

Accounting for fiscal obligations and contingent liabilities in public-private partnerships in South Africa

A framework for analysis

Refilwe Mokanse, Dorcas Kayo, Yoliswa Sambo,
Mkhulu Maseko, Cigdem Aslan

SA-TIED Working Paper #68 | July 2019



About the programme

Southern Africa –Towards Inclusive Economic Development (SA-TIED)

SA-TIED is a unique collaboration between local and international research institutes and the government of South Africa. Its primary goal is to improve the interface between research and policy by producing cutting-edge research for inclusive growth and economic transformation in the southern African region. It is hoped that the SA-TIED programme will lead to greater institutional and individual capacities, improve database management and data analysis, and provide research outputs that assist in the formulation of evidence-based economic policy.

The collaboration is between the United Nations University World Institute for Development Economics Research (UNU-WIDER), the National Treasury of South Africa, the International Food Policy Research Institute (IFPRI), the Department of Monitoring, Planning, and Evaluation, the Department of Trade and Industry, South African Revenue Services, Trade and Industrial Policy Strategies, and other universities and institutes. It is funded by the National Treasury of South Africa, the Department of Trade and Industry of South Africa, the Delegation of the European Union to South Africa, IFPRI, and UNU-WIDER through the Institute's contributions from Finland, Sweden, and the United Kingdom to its research programme.

Copyright © Author(s) 2019

Corresponding author:

The views expressed in this paper are those of the author(s), and do not necessarily reflect the views of the of the SA-TIED programme partners or it's donors.



Towards Inclusive Economic Development in Southern Africa

SA-TIED | Working Paper #68 July 2019

Accounting for fiscal obligations and contingent liabilities in public-private partnerships in South Africa: A framework for analysis

Refilwe Mokanse, Dorcas Kayo, Yoliswa Sambo, Mkhulu Maseko, Cigdem Aslan

ABSTRACT

The research proposes a general approach to assessing and accurately quantifying fiscal obligations and the state's contingent liabilities that arise from financing infrastructure projects through public-private partnerships (PPPs). It includes a method for assessing the likelihood of these contingent liabilities materializing due to contract termination because of private party default or public institution default or the triggering of a minimum revenue guarantee payment from the fiscus. South Africa's fiscal framework governing PPPs has been in existence since 2000 and, to date, 34 PPP projects valued at R89.3 billion have been completed. South Africa's methods for valuing and accounting for PPPs in the public sector accounts, and in particular, the contingent liabilities involved require review and improvement to meet international best practice. This paper sets out a framework for appropriate methods and provides a basis for developing public sector capacity for effective valuation and reporting.

Keywords: infrastructure investment, contingent liabilities, public sector assets and liabilities management, risk rating

JEL classification: H 54, H 61, H 81, H 83

1 INTRODUCTION

The provision of adequate and well-maintained infrastructure is a common problem facing many developing countries, including South Africa. The emergence of public-private partnerships (PPPs) has provided a window of opportunity for partnership between government and the private sector in the provision of infrastructure. South Africa has a strong PPP framework, with a total of 34 PPPs, valued at R89.3 billion, completed to date. For government, private participation and financing through PPPs offers an opportunity to increase infrastructure investment without immediately adding to government borrowing and debt. User charges can be a source of revenue for the government. User charges or unitary payments (payments made to the private party¹ (PP) for service rendered) also provide a return on investment for the PP.

However, for the private sector to fully commit to entering into a PPP or a long-term contract with government, a guarantee from the Minister of Finance binding the National Revenue Fund is required, such a guarantee mitigating the risk of revenue shortfall or default by creating a fiscal obligation or a contingent liability to the fiscus if the project sponsor is unable to pay the PP. Although some PPPs were undertaken almost 20 years ago, the full fiscal obligations and contingent liabilities that could accrue to government have not been calculated with a high level of accuracy. There is therefore a need to update and fully account for these fiscal obligations and contingent liabilities. In addition, there is a need to reliably predict the probability of the contingent liability materializing.

1.1 Background

PPP projects offer an opportunity for a partnership between government and the private sector to implement infrastructure projects. The PPP framework has been in existence since mid-2000 in South Africa. Table 1 shows a list of the 34 completed PPPs undertaken to date. Of the 23 PPPs, 26 are design-finance-build-operate-transfer (DFBOT) PPP models, four are design-finance-operate (DFO) models, two are design-build-operate-transfer models (DBOT), one is an equity partnership model, and one is a facilities management project model. These projects include hospitals, transport and roads, tourism and head office accommodation projects.

