PUBLIC SECTOR CONTINGENT LIABILITIES IN SPANISH TOLL ROADS

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Abstract

A number of the Spanish motorways are facing serious financial distress due to cost overruns and revenue shortfalls caused by low-traffic. The traffic deficit is explained by both the economic crisis and the overestimation of the expected roads usage. The government has granted them guarantees that should be characterized as contingent liabilities. Do they represent a threat to the Spanish public debt goal? The paper finds that the potential impact is limited. The estimated net present value of contingent liabilities ranges between 0.09% and 0.18% of nominal GDP. The extension of the term needed to economically re-balance the concessions implies an opportunity cost to the government ranging from 0.23% to 0.32% nominal GDP. However, a failure in solving the problems of insolvency of toll roads could generate a greater impact on the level of public debt, since a permanent increase between 2 and 4 basis points in the risk premium would have the same impact that assuming all the contingent liabilities.

Key words: Public-private partnerships, concessions contracts, toll roads, contingent liability, governmental loans and guarantees, public budget.

JEL Classification: H54, H62, H68, H81

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1 Introduction

A number of the Spanish motorways are facing serious financial difficulties because they have incurred in huge expropriation and construction cost overruns but, above all, as a result of revenue shortfalls caused by low traffic. This traffic gap has its origin in the impact of economic crisis, which has depressed the usage of tolled roads in the ramp-up period. But also, is due to the existence of an optimistic bias of the business plans of the tender regarding the expected usage of the roads. The government has granted them certain guarantees and commitments that should be characterized as contingent liabilities. This paper focuses on measuring the potential impact of those contingent liabilities on the public sector balance. The structure of the paper is as follows.

In Section 2 it is discussed how contingent liabilities arise in tolled highways and how they can be detected and measured. Special attention is paid to subordinated loans, debt-and-equity guarantees, minimum traffic and revenue guarantees as well as expropriations and construction cost overruns.

Section 3 describes the specific situation of ten Spanish toll roads in distress. A simulation exercise is carried out for estimating contingent liabilities derived from governmental policies related to these toll motorways. The key variable of the model is the rate of traffic growth

Section 4 concludes. The paper finds that the potential impact of contingent liabilities on public debt target is limited. The estimated net present value of contingent liabilities ranges between 0.09% and 0.18% of nominal GDP (2010). The extension of the term needed to economically re-balance the concessions implies an opportunity cost to the government ranging from 0.23% to 0.32% nominal GDP (2010). However, a failure in solving the problems of insolvency of toll roads could generate a greater impact on the level of public debt. A permanent increase between 2 and 4 basis points in the risk premium would be enough to match the impact of assuming all the estimated contingent liabilities

2. Measuring contingent liabilities in highways infrastructures

Public-private partnerships (PPP) and concessions are contracts that involve the public and private sectors working in co-operation and partnership in order to provide infrastructures and services. They are complex long-term contracts between a government (or grantor) and a private company (operator) to make a capital expenditure in order to create or renovate fixed assets as roads, bridges, schools, hospitals and others. In a concession´s style procurement, instead of the public sector procuring a capital asset by paying for it in full up front, the firm is responsible for designing, building, operating, maintaining and financing the asset. The private company provides the service to the government unit or to the general public on behalf of the public unit in return for regular payments from the public sector. When the private corporation sells the service directly to the public - as it is the case of tolled roads- the contract is seen as a concession rather than a PPP. From the economic perspective this distinction does not make a material difference. In both cases, at the end of the contractual period the asset reverts to the public sector at a given price. Indeed, the grantor acquires legal ownership and operational control of the fixed assets, usually without paying for it.

According to the implied risks, there are basically three types of motorways concessions: i) the availability payment structure, in which the operator company does not assume the demand risk and the government pays for the service according to the quality of the infrastructure facility or the quality of its maintenance service[1]; ii) the shadow toll structure, whereby the government contributes a specific annual payment per vehicle recorded, what enhances the

[1] In concessions with availability payment, banks have a higher propensity to finance the projects. However, this type of scheme may fail to provide a proper market test regarding the feasibility of projects.

concessionaire’s incentive to attract users to the facility[2] and iii) the toll structure, in which the operator company assumes complete market risk. In the three structures, the cost of the road is paid over time instead of up-front.

The toll road structure is the riskiest one for the private operators. The revenue risk - the most important one for toll road projects-, is defined as the risk associated with the existence of low-traffic or low rates of toll, so the actual proceeds will not cover costs. Traffic levels are affected by the markets served, competing alternatives, and the road’s links to the broader transportation system. The willingness of users to pay tolls is a function of wealth, the value they assign to time savings and other benefits of toll, as well of the quality of the competing alternatives. Estimates of the financial viability of toll road projects depend heavily on the accuracy of the forecast traffic demand.

