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Working Paper

Public private partnerships for transport infrastructure: Renegotiations, how to approach them and economic outcomes

International Transport Forum Discussion Paper, No. 2014-25

Provided in Cooperation with:

International Transport Forum (ITF), OECD

Suggested Citation: Makovsek, Dejan; Hasselgren, Bjorn; Perkins, Stephen (2015) : Public private partnerships for transport infrastructure: Renegotiations, how to approach them and economic outcomes, International Transport Forum Discussion Paper, No. 2014-25, Organisation for Economic Co-operation and Development (OECD), International Transport Forum, Paris

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Public Private Partnerships for Transport Infrastructure :

Renegotiations, How to Approach Them and
Economic Outcomes

Roundtable Summary and Conclusions

25

Discussion Paper 2014 • 25

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February 2015

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1. Introduction

The use of public private partnerships (PPPs) for investment in transport infrastructure has a long history, spreading rapidly in Latin America in the 1980s and in the 1990s in the UK. There are many forms of PPP, ranging from the project finance type (e.g. Design, Build, Finance, Maintain, Operate (DBFMO) contracts) to concessions with economic regulation, with the line between partnership and outright privatisation somewhat blurred. PPPs sought to bring efficiency incentives from private sector management into network industries (power transmission, water supply, road and rail infrastructure provision) that bear the hallmarks of natural monopoly and were traditionally managed by the state in many places.

To enable private participation in these industries a solution needed to be invented for a challenge, aptly called the time inconsistency problem (Helm 2009). This stands for the often observed short-termism in the behaviour of governments, who are inclined to serve short-term voter expectations before long-term welfare maximisation. For example, the state can choose to spend less on infrastructure maintenance and renewals as the effects of reduced service quality will not be immediately visible, to release money for spending on short-term priorities. It can choose to build cheaper infrastructure, without consideration for higher maintenance cost later on, when the relatively poor quality infrastructure is in operation. Paying for higher costs in the long-term will be a problem for future governments (but many of the same voters). If finance from capital markets is to be attracted to public infrastructure investment it needs to be insulated from such opportunistic behaviour.

PPP contracts embrace within a single contract both the construction of infrastructure and either its operation by the private partner or where the private partner is responsible for the asset being available for use during the operational period. The logic is that a competitively tendered combined contract will be the best way to secure both the efficient construction and use of the asset, in particular by avoiding excessive operational, maintenance and upgrade costs arising from, on the one hand, over-engineering in the construction phase or, on the other hand, poor quality construction. In this way the public sector can best secure its service objectives - i.e. the reason for wanting the infrastructure - at a cost which represents value for money.

The core principle behind the PPP is the creation of a contractual bubble – a framework of contracts that is supposed to shield the private investor from opportunistic behaviour and from inconsistency when governments change (of course it should also shield the public sector from opportunism by the private party). In theory, if the private investor sticks to the letter of his PPP contract, cost recovery and a risk adjusted return on investment is likely.

PPPs bring efficiency incentives to transport infrastructure through competition for a contract. As infrastructure provision often has the characteristics of a natural monopoly, there can be no (sufficient) competition in the market for infrastructure services. Actions

that erode the benefits of competition would also largely invalidate the economic rationale for the choice of the PPP in the first place and also often leads to public criticism of the contracts. Thus in principle, upholding the initially agreed contracts is paramount.

No party to the contract can hope to have perfect foresight over the long life of an infrastructure asset or over the life of a contract spanning several decades. It is possible even for very well written contracts, that in exceptional cases objective circumstances outside of the provisions of the initial contract arise, which may work against the initial purpose of the contract. In such cases renegotiation may be necessary. Empirical data (Guasch et al 2014) indicate that renegotiations are not exceptional.

Given the imperative of upholding contracts for efficiency and the daily reality of frequent renegotiation, the two main questions for this paper are: What are the primary reasons for renegotiations? And more importantly, do they generally uphold the spirit of the contract when they happen or are they more often motivated by interests, other than efficiency?

2. PPP Renegotiations Defined

Over its lifetime, the contractual relationship between PPP partners may be subject to many changes. Not all can be defined as contract renegotiations. Renegotiation involves re-opening the contract and making changes to its provisions. Adjustments that simply follow the provisions of the contract are not renegotiation. The table below, after Guasch et al. (2014), provides examples of both situations. Many changes to contracts under traditional procurement contracting can similarly be deemed as renegotiations.

The renegotiation examples above involve explicit cases. It should be stressed though, that renegotiation can also be implicit or tacit. This is the case when the public or private side does not enforce the provisions of the contract, without actually opening the contract and without any formal renegotiation taking place.