Table 1: Public-private partnership projects completed

Project name	Government institution	Type	Date of close ¹	Duration (years)	Financing structure	Project value (R m)	Form of payment
Transport							
SANRAL N4 East Toll Road	SANRAL	DFBOT	Feb 1998	30	Debt: 80% Equity: 20%	3 200	User charges
SANRAL N3 Toll Road	SANRAL	DFBOT	Nov 1999	30	Debt: 80% Equity: 20%	3 000	User charges
SANRAL N4 West Toll Road	SANRAL	DFBOT	Aug 2001	30	Debt: 80% Equity: 20%	3 200	User charges
Northern Cape fleet	N. Cape Dept of Transport, Roads and Public Works	DFO	Nov 2001	5	Equity: 100%	181	Unitary payment
Chapman's Peak Drive Toll Road	W. Cape Dept of Transport and Public Works	DFBOT	May 2003	30	Debt: 44% Equity: 10% Govt: 46%	450	User charges and guarantee
Fleet management	Eastern Cape Dept of Transport	DFO	Aug 2003	5	Debt: 100%	553	Unitary payment
National fleet management	Dept of Transport	DFO	Sep 2006	5	Equity: 100%	919	Service fee

¹ In this note, special purpose vehicle (SPV) and private party are used interchangeably.

Project name	Government institution	Type	Date of close ¹	Duration (years)	Financing structure	Project value (R m)	Form of payment
Tshwane fleet management	City of Tshwane	DFO	Nov 2015	5	Equity: 100%	1 612	Service fee
Gautrain Rapid Rail Link	Gauteng Dept of Public Transport, Roads and Works	DFBOT	Sep 2006	20	Debt: 11% Equity: 2% Govt: 87%	31 800	User charges and patronage guarantee
SANRAL Gauteng Freeway Improvement Plan Toll Road	SANRAL	DFBOT	Oct 2007	20	Debt: 100%	20 000	User charges
Water and sanitation							
Dolphin Coast water and sanitation concession	Kwa-Dukuza Local Municipality	DFBOT	Jan 1999	30	Debt: 21% Equity: 18% Govt: 61%	130	User charges
Mbombela water and sanitation concession	Mbombela Local Municipality	DFBOT	Dec 1999	30	Debt: 40% Equity: 31% Govt: 29%	189	User charges
Correctional services							
Mangaung and Makhado maximum security prisons	Dept of Correctional Services	DFBOT	Aug 2000	30	Debt: 88% Equity: 12%	3 600	Unitary payment
Health							
Inkosi Albert Luthuli Hospital	KwaZulu-Natal Dept of Health	DFBOT	Dec 2001	15	Debt: 70% Equity: 20% Govt: 10%	4 500	Unitary payment
Universitas and Pelonomi Hospitals co-location	Free State Dept of Health	DFBOT	Nov 2002	16.5	Equity: 100%	81	User charges
State Vaccine Institute	Dept of Health	Equity partnership	Apr 2003	4	Equity: 100%	75	Once-off equity contribution
Humansdorp District Hospital	E. Cape Dept of Health	DFBOT	Jun 2003	20	Equity: 90% Govt: 10%	49	Unitary payment
Phalaborwa Hospital	Limpopo Dept of Health and Social Development	DFBOT	Jul 2005	15	Equity: 100%	90	User charges
W. Cape Rehabilitation Centre and Lentegeur Hospital	W. Cape Dept of Health	Facilities management	Nov 2006	12	Equity: 100%	334	Unitary payment
Polokwane Hospital renal dialysis	Limpopo Dept of Health and Social Devt	DBOT	Dec 2006	10	Equity: 100%	88	Unitary payment
Port Alfred and Settlers Hospital	E. Cape Dept of Health	DFBOT	May 2007	17	Debt: 90% Equity: 10%	169	Unitary payment
Tourism							
SANPARKS tourism projects	SANPARKS	DFBOT	Apr 2000	Various	Equity: 100%	270	User charges
Eco-tourism Manyeleti three sites	Limpopo Dept of Finance, Economic Affairs, Tourism	DFBOT	Dec 2001	30	Equity: 100%	25	User charges
Cradle of Humankind Interpretation Centre Complex	Gauteng Dept of Agriculture, Conservation, Environment and Land Affairs	DBOT	Oct 2003	10	Equity (opex): 100% Govt (capex): 100%	39	User charges

Project name	Government institution	Type	Date of close ¹	Duration (years)	Financing structure	Project value (R m)	Form of payment
Western Cape Nature Conservation Board	W. Cape Provincial Government	DFBOT	Jul 2005	30	Equity: 100%	40	User charges
Information technology							
Information systems	Dept of Labour	DFBOT	Dec 2002	10	Equity: 100%	1 500	Unitary payment
Social grant payment system	Free State Dept of Social Development	DFO	Apr 2004	3	Equity: 100%	260	Unitary payment
Office accommodation							
Head office accommodation	Dept of Trade and Industry	DFBOT	Aug 2003	25	Debt: 80% Equity: 8% Govt: 12%	870	Unitary payment
Head office accommodation	Dept of International Relations and Cooperation	DFBOT	Jan 2005	25	Debt: 81% Equity: 19%	1 959	Unitary payment
Head office accommodation	Dept of Education	DFBOT	Aug 2009	27	Debt: 90% Equity: 10%	512	Unitary payment
Head office accommodation	Dept of Environmental Affairs	DFBOT	May 2012	25	Debt 49% Equity: 15% Govt: 36%	2 731	Unitary payment
Head office accommodation	Statistics South Africa	DFBOT	Mar 2014	24	Debt 54% Equity: 9% Govt: 37%	2 533	Unitary payment
Head office accommodation	City of Tshwane	DFBOT	Mar 2015	25	Debt: 86% Equity: 14%	2 005	Unitary payment
Head office accommodation	Dept of Rural Development	DFBOT	Feb 2019	27	Debt: 54% Equity: 10% Govt: 36%	3 991	Unitary payment