The lack of accuracy in traffic forecasts come from the fact that any traffic forecast is done in the context of uncertainty about many of the key inputs for the projections, as the demographic, economic or technology factors. As the empirical study by Bain (2009) suggests, the toll road traffic forecasts are characterized by large errors and a considerable optimism bias[3]. Likewise, Flyvbjerg et al (2005) show how the governments, as forecasters, generally do a poor job when estimating the demand for transportation infrastructure projects: in 50% of all analyzed road projects, the difference between the actual and the forecasted traffic exceeds +/- 20%. And in 25% of the projects, the difference exceeds +/- 40%[4]. Meanwhile Baeza (2008) has measured the

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[2] The contributions of governments in shadow toll arrangements are higher when traffic is high and lower when traffic is low. The operator assumes the risks of market demand, with the exception of the willingness of users to pay the toll, since the Administration pay the toll directly to the operator, without even the knowledge of users of the infrastructure. In some cases the government support will be unnecessarily high when traffic exceeds expectations. This inefficiency can be reduced by including a program for lower payments as traffic increases, or through a ceiling above which the tolls are not paid.

[3] The author used commercial-in-confidence documentation provided by the banks financing the projects. And, over a 4-year period, compiled a database of predicted and actual traffic for over 100 international toll road projects privately financed.

[4] The sample used in their work covers 183 road projects in 14 nations

overestimation of traffic in the case of the Spanish toll roads. Her study shows a significant difference, such that the actual traffic falls 27% below the forecasted traffic during the 3 first years of the ramp-up period[5]. In the case of the new toll road concessions the overestimation is much higher, as we will see later.

The usage of concessions and PPP is becoming a common trend of government policy, convinced that the private financing of public infrastructure leads to greater efficiency as a result of risk transfer to the private sector [6]. Another cause why, in recent years private toll roads have gained favour, is the growing acceptance of the user-pay principle. Some others point out ideology and the pressure of interest groups as relevant factors that explain some sort of privatization. But it is also clear that one the forces that have led infrastructure provision through PPP procurement methods is the existence of fiscal deficit. Evidence suggests that governments with a large deficit and a heavy debt burden are more likely to use PPP. Even it may be quite plausible that in some cases PPP structures are being used to evade expenditure controls and hide public budget deficit[7].

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[5] The study analyzes 18 Spanish roads for the period 1970-2005.

[6] To Reijniers (1994) two of the reasons for the increased usage of PPP are, first a more business-like operation by the public sector (increasingly forced to manage its funds more efficiently); and a more active involvement of the private sector in the public decisions. Owen and Merna (1997) consider that utilizing PPP may eliminate some inefficiencies of the public sector, as substantial cost overruns and poor management skills. According to Hammani et al (1999) the theoretical underpinning of the concept of public-private partnership can be traced to the theory of X-efficiency developed by Leibenstein. The inefficiencies in public institutions come basically from its organizational structures, typically highly bureaucratic. PPP may contribute to reduce the sources of inefficiency in public organizations and to allow them to respond to market forces and become more competitive. Meanwhile, Gerrard (2001) has pointed out that much of the improvement in value for money provided by PPP comes from the fact that private sector makes the right commercial decisions about the design, the operating regime, the human resources planning, and the project´s whole-life costs.

[7] According to Beato and Vives (1996) in the long term the use of PPP structures is likely to have a negative fiscal impact compared to the pure public provision. The public sector saves the cost of investment, but has to pay a lease during the term of the contract. The present value of lease payment will be larger than the cost of a pure investment in the public sector. The reason is the higher interest rate than a private company would have to pay in comparison with the public rate.

Concession contracts allow to distribute the cost of procuring an asset over time, while the associated capital expenditure is usually allocated to private rather than public sector balance sheet. When public sector budgets are constrained, there are obvious advantages in adopting a PPP to deliver public services that might otherwise be unaffordable to a government. In a period of slow economic growth and low tax revenues, the pressure on public finances is strong. Many governments face the dilemma of how to respond to rising popular expectations for improved social services and infrastructure in a time when budget deficits must be kept down. Therefore, budgetary constraints in many countries are encouraging the use of concessions and PPP. As Fisher and Babbar (1996) have argued, the renewed interest in toll roads is particularly strong because governments require of alternative methods for financing the transport needs, given their limited resources.

In each concession, the risks should be allocated between public and private sectors based on the ability of each partner to manage and control risks. When enough risks are transferred to the private sector, investment amount should not be included in the public sector balance sheet[8]. Eurostat recommends that assets involved in public-private partnerships should be classified as nongovernment assets, and therefore recorded off balance sheet for government, if both of the following conditions are met: (i) the private partner bears the construction risk[9]; and ii) the private partner bears one of the two risks,

[8] Although there is no a comprehensive fiscal accounting standard for concessions and PPP, the existing rules provide a starting point to address their accounting and reporting treatments. On the one hand the 1993 System of National Accounts (1993 SNA) and the 1995 European System of Accounts (ESA 95) cover some operations that characterize PPPs, including leases.On the other hand, ESA 95, supplemented by the ESA 95 Manual on Government Deficit and Debt, covers public infrastructure built and operated by the private sector. The Government Finance Statistics Manual 2001 (GFSM 2001) fiscal reporting framework is also well suited although it does not currently provide comprehensive coverage of such operations. A new SCN (SCN 2008), in which IMF, OCDE, UN, World Bank and Eurostat have been working, was published in 2009. Furthermore, a new SEC (SEC 2010) is now under way.

[9] The construction risk covers cost overruns and additional costs resulting from events such as late delivery, low quality, lack of compliance with specified standards and technical deficiencies. Sometimes the government agrees to make payments to a private partner, regardless of the

the availability risk[10] or the demand risk[11]. When there is a limited transfer of risk to the private sector, the accounting of a concession is more complex[12].