Table 1. **The difference between contract renegotiations and adjustments in line with the contract**

Renegotiations	
Change in risk assignment and / or in the conditions of the contract	<ul style="list-style-type: none"> • Reduction in the level of service quality provided (e.g. airports, from IATA A to B). • Deferral or advancement of investments by several years. • Extension of the contract term. • Reduction of the guarantee requirements for the private side (financial bonds) • Increase in the level of guarantees provided by the public side (to pay lenders). • Delays to a reduction of tariffs (tolls). • Reduction of fees for the public side. • Changes in any of these conditions to avoid bankruptcy of the operator.
Change in project scope (if this was not covered in the contract).	<ul style="list-style-type: none"> • Public side requests for additional investments. • Private side proposals for additional investments. • Grant of additional land for development serviced by the infrastructure. • Requests from the public side for additional interconnections with public (untolled, road) network.
Adjustments	
Adjustments in line with the contract provisions	<ul style="list-style-type: none"> • Adjustments to tariffs in line with a formula set in the contract or indexed by inflation. • Activation of triggers, which make predefined investments become mandatory. • Payments to the operator provided for in the contract.

Source: Guasch et al 2014.

3. Incidence of PPP Renegotiation

The most detailed account available for the incidence of renegotiation in PPPs is for Latin America and the Caribbean, compiled by the World Bank. From 1990 to 2013 more than 1 700 PPP projects reached financial closure in the region. Table 2 summarises the data on the frequency of renegotiation from this source and similar studies, although the available research is very limited for some regions. Renegotiation is most frequent in Latin America and the Caribbean but is by no means limited to developing countries.

Table 2. **Renegotiations of PPPs in different regions**

Region / country	Sector	% of renegotiated contracts	Source
Latin America and Caribbean	Total	68%	Guasch et al (2014)
	Electricity	41%	
	Transport	78%	
	Water	92%	
India	All sectors	0%	Guasch et al (2014)
US	Highways	40%	*Engel et al. 2011
France	Highways	50%	Atthias and Saussier 2007
	Parking	73%	Beuve et al 2013
UK	All sectors	22%	*NAO 2003
UK (Scotland)	All sectors	51%	*CEPA 2005

Note: (*) These studies include samples, which may not be representative of the population at the time of sampling.

The results in the table above should be treated with caution. They show that PPP renegotiation exists on many continents but they cannot be used to infer the average frequency of PPP renegotiations in different locations or sectors. The primary problem remains the lack of data on renegotiations and their nature. Of the studies cited, the World Bank data (used in Guasch et al. 2014) and the Beuve et al (2013)¹ study may be deemed most representative. The other studies cover only a sample of PPPs. The Engel et al (2011) study covered only 20 US road projects while Gifford et al 2014 note, that in the period 1986 – 2013, a total of 512 P3 projects reached financial close in the USA,

¹ The study covered several hundred contracts from three decades by a company, which was a market leader in the country.

most of them highways. The NAO (2003) and CEPA (2005) studies treat 37 and 64 UK projects respectively, when the UK reported 451 operational PFI projects by 2002. The Athias and Saussier (2007) study treats highway projects from a mix of countries but does not cover a sufficient proportion of projects to conclude that the results are representative for all or any of the represented countries.

As can be gathered from the studies of Guasch et al (2014), Bitran et al (2012) and Gifford et al (2014), the outcomes of renegotiations in terms of increase of initial costs or other changes can differ significantly between different jurisdictions with their different sets of legal systems. Bitran et al (2012) in the table below presents the frequency and impacts of renegotiations in Chile, Peru and Colombia. The impacts in Colombia in particular have been large in terms of added cost and extended scope of projects.

Table 3. **Summary statistics on renegotiations in Chile, Peru and Colombia: 1993-2010**

	Chile	Colombia	Peru
Total road concessions	21	25	19
Mean initial value of contract	246	263	166
Mean initial term (years)	25.2	16.7	22.1
Mean concession length (km)	114	195	383
Mean concession years elapsed	12.5	9.0	4.6
Renegotiated road concessions	18	21	11
Total number of renegotiations	60	430	53
Mean number of renegotiations per concession	3.3	20.5	4.8
Mean time of first renegotiation (years)	2.7	1.0	1.4
Mean fiscal cost of renegotiations *	47	266	28
Mean fiscal costs / initial value (percentage)	17	282	13
Mean added term (years)	0.9	6.3	0.8
Mean added length (km)	0	54.6	0
Number of renegotiations / concessions year elapsed	0.2	1.9	0.9

Note: (*) Constant USD Dec 2009, million.

Source: Bitran et al 2012.