In South Africa, all PPPs are required to go through regulatory tests to check for compliance before implementation. The three tests are value-for-money, affordability, and risk transfer. The process of accounting for fiscal obligations and contingent liabilities is directly linked to risk transfer.

PPP projects rely on unitary payments by the off taker and a few of them on user charges, sometimes backed by a minimum revenue guarantee. The key sources of contingent liabilities for the government mainly stem from these guarantees and the termination events that can result from PP default, government institution decision, corrupt acts or force majeure. The National Treasury (NT) has been publishing an estimation of the termination amounts in the Annexure E of the Budget Review since 2016.

Fiscal obligations and contingent liabilities exposure from PPPs arises mainly from government's obligation to a PP should there be an early contract termination. The amount of the resultant contingent liability is driven by the reason for termination. These are: termination as a result of PP default, public institution default, or force majeure ("act of God"). It also occurs if government has agreed to top up a shortfall if the project does not generate the minimum revenue set out in a contract with the PP. The materializing of contingent liabilities has an adverse and financial effect on the fiscus. Thus the NT undertakes to analyse and estimate the contingent liabilities arising from PPPs.

In terms of responsibilities, the Asset and Liability Management (ALM) division in the NT conducts credit risk analysis that focuses on state-owned companies' (SOCs) balance sheets, income statements and cash flow statements to determine whether they generate sufficient cash flow to service their obligations. This kind of analysis evaluates business and financial risk indicators to gauge whether

sufficient cash flows are likely to be generated over the life of the outstanding liabilities and whether the liabilities are likely to increase or decrease in the near future. When a PPP is implemented, the NT as a guarantor of the PPP debt also has to scrutinize the associated cash flows and creditworthiness of the PP to ascertain the ability of the special purpose vehicle (SPV) to service its principle payments plus interest when they become due. Given that ALM conducts credit analysis focusing on the credit worthiness of SOCs, there is a need to explore the possibility of conducting this kind of analysis on SPVs of PPP projects.

This paper is written jointly by the ALM division and Budget Office (BO) in the NT. ALM is responsible for analysing contingent liabilities that government is exposed to and for monitoring risk and likelihood of materialization of contingent liabilities emanating from PPPs. The BO division is the regulator of PPPs and its main responsibility is to ensure that all PPPs are undertaken in accordance with Treasury Regulation 16.

2 PROBLEM STATEMENT

To publish information on fiscal obligations and contingent liabilities and to assess the risk exposure from the PPPs, the ALM and BO teams rely on data received from the PPP unit within the Government Technical Advisory Centre. The data provides a risk score for all projects, which is not necessarily based on a scientific methodology but on qualitative aspects of contract management such as attendance at meetings, disputes, penalties imposed and operations of the SPVs. This method of analysis is heavily focused on qualitative assessment and does not consider the financial outlook of the projects. In addition, technical advisors make contingent liability (CL) calculations on behalf of government institutions, and it cannot be ascertained whether these calculations are accurate.

The research aims to develop a general approach to assessing and accurately quantifying fiscal obligations and CLs as well as to identify a methodology to determine the likelihood of these CLs materializing (Moody's, 2015). More specifically, it aims to achieve the following:

- improve the accuracy of the information published in the PPP annexure of the Budget Review, in particular the table on the termination amounts (see Table 1);
- assess the creditworthiness of the SPV companies that manage the current PPP projects;
- develop the capacity of the Credit Risk and BO teams to analyse the key risks from the PPPs to the public sector and assess reports to inform decision-making.