Sometimes the assessment of the risk to which the government is exposed under a concession contract is a difficult task. It is not easy when we face relatively straightforward explicit guarantees and it is even more complex in the presence of implicit guarantees and contingent liabilities. Sources of fiscal risk may be direct or contingent. The last one refers to a liability that appears only if a particular event occurs. Whether direct or contingent, the liability can be either explicit -if it is recognized as a government liability by law or by contract- , or implicit, if is a moral obligation reflecting public expectation and pressure from interest groups. Governments are also exposed to fiscal risk coming from moral hazard when it is perceived they have residual responsibility for market outcomes.

Most private toll roads are undertaken on a project finance basis, whereby investors rely on the performance of the project for payment rather than the credit of the sponsor. This arrangement is also referred to as limited recourse financing, which indicates that lenders have limited recourse to the sponsors for payment if the project fails to generate adequate returns. A primary benefit of

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status of the asset. This indicates that the government actually takes most of the construction risk.

[10] The risk of availability refers to the commitment of the private partner to deliver the expected volume and quality of service agreed. This risk includes the possibility of additional costs such as maintenance and financing costs, possible penalties if the service does not meet quality standards, and so on. When government payments to private partners are independent of the level of service, this means that in fact there has not been a real transfer of this risk to the private sector.

[11] The demand risk refers to the impacts on revenues or costs coming from changes in business cycle, variations of market trends, change in competition and technological progress. Normally those negative impacts on demand due to changes in government policies should not be transferred to the private sector. But when the government pays to private partners regardless of the demand situation (with the aforementioned exception), this means that the government assumes most of the demand risk.

[12] When the assessment of risks and benefits is not conclusive it can be useful to find the unit with a decisive influence on the nature of the asset, and the way the terms and conditions of services produced with the asset are determined.

project finance structures is that they allow sponsors leverage their resources and expertise in order to undertake projects that otherwise they would not be able to finance with the strength of their own balance sheet. In addition, project finance allows sponsors sharing project risks with lenders and maintaining the project debt off their balance sheet. One of the consequences of the use of project finance structures is the interest of both concessionaires and banks in protecting the solvency of the project.

Governments often help the projects by providing contingent liabilities such as guarantees. When at least part of the project risk is taken by the government, it is likely that the project receives a higher amount of funding and obtains better financial conditions than on a stand-alone basis. Government support may be especially important for projects with special risk characteristics, such as large scale projects requiring long-term financing.

The risks incurred by the private sector in connection to the concessions may be reduced or eliminated by explicit guarantees granted by the government. Governments also provide financial support to motorway concessions in order to attract private financial resources, when necessary for the viability of the project. Thus, governments take actions to protect equity investors, enabling them to obtain a reasonable return on capital. They also seek to protect lenders, for example, by reducing the risk of project revenues being insufficient to cover debt service.

Potential future costs arising from the contractual obligation of government to purchase services from private sector should be calculated and taken into account when analysing debt sustainability. Contingent liabilities arise when a government decides to extend its financial support to other private sector agents, if certain events take place. Events such as debt default, insolvency, or a fall in revenues below a certain level. In practice, however, conventional fiscal analysis falls short of addressing fiscal risks arising from the existence of contingent liabilities. And this despite the fact that a considerable amount of literature has already addressed the issue from a theoretical perspective.

According to Towe (1993) the distinction between governmental contingent and direct liabilities is that the nominal obligation and the settlement date of the latter are fixed at the date of the issue in the second, whereas with contingent liabilities, the contractual obligation of the government is dependent in its timing and amount on the occurrence of a particular event.

To formally incorporate the effect of government guarantees and contingent liabilities in the analysis of debt sustainability, there are several techniques. The simplest is to compute the maximum exposure. A more useful approach is to estimate the present value of expected losses arising from the contingent liability. An alternative approach is to consider it as a financial derivative. According to this approach, a credit guarantee is equivalent to the government´s selling out an option, which gives the lender the right to put the loan to the government.

Governments provide financial support for road concessions through at least ten ways. Three of them generate direct liabilities. Another five of them may produce contingent liabilities. And another two do not produce financial effects.

Cash grants (CG) are the most direct mean of supporting concession projects. They take place up front in the early years and reduce the required capital to be provided by the private sector.

Subordinated loans (SL) improve the feasibility of a project by increasing the senior debt service coverage ratio. Since typically subordinated debt is provided by the government at a low interest rate, its impact in government's budget depends on its notional amount, the difference between its interest rate and the funding cost of the public sector, as well as the duration of the financial instrument.

Debt guarantees (DG) offer a full warranty or a guarantee of cash flow deficit for the payment of loans. They do not involve public expenditure, provided that the project will generate sufficient cash flow to repay debt. But they involves a risk if revenues are insufficient to cover debt service. The granting of such a guarantee is not recorded as a financial liability in the balance sheet of the grantor, but should be considered as a contingency liability. When the guarantee is granted to companies already in distress situations, there is a high likelihood that it will be called. Its activation implies a capital transfer from the government to the private sector.

