}$  and  $C_{it}$  are estimated using the Black-Scholes formula as follows:

$$P_{it} = E^* \exp(-r_{UF}t) N(y_2) - E_i N(y_1)$$

$$C_{it} = E_i N(y_1) - E^* \exp(-r_{UF} i) N(y_2)$$

where  $E^*$  = the guaranteed US\$–UF exchange rate (the exercise price of the option),  $N(y)$  = the probability that a normally distributed variable will be less than or equal to  $y$ , and

$$y_1 = [\ln(E^*/E_i) - (r_{UF} + \sigma_E^2/2) i] / \sigma_E i$$

$$y_2 = y_1 + \sigma_E \sqrt{i}$$

A complication is created in valuing the exchange rate guarantee by the fact that the concession holder has the option to cancel the guarantee at any time. This provision undermines the application of the Black-Scholes formula, which cannot be used to value options that can be exercised continuously (i.e., American options). Moreover, exercising such an option requires the concession holder to anticipate the likely evolution of the exchange rate. Binomial trees are better suited to modeling the more complex decision-making process that characterizes this case.<sup>102</sup>

Using the Monte Carlo simulation analysis to value the minimum revenue guarantee and revenue sharing and the Black-Scholes options pricing formula to value the exchange rate guarantee, the Report on Public Finances for 2005 contains a table reporting the contingent assets and liabilities created by the net minimum revenue guarantee (i.e., the minimum revenue guarantee less revenue sharing) and the exchange rate guarantee for every concession.<sup>103</sup>

This is supported by additional tables that provide: 1) details of each concession (the project, its nature, physical size, value, and duration, the private partner(s), date of award, and status); 2) concession commitments (investment, subsidies, additional work, and minimum revenue guarantees) in present value terms; and 3) expected annual cash flows arising from guarantees for 2004–24.

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<sup>102</sup>Starting with the initial value of the risky variable, binomial trees depict upward or downward movements in this variable and associated guarantee payments depending on two possible states of the world that occur with known probabilities. This process is repeated over successive periods, with the number of branches doubling each period, until the guarantee expires. The full range of outcomes provides the probability distribution of guarantee payments over the life of the guarantee, and the value of the guarantee is computed by taking the present value of all the values for guarantee payments in this distribution, weighted by their respective probabilities. While binomial trees allow considerable flexibility in modeling the behavior of the risky variable from period to period, they are computationally cumbersome.

<sup>103</sup>The models used in Chile generate information on the entire distribution of expected guarantee costs, which allows a probability to be assigned to all possible outcomes (including worst cases). This would be particularly useful information from a risk management perspective, although only in the context of assessing the risk characteristics of the government's overall liabilities.

# 5

## International Accounting and Reporting Standards for Contingent Liabilities

### International Accounting Standards

International accounting standards specify the treatment of guarantees and other contingent liabilities for government entities using the accrual basis of accounting. There is a hierarchy of international standards: if there is no International Public Sector Accounting Standard (IPSAS), entities should comply with International Financial Reporting Standards (IFRS), incorporating International Accounting Standards (IAS) and Interpretations.<sup>104</sup>

Under accrual accounting, the key judgment is whether a guarantee or program of similar guarantees should be classified as a liability or as a contingent liability. International accounting standards require that a contingency be recognized as a liability only when it is judged probable (more likely than not) that an expense will occur and when a reasonably reliable estimate can be made of the amount of the expense. Accounting standards have, however, been moving in recent years toward increased recognition of liabilities valued at fair value.

At present, different accounting standards apply to guarantees, depending on the type of guarantee or contingency concerned. IPSAS 19 (Provisions, Contingent Liabilities and Contingent Assets) should be applied to

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<sup>104</sup>IPSAS is issued by the International Federation of Accountants (IFAC). The IAS is issued by the International Accounting Standards Board (IASB); interpretations are issued by the International Financial Reporting Interpretations Committee (IFRIC), an IASB committee. IFRIC interpretations provide guidance on newly identified financial reporting issues not specifically addressed in International Reporting Standards. Entities must comply with these interpretations if their statements are described as complying with International Accounting Standards. The standards are contained in International Federation of Accountants (2004) and International Accounting Standards Board (2003).

accounting for guarantees, except for financial instruments carried at fair value, and to guarantees arising in insurance contracts with policyholders.<sup>105</sup>

Financial instruments carried at fair value are covered by IAS 39 (Financial Instruments: Recognition and Disclosure). The definition of a financial instrument is any contract that gives rise to both a financial asset on the part of one entity and a financial liability or equity instrument on the part of another. It includes financial guarantee contracts, which are sometimes referred to as credit insurance and cover financial guarantees, letters of credit, and credit default contracts.<sup>106</sup> IAS 39 provides for the recognition of financial guarantees as liabilities, valued at fair value, which is defined as the amount for which a liability could be settled between knowledgeable and willing parties in an arm's length transaction. Fair value may be estimated by use of published prices, use of a rating issued by a rating agency, or use of appropriate estimation techniques such as discounted cash flow analysis and option pricing models.

Guarantees that are not covered by IAS 39, and are not insurance contracts, should be accounted for under IPSAS 19.

A contingent liability is defined as:

- A possible obligation that arises from past events and whose existence will be confirmed only by the occurrence or nonoccurrence of one or more uncertain future events not wholly within the control of the entity.
- A present obligation that arises from past events but is not recognized because:
  - It is not probable that an outflow of resources embodying economic benefits or service potential will be required to settle the obligation.
  - The amount of the obligation cannot be measured with sufficient reliability.<sup>107</sup>

A provision, on the other hand, is a liability of uncertain timing or amount. A provision should be recognized when:

- An entity has a present obligation (legal or constructive) as a result of a past event.