Table 2: Level of potential government contribution to contingent liabilities by category (R million)

	Termination private party default		Termination force majeure		Termination government default	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
National departments exposure	3 070.5	3 464.6	2 777.9	3 655.9	4 687.6	5 348.0
Provincial departments exposure	3 803.2	3 571.3	2 591.3	2 372.8	4 892.5	4 732.3
Public entities exposure	557.0	489.2	555.7	414.8	767.0	614.4
Municipal exposure ¹	2 675.9	2 274.5	2 269.1	1 928.8	3 360.9	2 856.7
Total	10 106.5	9 779.6	8 194.0	8 372.3	13 708.0	13 561.4

1. Municipalities are an autonomous sphere of government and therefore their liabilities are not part of the fiscus.

Source: National Treasury

Table 1 shows the level of potential government contribution to CLs by category. It shows CLs for PPPs as a result of contracts terminating due to government default amounted to R13.6 billion in 2018/19, with national PPPs accounting for most of them, followed by provinces, municipalities and public entities. This information was published in the Budget review of 2019 but there is currently doubt about its accuracy, because the information was provided by technical advisors and NT does not have a reliable methodology of quantifying these liabilities – hence the present research. In summary, this paper seeks to establish the accuracy of the current qualitative methodology used to calculate contingent liabilities and if necessary establish a methodology that will outline a general approach to assessing and quantifying fiscal obligations and contingent liabilities. Furthermore, it will outline a methodology that will determine the likelihood of these contingent liabilities materializing as a result of any of the following reasons: private party default; government institution default, and triggering of a minimum revenue guarantee payment.

3 RESEARCH OBJECTIVES AND APPROACH

Currently each PPP has its own formula for calculating contingent liabilities. The research objective is to create a model to accurately determine the volume of government's fiscal obligations and contingent liabilities and to assess the creditworthiness of SPVs. This will be based on the cash flow profile of the project in order to quantify total risk exposure and likelihood of materialization. The model that will be adopted aims to assess default risk of the PP by estimating the risk probability as well as the risk impact (default/credit loss) of individual projects. The model will also aim to establish qualitative indicators that can be used to determine the likelihood of default of either the PP or the public institution or force majeure. This methodology will help the NT to manage the credit risk exposure of the PPP portfolio and, consequently, the implications on the fiscus.

3.1 Data

Data on the eight sampled projects that are currently in operation was required, and sourced from Treasury Approval value for money reports (Treasury Approval III reports), financial models, approved memos and letters. Income statements and balance sheets of the SPVs will also be requested from the relevant institutions. These projects include the following: Gautrain Rapid Rail, Chapmans Peak Drive Toll Road; SANRAL N3 and N4 Toll Roads; Dolphin Coast Water and Sanitation Concession; Department of Environmental Affairs and Department of Education buildings; Inkosi Albert Luthuli and Pelonomi and Universitas PPP hospitals. These projects were sampled mainly because they represent various sectors of PPPs and have a diverse range of risks that can assist with the quantification of fiscal risks and contingent liabilities. A screening of these documents showed that only three projects had some of the relevant information. Some SPVs had also some publicly available data in their annual reports such as the income statements and balance sheets. However, for this research, the Department of Education (DoE) accommodation building has been chosen to serve as a pilot for the research. A brief description of the DoE has been provided below:

- The DoE office accommodation PPP project reached financial closure in August 2007.
- The total project cost, including construction and maintenance of the building, was R512 million at 2007 prices, discounted at 11.14 percent.
- The total size of the building is 57 778 m², which includes 34 000 m² office space, 15 832 m² basement space, and 7 946 m² special area.
- The building was constructed to house an estimated 1 200 employees of the DoE.
- The unitary payment in year 1 of the operations was estimated to be R70 million over 25 years, escalating by inflation every year.
- The funding structure of the project was 87 percent debt and 17 percent equity.
- There was no capital contribution by the DoE.

3.2 Research question

The research project answers the following questions:

- What is the total cost of all the fiscal obligations and contingent liabilities of the eight sampled PPP projects?
- What is the best methodology to estimate the risk exposure from PPPs and to estimate the probability of default or termination?
- What is the best methodology to estimate and assess the likelihood of a revenue guarantee being triggered?
- Should any of these agreements fail or be terminated, how much would government be liable to pay the private sector?
- What are the qualitative factors that would be most reliable in determining the likelihood of default or termination?
- How should these fiscal obligations and contingent liabilities be managed to minimize and mitigate the fiscal risk that could accrue to government?

3.3 Significance of the study

The research will enable government to fully account for all its fiscal obligations and contingent liabilities and come up with recommendations on how best to manage PPPs to reduce fiscal risks that could potentially accrue to South Africa. The research is also expected to contribute to policy discussions about the importance of PPPs and crowding in of private financing.

3.4 Research methodology

The research adopts a methodology used by Bachmair (2016) which calculates the expected loss (EL) from each PPP project, through the following formula (see Figure 1):

$$EL = EAD * LGD * PD,$$

where EL = Expected loss; EAD = Exposure at default; LGD = Loss given default; and PD = Probability of default.