Equity guarantees (EG) are options to sell shares in a project with a guaranteed minimum return. They do not involve public spending as long as the project generates the minimum agreed return on capital. But the government assumes all risks of the project, while private sector incentive to improve project performance is severely reduced. This guarantee structure implies a liability when the actual project performance is below the specified level.

Minimum traffic and revenue guarantees (MRG) provide a cash-flow to the private company if traffic (or revenues) fall below a given minimum level. Since the government shares a "downside" risk, it is usually compensated receiving a percentage of any revenues above a threshold. This guarantee structure will imply a contingent fiscal expenditure when the actual revenues of the project fall below a given level.

Concession term extensions (TE) are sometimes provided by governments when revenues fall below a minimum threshold. The term extensions do not imply any cash cost on the government, but imply opportunity costs, since the public sector will receive the asset later. When, as usually happens, the price at which the government receives the asset is zero, this contingent opportunity cost can be measured as the net present value of the expected revenues that the toll road would produce during the extended period.

Tariff increase allowances (TI) in toll roads impose no cash cost to the government, because tariffs are directly paid by the consumer. This mechanism, however, may not provide enough short-term protection to investors or lenders when there are traffic and revenue shortfalls[13]. When the

[13] A fare increase does not impose a monetary cost to the public sector, but may imply electoral costs for the political party in the cabinet. In some countries the risk of government ban on contemplated toll rate increases in the original business model, is a source of regulatory risk for concessionaires.

price-demand elasticity is high enough a tariff increase will be of limited value to improve cash flow and, therefore, the debt service coverage ratio. It is so because the fares increase could further reduce demand[14].

Expropriations cost overruns (EC). When the responsibility for the additional costs of expropriation is assumed, as often happens, by the grantors a contingent liability arises.

Construction cost overruns (CC). The concessionaire typically takes primary risks for cost overruns and delays during the construction period. Often the concessionaire transfers these risks to a construction contractor through a fixed price contract, while the public sector is usually responsible for those activities under its control. This responsibility includes completing those facilities that enhance the project, as well as the cost increases associated with major design changes. Sometimes the public sector also may share the responsibility for cost increases due to unforeseen geological conditions and other high-risk factors of the project. Thus, the responsibility for construction cost overruns is typically a contingent liability[15].

Revenue enhancements (RE) provided by a government may take the form of limits on competition or the building of additional and auxiliary facilities. Both

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[14] For the Spanish case, the empirical study by Matas and Raymond (2003) finds that the sensitivity of demand to price depends on both the characteristics of toll roads and the free alternatives roads. Their study takes into account all the Spanish toll roads for the period 1981-1998.

[15] According to Flyvbjerg et al (2002) the governmental estimates of costs to decide whether a project should be built are highly and systematically misleading: in 9 out of 10 transportation costs of the project infrastructure are underestimated. According to the results for the case of roads, the actual costs are on average 20% higher than the estimated cost. Their study was based on a sample of 258 transportation infrastructure projects worth US$ 90 billion and representing different project types, geographical regions and historical periods. Moreover, according to Baeza (2008) the underestimation of the costs of building highways in Spain exceeds 13% on average. Her analysis considers a sample of 24 toll road concessions of the 31 granted until 2005.

methods can help increase traffic to the concession. This commitment involves a limited financial risk to the public sector but may have significant value for investors. In many cases, however, these measures have limited effectiveness to support private financing of projects, since it is difficult to estimate their actual impact in revenues improvement.

In summary, the expected net present value of total liabilities of the public sector (TL) generated by financial support from the government to toll roads can be expressed as the sum of direct liabilities (DL) plus contingent liabilities (CL) such that

$$TL = DL + CL \quad (1)$$

Being

$$DL= \sum CG_t (1+r)^{-t} + \sum SL [d(i_d-i_g)] + \sum CRE_t (1+r)^{-t} \quad (2)$$

Where CG_t are the cash grants for period t, SL is the nominal amount of subordinated loan, d is the duration of the financial instrument, i_d is the interest rate of the subordinated loan, i_g is the interest rate of the public debt for the same maturity; CRE_t is the cost for the public sector of revenue enhancement; and r is the discount rated to be used;

The expected net present value of contingent liabilities is determined by

$$CL^e = p_{dg} DG_t (1+r)^{-t} + p_{eg} EG_t (1+r)^{-t} + \sum p_{trg} MRG_t (1+r)^{-t} + \sum EC_t (1+r)^{-t} + \sum CC_t(1+r)^{-t} \quad (3)$$

Where DG_t, EG_t, MRG_t are the amounts given by the government to the concessionaire in period t as a consequence of the execution of guarantees linked to debt, equity, traffic and revenue respectively; EC_t and CC_t are the sums paid by the government for expropriation and construction cost overruns. Given that for a particular motorway project not all if any of the contingent liabilities will happen, in practice, p_x are the probabilities of the occurrence of the mentioned x events and t is the period when the events take place.

Tariff increase allowances (TI) have no financial effects on public budgets (except in the case of shadow toll roads). And concession term extensions (TE) have only opportunity costs to public sector.