In contrast, impacts of changes to the contracts in the UK generally appear to be quite limited. NAO (2008) reports the monetary impact of changes to contracts for the year 2006 in their survey of 171 PFI projects (from all sectors). They amounted to a 1.1 % increase in unitary charges for the projects in question. Unfortunately, a more comprehensive view on the impact of changes over the life of the projects is not available. The majority (82%) of changes involved £5 000 or less. Nearly all changes originated with a request from the public sector rather than from the private sector contractor or as a result of a change in law.

There have been infrequent cases of high impact renegotiations with significant consequences for budgets, such as the Channel Tunnel Rail Link. The contract to build the line to London and take over running of Eurostar international train services was awarded to London & Continental Railways Limited in 1996 with the government providing grants totalling £1.8 billion for the construction of the rail infrastructure and its use by domestic train services. Renegotiation in 1998 and resale of the failing concession in 2009/10 resulted in net taxpayer support, largely as a result of debt service

obligations, rising to a total of £10.2 billion through 2070 in 2010 prices according to National Audit Office estimates (ITF 2013).

To provide some perspective, it may be useful to note that renegotiations, as initially defined, are pervasive in traditional procurement as well. In the context of cost overruns in road projects for example, changes in the scope of the project during construction, “scope creep”, is often identified as the primary cause of cost overruns (Makovsek 2013 provides an overview). A straightforward comparison of ex-post cost or benefit deviations against the initial contractual commitments with renegotiations in PPPs is unfortunately not available². There are, however, indications that PPPs, at least in some industrialised countries have superior performance as far the construction phase is concerned in terms of on-budget and on-time delivery. The table below shows the example for Australia. The superior performance suggested in the table below is subject to caveats.³

Table 4. **Average cost overruns in PPPs and traditional projects in Australia**

Projects	Budget approval	Contractual commitment
No of observations	43	40
Traditional projects	19.7%	18.0%
PPP projects	7.8%	4.3%
Difference (Traditional – PPP)	11.9%	13.7%

Source: Duffield et al. 2008.

There is little data on tacit renegotiation available, but the limited available research suggests this could be an issue even in countries with the most complete regulatory environments. NAO (2008) in the UK for example reported that over 15 per cent of 171 PFI projects sampled at the time did not have their contract managed on a full time basis. Of course there is always a confounding problem – i.e. when is it tacit renegotiation and when is it just inadequate contract administration and management.

In summary, the available research appears to show that renegotiations are not uncommon in PPPs (as well as with traditional procurement contracts). Their frequency in some countries, suggests that they are not the result of rare changes in external conditions in these countries. And for the very largest renegotiations, their sheer size suggests that either renegotiation was not entirely the result of unforeseeable circumstances or PPP was not an appropriate choice for project delivery. The reasons for renegotiations are explored to some detail in the next chapter.

² A volume of literature on infrastructure project cost overruns exists, but most of them report only the magnitude of cost overruns, and not the causes. It is not appropriate to equate cost-overruns against the initial contract with contract renegotiations. This would only be the case in lump-sum contracts, whereas in other cases it could be the result of the risks allocated to/borne by the public side.

³ Firstly, we do not know what the relative price for the infrastructure delivery is (what is the price of risk transfer to the private sector, life cycle optimisation considerations aside). Secondly, in traditional procurement any “renegotiations” have to occur during or immediately after construction. In the case of PPPs they could theoretically occur much later, which is never captured by studies, dealing with construction cost performance.

3. Causes of Renegotiations

Examples of the causes of PPP renegotiation

The research presented in the discussion papers for the Roundtable shows that the nature of renegotiations is to some extent country or region-specific. In Latin America and the Caribbean, Guasch et al (2014) and Bitran et al (2012) note that most renegotiations take place very early after financial close, during or even before the construction phase. This trend is especially prominent in the transport (and water/sanitation) sector, where 78% of PPPs get renegotiated, on average 0.9 years after financial close.

The mean fiscal cost of renegotiations reported in table 3 for Chile, Peru and Colombia shows that the scope of the projects was significantly increased by renegotiation. Bitran et al. (2012) further show that this mainly relates to increase in scope during construction, although a significant part also relates to changes in conditions during operation. A substantial share of these changes is financed through a transfer of obligations to future governments (e.g. concession extensions) and users (e.g. tariff increases).

As noted by Engel et al. (2014) most of these renegotiations were by mutual agreement, without conflict between the parties. This is true for 83 % of renegotiations in Chile, 98% of the cases in Colombia and in all cases in Peru. The dominant initiator of renegotiations differs by country (government, private party or both). But given that most renegotiations are by agreement of both parties, which party actually initiated the renegotiations is perhaps unimportant. This situation is consistent with opportunistic behaviour of both parties to the contract. Engel et al (2014) suggest:

- firms competing for projects can make loss-making offers, expecting to recoup their losses through renegotiation; while
- renegotiation can be used by government to increase expenditure beyond agreed fiscal spending limits.