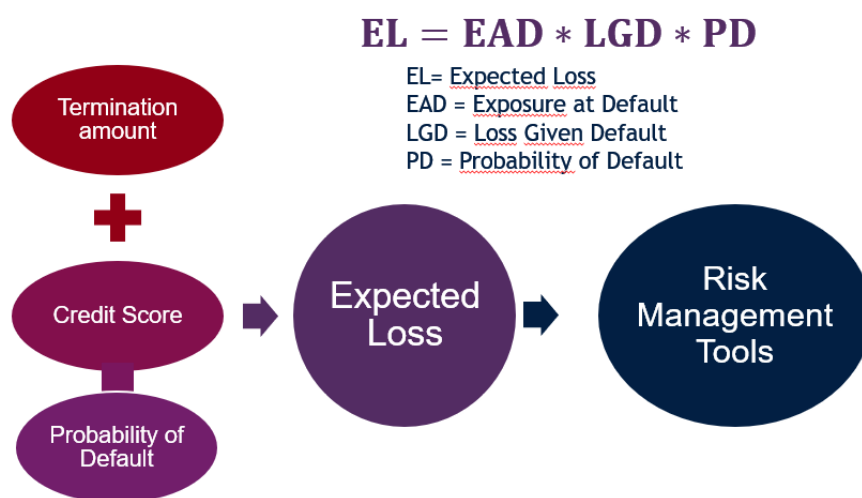


Figure 1: Proposed methodology

Source: World Bank

This formula can be decomposed into i) the calculation of the termination amounts from the triggers indicated in the PPP contracts (EAD); ii) development of a credit score to assess the creditworthiness of a PPP project; iii) translation of the credit score into a probability of default (PD); and iv) the estimation of the recovery rate (LGD) that might be high for a PPP. It should be noted that the EL is a present value number, so the formula, as seen below, must discount the cash flows with the government's yield at a particular year.

$$EL_y = \sum_1^y \frac{EAD_y * PD_y * LGD_y}{(1 + Govt. Yield_y)^y}$$

4 CALCULATION OF THE TERMINATION AMOUNTS

The calculation of the exposure tries to answer the question on how much is at risk if a PPP project is terminated, as this event generates some cost to the off-taker. Depending on whether the off-taker is a central government entity (e.g. sectoral departments), a SOC, or a sub-national government, there is an explicit or implicit CL with a potential to impact the government's public finances. In the event of a termination, payments are expected to be made to debt counterparties, equity (shareholder) counterparties, and hedging counterparties.

To calculate the termination amounts, it is necessary to generate the project cash flows. A typical PPP project is financed through equity and debt. Equity shareholders expect a compensation to match their required internal rate of return (IRR) through dividends and equity repayments (at the end of the concession, the SPV closes with no asset or liability). Debt investors receive interest payments and principal repayments.

At termination, a compensation needs to be made to those who finance and hedge the project. The hedging cost arises from the breakage, i.e. cancellation, of the derivative agreements that the SPV put in to manage the financing risks such as the interest rate or currency. However, this compensation must consider the debt- and equity-related payments at the date of the termination, and subject to penalties linked to the cause of the termination. For example, if the project terminates due to PP default or corrupt acts, the equity shareholders are penalized more heavily than if the public sector decided to withdraw. Furthermore, there are other cost components such as payments related to the subcontractor costs or redundancy costs.

A PPP project in South Africa can be terminated upon the PP default, if the off-taker decides to terminate, due to force majeure, or in the occurrence of corrupt gifts and acts. Even though each PPP project can have its particularities, usually the debt is amortized before equity and according to the seniority of debt. An analysis of the financial contract and the financial model for the DoE project was undertaken. Based on this input, an Excel template was prepared to calculate the termination amounts under the four triggers indicated above. The analysis considers the payments to the equity shareholders, lenders and hedging counterparties. Given that there was not enough information, a quantification of potential payments could not be conducted due to the subcontractor or redundancy costs.

Figure 2 shows an analysis of equity and debt profile of the DoE PPP project. The debt and equity profile of the project consists of senior debt, sub-debt, equity and interest expense. These are components of the project that need to be paid in case of project termination.