3 Measuring contingent liabilities linked to Spanish toll roads

The toll roads experience started in Spain in 1953, although 45% of the construction has taken place in the last 30 years. Today there are around 3,500 km of tolled roads in use, of which is been granted by central government almost 90%, and the rest by regional governments. Of the universe of central government tolled roads currently there are 11 in distress. These concessions were granted between 1998 and 2006 and they have an average concession term of 45.2 years[16]. See table 1

Table 1

Motorway	Tender resolution date	Concession Term *
Alicante Cartagena	July 1998	50
R3-5 (Accesos Madrid)	Sepember 1999	50
Santigo-Orense (Acega)	October 1999	75
R2	November 2000	24
R4	december 2000	65
M12 Eje Aeropuerto	november2002	24 + 1
AP 41 (Madrid-Toledo)	Febuary 2004	36 + 4
Circunvalación Alicante	Febuary 2004	36 + 4
AP7 (Cartagena - Vera)	Febuary 2004	36 + 4
AP36 (Ocaña -La Roda)	Febuary 2004	36 + 4
AP-46 Málaga - Las Pedrizas	September 2006	36 + 4

*Initial concession term (in years)

[16] The average has been weighted using the investment cost of each concession.

Table 2

Motorway	concessionaire	Length *
Alicante Cartagena	AUSUR	76,60
R3-5 (Accesos Madrid)	ALAZOR	90,20
Santigo-Orense (Acega)	TACEL	56,60
R2	Henarsa	80,70
R4	Autopista del Sur	52,50
M12 Eje Aeropuerto	AEACE	9,40
AP 41 (Madrid-Toledo)	CEA	80,00
Circunvalación Alicante	CIRALSA	142,50
AP7 (Cartagena - Vera)	Aucosta	114,00
AP36 (Ocaña -La Roda)	Madrid-Levante CE	177,30
AP-46 Málaga - Las Pedrizas	Guadalmedina	37,00
* in kilometers		916,80

The length of the concessions mentioned above is about 920 km, equivalent to about 26% of the total length of the Spanish motorways. Estimated bank debt for these toll roads exceeds € 3, 94 million[17]. See table 2.

There are basically three reasons that caused economic financial distress in the specific sample of toll roads described above:

i) Insufficient revenues due to traffic shortfalls. The existence of traffic deficit comes from an optimistic bias of the initial business plans as well as of the impact of economic crisis, which has reduced traffic during the ramp-up period. The forecasts for the period 2010-13 suggest that the expected revenues of the concessions under analysis will be as average barely 36% of revenues reported in the business plan of the tender. That means a 64% overestimation of traffic projections. In theory, the analysis carried out by lenders should have detected this bias. But somehow in the case of toll roads in the sample it did not happen.

ii) Expropriation overruns cost. For the selected sample the estimated value of expropriation cost overruns amounts to € 1.6 billion.

[17] By December 2010 the road Malaga-Las Pedrizas had been solely funded exclusively with equity (without using debt). For this reason, this highway was not included in the sample.

iii) Construction overruns cost. The amount reported by the concessionaires amounts to € 620 million in the case of the tolled roads sample. However, in practice only a fraction of that amount will be accepted by the government as eligible for cost overrun compensations. See table 3.

Contingent liabilities are calculated below according to two criteria: maximum and expected amount.

Table 3

Aggregated data for 10 tolled motorways*

Bank senior loans	3.939
Traffic ratio (1)	36%
Expropriation cost overrruns	1.600
Construction cost overrruns	620
Financial Liabilities of Government	3.499

*.- Alicante Cartagena; R3-5 (Accesos Madrid); Santiago-Orense (Acega); R2; R4; M12 Eje Aeropuerto; AP 41 (Madrid-Toledo); Circunvalación Alicante; AP7 (Cartagena - Vera); AP36 (Ocaña -La Roda)

(1).- Average ratio 2011-13: expected / disclosed in tender business plan

€ million

3.1. Estimation of maximum amount of contingent liabilities

The maximum amount for the public sector contingent liabilities can be approached through the concept of the *financial liability of the government.*

As in many countries the principle of financial liability of the government is posited in administrative law doctrine together with the legality principle, as an essential principle of administrative law. The so called in Spain “responsabilidad patrimonial de la Administración” is a solid guarantee established in Spanish law. It operates to compensate damages which would result from termination of the concession for a number of reasons. Generally speaking, the public sector's liability is based on its duty to compensate the harm caused by its exercise of the powers to terminate the concession attributed to it, in certain cases by the law, thereby avoiding the undue enrichment that would ensue for the public sector if such termination did not entail payment of, at least, the motorway works and installations executed by the operator and owned by the government[18].

The duty of the Administration to make repairs for injury caused by its actions to the property of the citizens is a principle manifested not only in the contractual relations maintained by the Administration but also outside of that sphere. According to that, in the event of termination, the public sector must pay, in all cases, to the contractor the price of the works and installations executed by the contractor and which will become property of the government. To do that, the government will take into account the condition of the project and the time remaining until the reversion. The breach by the Administration or by the contractor of the contractual obligations will produce the effects provided in the specific provisions in contracts. The contractor shall be entitled to receive interest at the legal rate on the amounts owed or economic values agreed, as from their stipulated due date, as well as compensation for the damages and losses suffered. The government should compensate the contractor for the damages and losses occasioned thereto, including the loss of future income based on the operating results of the last years and loss of value of the works and installations that are not to be reverted to the government, taking into account their degree of amortization.