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<sup>105</sup>Insurance contracts are covered by IFRS 4 (Insurance Contracts).

<sup>106</sup>However, IAS 39 does not cover financial guarantees that transfer significant risk to the issuer, which are covered by IFRS 4. An amendment currently being proposed by IASB would see all financial guarantee contracts, including those that transfer significant risk, being covered by IAS 39.

<sup>107</sup>The commentary in the standard indicates it will only be in extremely rare cases that no reliable estimate can be made of an existing liability; in such case the liability should be disclosed as a contingent liability.

- It is probable that an outflow of resources embodying economic benefits or service potential will be required to settle the obligation.
- A reliable estimate can be made of the amount of the obligation.

The commentary indicates that, where there are a number of similar obligations and the likelihood of an outflow for any one of them is small, the treatment is determined by considering the class of obligations as a whole. In other words, where the expected cost of a category of contingent liabilities can be estimated with sufficient reliability, a provision might be recognized (i.e., the contingency would be classed as a liability in the form of a provision rather than as a contingent liability). The amount recognized should be the amount an entity would rationally be expected to pay to settle the obligation or to transfer it to a third party.

Provisions should be reviewed at each reporting date and adjusted to reflect the current best estimate. Where discounting is used, the carrying amount of a provision increases in each period to reflect the passage of time. This increase is recognized as an interest expense. A provision should be used only for expenses for which a provision was originally recognized.

IPSAS 19 requires certain disclosures in relation to contingent liabilities. Unless the possibility of any outflow in settlement is remote, an entity should disclose for each class of contingent liability at the reporting date a brief description of the nature of the contingent liability and, where practicable:

- An estimate of its financial effect;
- An indication of the uncertainties relating to the amount or timing of any outflow; and
- The possibility of any reimbursement.

Notes to the financial statements may include additional information useful as an input to assessments about financial position and performance, such as identifying the future events that would need to occur for a contingent liability to qualify for recognition as a liability.

IPSAS 19 also contains disclosure requirements for provisions. For each class of provision, an entity should disclose:

- The carrying amount at the beginning and end of the period;
- Additional provisions made in the period, including increases to existing provisions;
- Amounts used (that is, incurred and charged against the provision) during the period;
- Unused amounts reversed during the period; and

- The increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate.

An entity should disclose the following for each class of provision:

- A brief description of the nature of the obligation and the expected timing of any resulting outflows of economic benefits or service potential;
- An indication of the uncertainties about the amount or timing of those outflows (where necessary to provide adequate information, an entity should disclose the major assumptions concerning future events); and
- The amount of any expected reimbursement, stating the amount of any asset that has been recognized for that expected reimbursement.

A contingent asset is a possible asset that arises from past events and whose existence will be confirmed only by the occurrence or nonoccurrence of one or more uncertain future events not wholly within the control of the entity. Contingent assets should be disclosed where an inflow of economic benefits or service potential is probable. Where such an inflow is virtually certain, such items should be recognized as assets, rather than be disclosed as contingent assets.

IPSAS 15 (Financial Instruments: Disclosure and Presentation) contains additional disclosure requirements to enhance the understanding of on-balance-sheet and off-balance-sheet financial instruments, including contingent instruments such as financial guarantees. IPSAS 15 requires disclosure of risk management policies; of the terms, conditions, and accounting policies for each class of financial liability, including unrecognized liabilities; of information about exposure to interest rate risk and credit risk (including any significant concentrations of credit risk); and of information about how fair value is determined.

## **Fiscal Reporting Standards**

GFSM 2001 follows 1993 SNA by not treating any contingencies as financial assets or liabilities because they are not unconditional claims or obligations. Only when a contingent contract relates to a financial arrangement (e.g., a financial derivative) where the arrangement has value because it is tradable does GFSM 2001 call for recognition of the contingency as a liability. GFSM 2001 also calls for aggregate data on all important contingencies to be recorded as a memorandum item. In addition to the gross amount of possible revenue or expense, estimates of expected revenue or expense should be included.

ESA 95 (1995 European System of Accounts; ISWGNA, 1993) and the ESA95 Manual on Government Deficit and Debt (Eurostat, 2002) specify that, with one exception, government-guaranteed debt is a contingent liability and should not be taken into account in the calculation of government debt. The exception is when the government guarantees the borrowing of a public enterprise and when it is certain that the government, and not the enterprise, will service and repay the debt.

The Fund's Code of Good Practices on Fiscal Transparency (IMF, 1998, item 2.1.3) requires a statement describing the nature and fiscal significance of central government contingent liabilities to be part of the budget documentation. The Manual on Fiscal Transparency (IMF, 2001b) states that budget documentation should include a statement indicating the public policy purpose of each contingent liability, its duration, and the intended beneficiaries. Where possible, major contingencies should be quantified.

The OECD Best Practices for Budget Transparency (OECD, 2001) require disclosure of 1) contingent liabilities in the annual budget, the mid-year report to the legislature, and the final accounts, classified by category, and 2) past calls on government to meet contingent liabilities.<sup>108</sup>

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<sup>108</sup>These requirements are also part of a set of best practices included in the Manual on Fiscal Transparency (IMF, 2001b).

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