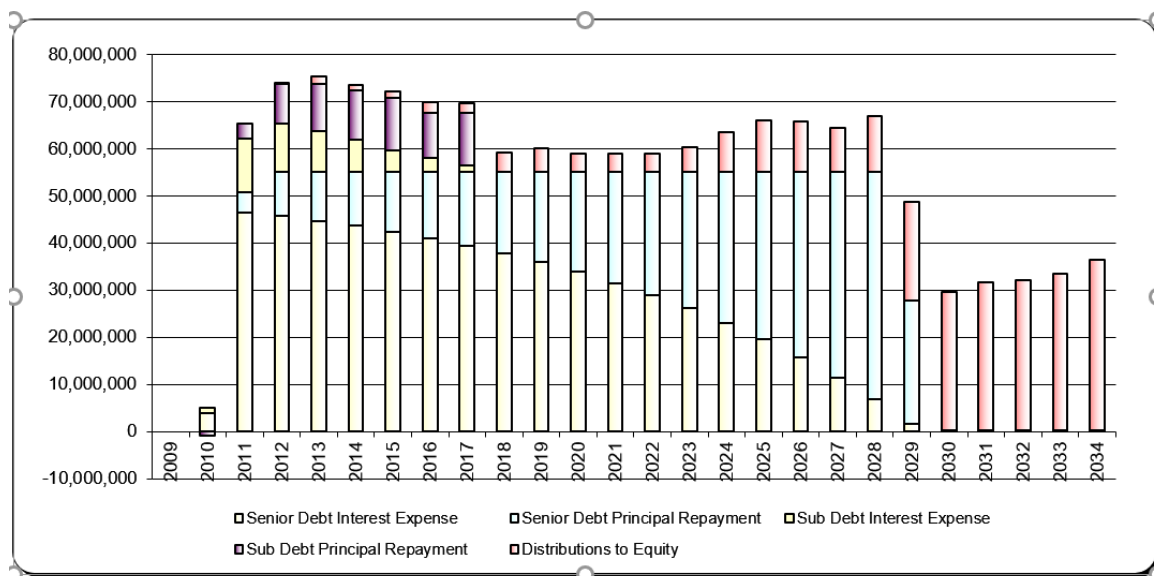


Figure 2: Equity and debt payment profile of the Department of Education project

Source: "Summary" sheet of DoE Financial Model_3 August 2009.xls

Department of Education Building Sethego Private Party (Pty) Ltd - Operations		Termination Amount			
		Public Sector Default	Private Party Default	Force Majeure Termination	Corrupt Acts Termination
		441,312,419	359,342,902	359,342,902	359,342,902
			Period End Date	Saturday, September 30, 2006	Saturday, March 31, 2007
1				0	1
2					
3	Senior Debt Amount			-	-
4	Project Co share capital			-	56,561,105
5	Project Co share distributions			-	-
6	Project Co share distributions Cumulative			-	-
7	CPI Index			1.00	1.00
8	Project Co share real cashflows	-	18,262,828	-	56,165,112.60
9					
10	SPV LIABILITIES AT TERMINATION	Termination Date	Last Payment Date		
11		Sunday, November 11, 2018	Sunday, September 30, 2018	24	
12	Senior Debt Amount		345,744,457		
13	Project Co share capital		1,611,733		
14	Project Co share distributions		11,916,226		

Figure 3: Snapshot of the termination amount template

5 DEVELOPMENT OF THE CREDIT SCORE

Another important component for the risk assessment of PPPs is to develop a credit scoring methodology. This is a methodology with which the ALM’s Credit Risk team is familiar, given the use of a similar approach to evaluate the CLs from South Africa’s SOCs.² This approach helps to achieve understanding of the fundamental risk drivers of a PPP project, to assess the creditworthiness of the SPV managing the project, and produce a credit score (e.g. 1 for low risk, 9 for high risk)

Moody’s (2015) methodology for operational privately-financed public infrastructure (PFI/PPP/P3) projects has been adopted. This is the standard method to assess credit rating of PPP SPVs at the operation phase of the project and consists of the following eight factors:

- complexity of project operations and performance regime;
- strength of contractual arrangements and operations approach;

² National Treasury of South Africa. (2017). Methodology for conducting credit risk assessments on state-owned companies operating within the electricity sector.

- performance and quality of the sub-contractor;
- leverage and coverage;
- project track record;
- refinancing risk;
- structural features; and
- off-taker considerations.

To develop credit scores based on this methodology is not straightforward, in order to appreciate the complexity, it is important to have a good understanding of the contractual, financing and operational structure of the PPP project. In some cases, the methodology could be adjusted with specifics of South African PPPs, for example by assigning larger weights to factors (e.g. Factor 4 on leverage and coverage and Factor 5 on track record) that can be updated with recent financial information to monitor the performance of the SPV. This will allow NT to keep track of the performance of the projects and to develop some early warning indicators to anticipate increasing risks.

To develop a credit score, financial statements of the SPV are required. However, the financial statements of the DoE SPV could not be obtained. As a proxy, the financials statements of the Department of Environmental Affairs (DoEA) were used. The DoEA project was used because it is similar to the DoE in terms of project size and it is also an office accommodation PPP project. The Moody’s credit rating score was applied (see Figure 2) with some adjustments made to South Africa, such as the adoption of a score of 1 to 9 scale used for South Africa’s SOCs (1 for strong credit quality, 9 for the riskiest SPVs), which would consist of superimposing the scale of nine over the Moody’s scale of 20.