Each motorway has a disclosed amount of financial liability of the government in the concession contract. The sum of these amounts for the motorways of the sample amounts to € 3.50 billion. Since the total debt granted by banks to toll roads in the sample has to be refinanced in the short term, the government risk comes from the potential reluctance of the banks to refinance this debt.

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[18] In the Spanish case, this principle is linked to the proclamation of the rule of law and the principle of the responsibility of public powers set out in the Article 106.2 of the Spanish Constitution, proclaiming that "private individuals shall, under the terms laid down by law, be entitled to compensation for any loss they may suffer to their property or rights, except in cases of force majeure, whenever such loss is the result of the operation of public services."

Around 30 international institutions are currently financing toll roads included in the sample. Their share in the total senior bank debt exceeds 30% what increases the risk of a scenario in which the financial liability of the government could be executed. An event never happened before in Spain.

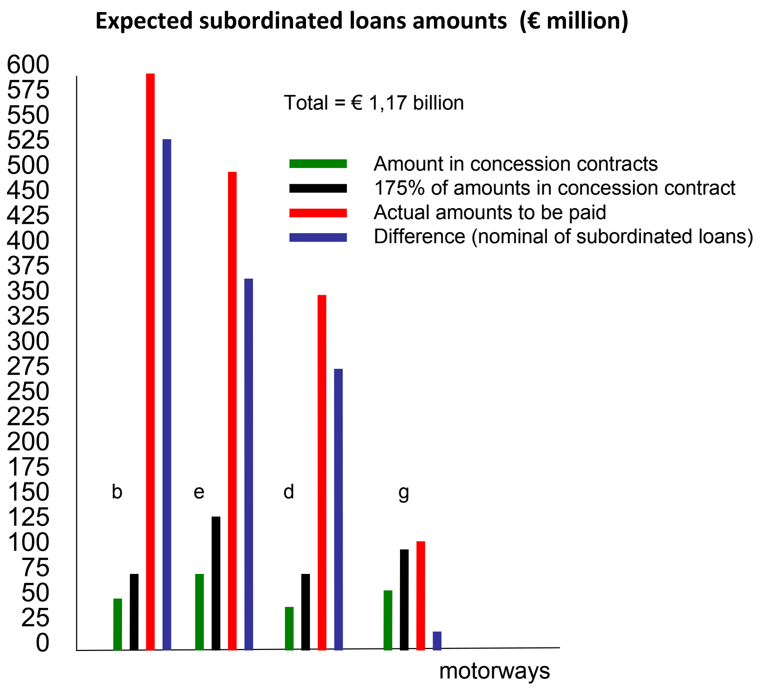
3.2. Estimates of the expected amount of contingent liabilities

The expected amount of contingent liabilities will be the sum of the subordinated loan amount - given by the government to the private companies to compensate the expropriation overruns cost-, the re-equilibrium costs potentially assumed by the public sector and the construction overruns cost.

i) Subordinated loans (underwritten for compensating expropriation cost overruns)

In 2009 the Spanish government decided to help a number of concessionaires of toll roads through the underwriting of subordinated loans to be issued by the concessionaire companies. The allocated amount in the State Budget Law for those subordinated loans totaled € 200 million and € 250 million for years 2010 and 2011 respectively.

Chart 1



Probably in the years to come new amounts will be allocated by the government in the Public Sector Budget Laws. According to the law text, the total figure can be computed as the difference between the actual amounts to be paid by the concessionaires to the owners of the land and 175% of the initially forecasted amounts included in the concession contract. Estimates indicate that the notional value of subordinated loans will reach € 1.17 billion. See chart 1.

The subordinated loans underwritten by the government are subsidized. Their interest rates are as low as 1.75%, with 3 years grace period for principal and interest. Subordinated loans will be payable when the income increases due to improved traffic or tariff increase. In order to estimate the public budget risk derived from the underwriting of subordinated loans by the government, a simulation was carried out. Three different scenarios were used regarding the maturity (10, 15 and 20 years) and other three scenarios were used for the credit spread between the swap curve (IRS) and the cost of government funding for those maturities (low, medium and high). The IRS daily average for the last quarter of 2010 was used as reference. See table 4.

Table 4

ASSUMPTIONS

Nominal: subordinated bond	1.171
Interest rate of subordinated bond	1,75%

Maturity	Duration of Subordinated Bond
10	8,393
15	11,392
20	13,924

	Spread to swap (basis points)		
Maturity	low	medium	high
10	175	200	225
15	185	210	235
20	195	220	245

Maturity	Daily average rate *
10	3,129%
15	3,462%
20	3,510%

* Sample period = 25-10-10/24-01-11

	Interest rate of public debt		
Maturity	low	medium	high
10	4,88%	5,13%	5,38%
15	5,31%	5,56%	5,81%
20	5,46%	5,71%	5,96%

	Interest rate difference = public debt vs. subordinated loan		
Maturity	low	medium	high
10	3,13%	3,38%	3,63%
15	3,56%	3,81%	4,06%
20	3,71%	3,96%	4,21%

	Potential Budget Impact spread to swap scenarios		
Maturity	low	medium	high
10	307,6	332,2	356,7
15	475,3	508,6	542,0
20	605,0	645,8	686,6

€ million

According to the considered assumptions, the estimated financial cost for the public sector derived from the underwriting of subordinated loans will be in the range between € million 308 and € 687 million. See table 5

Table 5

Potential Budget Impact			
	spread to swap scenarios		
Maturity	low	medium	high
10	307,6	332,2	356,7
15	475,3	508,6	542,0
20	605,0	645,8	686,6

€ million

ii) Re-equilibrium costs

The common experience of the distressed toll roads under analysis is the existence of traffic deficit during the ramp-up periods. In 2010 the Spanish government decided to help them through the implementation of a "compensation account" that may be described as a senior loan whose balance varies annually depending on the difference between the initially expected traffic and the actual one[19].

The eligibility criteria to benefit from the compensation account consist of having a revenue level below the 80% of the forecasted revenues in the economic plan included in the concession´s tender (TR). The maximum annual limit of the compensation account for the period t (CA_t) is calculated as the difference between 80% of TR_t and CR_t, such that CR_t is the actual commercial revenue of the concessionaire for period t.

There is a second limitation such that CAt cannot be higher than 49% (CA_t + CR_t). Hence, CA_t cannot be higher than 96% CR_t. When $CR_t > TR_t$, the account balance receives a debit. The debit for the period will be 50% of ($CR_t - TR_t$). As a consequence, the balance of the compensation account (BCA) at period t could be expressed as

$$BCA_t = \sum \min [0{,}96\ CR_t ;(0{,}8\ TR_t – CR_t)] - \sum 50\% (CR_t - TR_t) \text{ if } CR_t > TR_t \quad (4)$$

[19] It was regulated by Ley 43/2010, del Servicio Postal Universal de los Derechos de los Ususarios y del Mercado Postal (December, 2010.

The current law considers a period of 3 years for the annual allocation of credits in the compensation account. It is expected that in this period all the entries will be credits[20]. According to the law after this period the accumulated amount of the credit balance will be capitalized using as a discount rate the higher figure among the following ones:

i) a fixed interest rate of 1,75%;
ii) [CA/TI] [75% CR – (TI/CT)]

such that TI is the total investment in the motorway and CT is the concession term.

A simulation exercise has been carried out in order to estimate the potential contingent liabilities derived from the compensation account. For this purpose it has been modelled a “synthetic toll motorway”. The considered assumptions are the following:

i) The average growth rate, disclosed in the business plan, for the whole period is 2.61%[21]. This growth rate is taken as the benchmark.

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[20] For year 2011 the amount allocated in the public sector budget for the compensation account reached € 80.1 million.

[21] This figure is consistent with the benchmark growth rate of a concession of 45 years (the average maturity of 10 concessions in the sample). It was considered a scenario with no fare increases and no inflation. In practice, the rates of the concessions in the sample are linked to inflation, but also their financial liabilities are generally floating rate loans (at least partially hedged to changes in interest rates).

Hypothesis of Traffic in Tender Business Plan

years	growth rate
5	5%
5	4%
10	3%
10	2%
15	1,5%
45	2,61%

So the correlation between inflation and nominal interest rate should be taken into account.

ii) The remaining concession term is 38 years (in line with the average of the analyzed toll roads).
iii) Regarding the difference between the actual traffic growth rate and the traffic growth included in the business plan, it has been used a range between 1.75% and 3.50%.
iv) It has been considered a range between 35% and 45% as the current ratio of actual commercial revenues in terms of the forecasted revenues in the initial business plan

The simulation results suggest the following:

i) In a scenario where the actual business revenue represents 35% of revenue originally planned, it is required a permanent positive difference in the rate of traffic growth around 4.45% to cancel the net balance of compensation account at the end of the concession period.
ii) Given a rate of growth between 2% and 3% above the benchmark, the net present value of the compensation account would range between € 0.61 and € 1.27 billion.

Table 6

Net present value of the balance of the compensation account at the end of the concession period *

	Growth rate difference: actual versus forecasted							
Ratio CR/TR after 7,25 years of concession	1,75%	**2,00%**	2,25%	2,50%	2,75%	**3,00%**	3,25%	3,50%
35%	1.561	**1.271**	1.032	837	706	**609**	509	403
40%	954	**750**	609	500	417	**327**	237	146
45%	515	**317**	219	157	103	**51**	34	-

€ million

* Discount rate: 6%

iii) To repay the compensation account, the concession term should be extended in a range from 15 to 38 years if the ratio of actual revenues versus initially forecasted revenues is 35% and the traffic growth rate ranges from 2% to 3% above the benchmark rate. See table 7.