Factors	Sub-factors	Subfactor weight within scorecard	Department of Environmental Affairs Office Building	
			Indicative score	Score
FACTOR 1: COMPLEXITY OF PROJECT OPERATIONS AND PERFORMANCE REGIME	Complexity of Facility Management (FM) Obligation	10%	6.00	0.60
	Complexity of Lifecycle Obligation	10%	6.00	0.60
	Nature of Performance Regime	5%	6.00	0.30
	Concession/Sub-Contract Interface	5%	6.00	0.30
FACTOR 2: STRENGTH OF CONTRACTUAL ARRANGEMENTS AND OPERATIONAL APPROACH	Robustness of FM Sub-Contract Package Terms	7.5%	15.00	1.13
	Robustness of Lifecycle Contract Arrangements	10.0%	15.00	1.50
	Adequacy of FM Budgeting, Benchmarking and Resources	7.5%	9.00	0.68
	Adequacy of Lifecycle Plan	10.0%	9.00	0.90
FACTOR 3: PERFORMANCE AND QUALITY OF SUB-CONTRACTOR		10.0%	9.00	0.90
FACTOR 4: LEVERAGE AND COVERAGE	Minimum Annual Debt Service Coverage Ratio (DSCR)	7.5%	3.00	0.23
	Average Annual DSCR	7.5%	3.00	0.23
	Minimum Annual DSCR Break-even ratio	10.0%	3.00	0.30
Initial Rating			Baa1	7.65
Factor 5: Project Track Record	Quality of Relationships Among Project Parties		0.0	
Factor 6: Refinancing Risk	Operational Performance		0.0	
Factor 7: Structural Features	Debt Service Reserve Account (DSRA)		0.0	
	Maintenance Reserve Account (MRA)		0.0	
	Security and Creditor Controls		0.0	
Final Moody's Rating			Baa1	7.65
Credit Score using SOC's rating scale			4	

Figure 4: Snapshot of the SPV credit score template

Source: World Bank

One point to note is that if the off-taker is an SOC or a subnational government, the credit score from the PPP project would have to be complemented by an additional credit score for the off-taker. The

rationale is that the government's public finances is exposed to credit risk from these off-takers and thus the credit risk from both the SPV and the related off-taker has to be considered. The scenarios that could materialize are :

- SPV defaults, but the off-taker is able to pay the termination costs
- SPV defaults, but the off-taker does not have the resources to pay the termination costs

Therefore, in case the off-taker is an SOC or a subnational government, the credit score of the SPV would be:

- Rating of SPV = min (rating of SPV using factors 1-7; rating of off-taker minus³ one notch)

Given that the ALM's Credit Risk team is already producing credit scores for the SOCs benefitting from sovereign guarantees, the only additional work would be for those off-takers that do not currently have guaranteed debt, for example Gauteng province in the case of Gautrain project, to have their credit scores calculated.

6 DERIVATION OF THE PROBABILITY OF DEFAULT FROM THE CREDIT RATING

To calculate the PD of public sector termination would depend on the team's ability to identify and assess the triggers; this might not be quantifiable (e.g. political decisions, social motives). Similarly, force majeure risks might have been leveraged through insurance, or alternatively capacity to assess the probability of events such as war or disaster which is outside their mandate would have to develop significant would have to be developed. Similarly monitoring the likelihood of corrupt acts might not be an expertise of the NT.

To compute the PD of the SPV, the step following the production of the credit score of the SPV is to match the rating with the probability of default. This can be backward looking, by using historic default rates from Moody's tables or forward looking using market credit spreads. The challenge with the use of market credit spreads is their availability and the fact that they contain risk and liquidity premia on top of credit risk.

In line with the methodology used for the SOCs, it was decided to translate the ordinal ratings into PD (for the respective year), with the use of Moody's default databases. It is important to take time into account and in particular distinguish between cash flow impact and economic impact. For instance, the termination payment is not an economic loss. While the termination amounts might be very large and hence translate into large cash outflows with a significant impact at the time of the default, the actual economic loss might be much smaller, as the government would be acquiring the PPP's assets in all cases of termination. This might imply much lower overall running cost going forward for the government (e.g. no more unitary payment to be made).

³ There is minus one notch because it is slightly "easier" for the off-taker to default on a unitary payment than on a public bond.

Rating	1	2	3	4	5	6	7	8	9	10
Aaa	0.000	0.013	0.013	0.037	0.104	0.170	0.241	0.318	0.401	0.489
Aa	0.022	0.068	0.136	0.260	0.410	0.550	0.682	0.800	0.900	1.017
A	0.062	0.199	0.434	0.679	0.958	1.271	1.615	1.995	2.387	2.759
Baa	0.174	0.504	0.906	1.373	1.862	2.375	2.872	3.386	3.965	4.623
Ba	1.110	3.071	5.371	7.839	10.065	12.123	13.911	15.700	17.479	19.323
B	3.904	9.274	14.723	19.509	23.869	27.957	31.774	34.993	37.936	40.560
Caa-C	15.894	27.003	35.800	42.796	48.828	53.270	56.878	60.366	63.730	66.212
Inv Grade	0.091	0.272	0.519	0.802	1.113	1.441	1.776	2.126	2.498	2.887
Spec Grade	4.460	9.161	13.634	17.571	21.014	24.042	26.690	29.035	31.212	33.234
All Rated	1.675	3.407	5.015	6.398	7.587	8.619	9.513	10.312	11.062	11.771

Figure 5: Moody’s Investor Services, historic probabilities of default

Source: Moody’s, 2015

7 QUANTIFICATION OF THE EL AND THE USE OF THIS OUTPUT FOR THE MANAGEMENT OF THE CLS FROM PPP PROJECTS

With the EAD in the event of PP termination and the PD computed, the only variable is loss given default (LGD), which corresponds to the amount that would be recovered through the government either retendering the PPP asset or taking charge of its operation. Given that there is still no information in this respect, and to adopt a very conservative approach, it was proposed at this stage to assume a recovery rate of 0%, thus LGD = 100%. In reality the recovery rate might usually be high for a PPP project given the underlying asset.