Table 7

Extension term requiered to offset the compensation account (in years)								
	Growth rate difference: actual versus forecasted							
Ratio CR/TR after 7,25 years of concession	1,75%	**2,00%**	2,25%	2,50%	2,75%	**3,00%**	3,25%	3,50%
35%	47	**38**	30	24	19	**15**	12	8
40%	39	**31**	25	19	15	**11**	8	5
45%	28	**18**	13	8	4	**2**	1	-

iv) A free extension of the concession term means an opportunity cost for the government. In the considered scenarios, the net present value of the lost revenues ranges from € 2.42 billion to € 3.39 billion.

v) Another conclusion to point out is that only if the traffic growth rate above the benchmark rate is below 1.75%, would it be more convenient for the government that the private sector executes the right to call the financial liability (€ 3.5 billion). See table 8

Table 8

Net present value of the opportunity cost due to the extension of the concession period (lost revenues)								
	Growth rate difference: actual versus forecasted							
Ratio CR/TR after 7,25 years of concession	1,75%	**2,00%**	2,25%	2,50%	2,75%	**3,00%**	3,25%	3,50%
35%	3.463	**3.391**	3.172	2.952	2.687	**2.419**	2.194	1.683
40%	2.739	**2.568**	2.385	2.049	1.798	**1.437**	1.117	704
45%	2.356	**1.833**	1.546	1.127	701	**466**	341	-

In order to take into account the combined potential impact of both, the subordinated loans underwriting and the compensation account, three alternative scenarios have been considered. The results suggest that the estimated contingent liabilities range from € 0.92 billion to € 1.96 billion. Hence, the total estimated contingent liabilities would range from 0.09% to 0.18% of nominal GDP (2010). See table 9

Table 9

	subordinated loan		compensation account		subordinated loans	compensation account	total contingent	total contingent/ GDP
Contingent Liabilities								
Scenarios	spread to swap	maturity	CR/TR	excess GR				
A	245 b.p	20	35%	2,00%	686,6	1.270,8	1.957,4	0,18%
B	210 b.p	15	35%	2,50%	508,6	837,2	1.345,8	0,13%
C	175 b.p.	10	35%	3,00%	307,6	608,6	916,2	0,09%

€ million

Nominal GDP (2010) = 1.062,6 € billion

In another vein, a failure in solving the problems of insolvency of toll roads could generate a greater impact on the public debt level. A lost of credibility in the Spanish concession system as a result of the bankruptcy of some toll roads, would raise the risk premium on government debt. To calculate this impact, it has been carried out a extension of the simulation model . The used assumption is that the whole amount of outstanding debt of the public sector has to be refinanced at a higher credit spread. In December 2010 the outstanding public debt reached € 638.77 billion. The assumption used for the average duration of the liabilities was 7 years. See table 10.

Table 10

Spanish Public Sector Financial Liabilities	Outstanding amounts (dec-2010)	%	
Letras del Tesoro 3 months	7,00	1,1%	
Letras del Tesoro 6 months	10,11	1,6%	
Letras del Tesoro 12 months	52,67	8,2%	
Letras del Tesoro 18 months	19,11	3,0%	
Bonos Estado 3 years	64,85	10,2%	
Bonos Estado 5 years	64,43	10,1%	
Bonos Estado 10 years	166,70	26,1%	
Bonos Estado 15 years	72,83	11,4%	
Bonos Estado 30 years	68,33	10,7%	**average duration**
Others	112,74	17,6%	
Total (€ million)	638,767	100,0%	7,01

The main result is that a permanent increase between 2 and 4 basis points in the risk premium would be enough to match the impact in the public debt/GPD ratio of assuming all the estimated contingent liabilities. See table 11

Table 11

Credit spread increase with equivalente results			
Scenarios	contingent liabilities (€ million)	CL/GDP	basis points
A	1957,4	0,18%	4,4
B	1345,8	0,13%	3,0
C	916,2	0,09%	2,0
Outstanding public debt (Dec 2010) - euro million- =		638.767	

4. Concluding remarks

This paper focuses on measuring the Spanish public sector contingent liabilities linked to a number of toll roads in distress. Today there are in Spain more than 3,500 km of tolled roads. Of the universe of concessions granted by central government there are basically 11 roads in distress. The economic problems of those concessions are linked to traffic shortfalls (the traffic was overestimated in 64%); expropriation cost overruns (€ 1.6 billion) and construction cost overruns (€ 620 million).

The total public financial liability implied in the toll roads in the sample is € 3.5 billion or 0.33% of nominal GDP (2010). In order to avoid the failure risk the Spanish government has designed several policies. In 2009 it implemented an underwriting policy of subordinated loans to be issued by the concessionaire companies for an expected amount of €1.17 billion, whose financial cost is estimated in a range between € 308 million and € 687 million. In addition, in 2010 the government implemented another loan (“compensation account”), whose balance varies annually depending on the difference between the initially expected traffic and the actual one. If we contemplate a traffic growth rate in the years to come between 2.00% and 3.00% above of the benchmark rate, the net present value of the balance at the end of the concession term would range between € 0.61billion and € 1.27 billion. A free extension of the concession terms to enable the repayment would be an opportunity cost to the government such that the net present value of lost revenues would be at a range between € 2.42 billion and 3.39 € billion.

In summary, the estimated contingent liabilities range from 0.09% to 0.18% of nominal GDP (2010). And the extension of the concession terms needed to repay the loans granted by the government to the concessionaires, would mean an opportunity cost to the public sector of between 0.23% and 0.32% of the nominal GDP.

A final result to keep in mind is that a failure in solving the problems of insolvency of toll roads could generate a much larger impact on the level of public debt. A lost of credibility in the Spanish concession system, as a result of the failure of some toll roads, would raise the risk premium on government debt. The estimate finds that a permanent increase between 2 and 4 basis points in the risk premium would have the same impact that assuming all the contingent liabilities.

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