See Box 1 for the application of these methodologies to the DoE office building project, where obtain an expected loss amount of R655 000 is obtained for the government regarding the risk of the PP defaulting in 2019. Given that quantifying risks, in addition to analysing them, facilitates action, this methodology can be applied to all the active PPP projects and allocate expected loss from the portfolio as an appropriation in the next year’s budget. Furthermore, the portfolio level expected loss information can be published in PPP annexure in the Budget review of 2019 or at least monitor the performance of these estimates against the materializations going forward.

Box 1: Application of the proposed methodologies to a sample project: DoE

Based on the information obtained from the financial model from the financial close of the project in 2012, and using the Termination Amounts Template, the exposure at termination in year 2018 under the four triggers were calculated. See table below.

Termination amount (R)			
Public sector default	Private party default	Force majeure termination	Corrupt acts termination
444 739 918	346 166 308	346 166 308	346 166 308

The credit score was constructed based on the financial contract for the DoEA, and with the assumption that DoEA and DoE would have the same rating given the similarities between the two projects, see in section 2. The credit score thus generated is 4 out of South Africa’s 9 scale. This corresponds to 0.174% PD in year 1.

Therefore, the EL for the first year is calculated as $R346.2m \times 0.174\% \times 100\% = R602.3\ 000$ for a project valued at R512 million.

8 NEXT STEPS

One of the main challenges is the lack of comprehensive information about the active PPP projects. The data is scattered; even the financial close documents such as the concession agreement, the financial model, and the annexes regarding the arrangements on hedging and subcontractors are not available for the eight originally selected projects. Updated information could not be maintained, as most projects have been operational for a certain number of years.

PPP agreement and accompanying data has been obtained for most of the eight projects, but the challenge is financial statements of the SPV. The next step is to write to all identified SPVs and seek the relevant financials. Once the required information has been obtained, the credit score methodology can be adopted and applied to all projects sampled.

REFERENCES

- Bachmair, F. 2016. Contingent liabilities risk management: a credit risk analysis framework for sovereign guarantees and on-lending—country experiences from Colombia, Indonesia, Sweden, and Turkey (English). Policy Research working paper; no. WPS 7538. Washington, D.C. : World Bank Group. [Online] Available: <http://documents.worldbank.org/curated/en/138921468195001816/Contingent-liabilities-risk-management-a-credit-risk-analysis-framework-for-sovereign-guarantees-and-on-lending-country-experiences-from-Colombia-Indonesia-Sweden-and-Turkey> Accessed: 25 March 2019.
- Moody's. 2015. Rating methodology: operational privately-financed public infrastructure (PFI/PPP/P3) projects. 9 March 2015. [Online] Available: <http://www.congem.com.br/file/Operational-Privately-Financed-Public-Infrastructure-Projects.pdf> Accessed: 25 March 2019.
- National Treasury Public Private Partnership Manual. 2004. Pretoria.
- National Treasury Standardised Public Private Partnership Provisions. 2004. Pretoria.
- National Treasury. 2014. Accounting Guidelines GRAP 13 lease. January. [Online] Available: www.oag.treasury.gov.za Accessed: 19 march 2019.
- National Treasury. 2019. 2019 Budget Review. 25 February. [Online] Available: www.treasury.gov.za Accessed: 25 February 2019.
- The World Bank. 2006. Managing the government's fiscal obligations in public-private partnerships. Report to the National Treasury of South Africa. 14 September 2006.

About the authors

Most of the authors are employed by the National Treasury of South Africa. Refilwe Mokanse is Senior Policy Analyst, Infrastructure Finance; Dorcas Kayo is Director, Infrastructure Finance; Yoliswa Sambo is an Analyst in the Credit Risk section and Mkhulu Maseko is Director of the section. Cigdem Aslan is from the World Bank.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

A world free of hunger and malnutrition

1201 Eye Street, NW | Washington, DC 20005-3915 USA

T: +1.202.862.5600 | F: +1.202.862.5606

Email: ifpri@cgiar.org | www.ifpri.org

This paper was prepared as an output for the Towards Inclusive Economic Development in Southern Africa (SA-TIED) project and has not been peer reviewed. Any opinions stated herein are those of the authors and not necessarily representative of or endorsed by IFPRI. The boundaries, names, and designations used in this publication do not imply official endorsement or acceptance by the authors, the International Food Policy Research Institute (IFPRI), or its partners and donors.