This situation is not much different from some of the weaknesses observed in traditional procurement procedures that PPP contracts are supposed to overcome. Opportunistic behaviour of the government in that context is termed strategic misrepresentation⁴

⁴ The term "strategic misrepresentation" implies a miss-statement of fact or submission of misleading information. It appears in the research literature in relation to budget preparation, investment appraisal (e.g. deliberate underestimation of cost) and in other examples. A related term refers to the strategic behaviour of bidders, known in the research literature as "low-balling". It refers to behaviour, where the bidders submit unrealistically low bids, assuming that they will be able to achieve renegotiation later, through hold-up or other means. In effect low-balling is a bet. The additional revenue from the renegotiation might not necessarily materialize (this depends on the behaviour of the procurement authority).

(Flyvbjerg et al. 2002) and manifests itself in scope creep during project execution. Opportunistic behaviour on the contractor side manifests a well-known functional relationship between the distance of low (winning) bids from the average of other bids and the magnitude of later cost overruns, recovered through renegotiation (Williams et al 1999; Jähren and Ashe 1990).

An (additional) element that appears to work in favour of bidder opportunism is the absence of an institutional framework that provides for guaranteed service provision in the case of operator bankruptcy, for example by a government department operating services on its own account. As noted by Guasch et al. (2014) governments in Latin America are not generally inclined to cancel contracts (only about 5 % of contracts get cancelled on average) or allow operator bankruptcy.

This is mirrored by a converse situation in the US, where operator bankruptcies are not uncommon. Gifford et al (2014) note, that the U.S. institutional framework helps protect the public sector from private opportunism by guaranteeing service provision even if the private entity files for bankruptcy. In the U.S. the bankruptcy framework primarily serves to protect debtors, aiming to help companies survive liquidity crises. As mentioned in Cirmizi et al. (2012) the framework usually allows the debtor to keep control of the company during the bankruptcy event and even allows the debtor to acquire additional debt to restructure the company. In the US the companies tend to stay in control while trying to survive. Conversely, in the EU, the institutional framework is more lender-friendly and the court takes full control in the case of bankruptcy.

While each situation is project specific, the procedure in case of concessionaire failure is partly addressed in the terms of the concession. Expenditures for operations and maintenance are normally given precedence under concession and bond provisions but it depends on how project (or other) revenues are pledged. Bondholders and creditors have certain rights under project-specific Trust Indenture⁵ and under state-specific bankruptcy laws. The law differs significantly between States in the US. In general, the rights of lenders and others to the cash flow apply to net income flows after adequate funding for operations and maintenance has been reserved. Lenders often have step-in rights but the public agency (usually the owner) often has the right to transfer the concession and over-riding step-in rights to keep the facility operating. And of course, there may be judicial rulings sought in order to resolve disagreements about what all these terms mean.

The incidence of renegotiation in the US appears to be low, but there is no comprehensive research available to provide detailed statistics. Gifford et al (2014) focussed specifically on cases where changes to the contract did occur. Of the six cases studied, only three could be regarded as renegotiations, whereas three were bankruptcies. In the US case studies there is also no clear-cut direction or dominant reason for renegotiation. External shocks initiated several of the renegotiations, in particular the 2008 financial crisis affected travel demand and consequently toll revenues. Complexity in agreements made it difficult to write a “nearly complete” contract in two cases and the evolving institutional experience might have played a role.

⁵ A Trust Indenture is an agreement in the bond contract between a bond issuer and a trustee. It represents the bondholder's interests by highlighting the rules and responsibilities that each party must adhere to. It may also include a definition of the source from which the income stream for the bond is derived.

Simple inferences, identifying one single driver as responsible for renegotiations, were not confirmed.

In Portugal, the economic crisis prompted much of the national highway programme to be renegotiated. Portugal's PPP projects were remunerated by availability payments, and the toll motorway network was extended to regions with low demand. This became very difficult to sustain with the onset of the economic crisis and worsening public accounts. Systematic renegotiation suspended new projects and led to an overall reduction of public payments, reducing IRRs by cuts in payments for CAPEX and OPEX⁶ (Guasch et al. 2014).

In India, no renegotiations have been allowed by the government to date, several years after many of the several hundred PPP projects went into operation. Reportedly there have been many requests for renegotiation by the private parties, possibly due to over-aggressive bidding. The standard road sector PPP contract developed in India provides for a range of foreseeable changes in conditions that can be accommodated without renegotiation. In order to minimise moral hazard in the bidding and project specification processes, renegotiation is reserved for very exceptional circumstances.

In the UK, NAO (2008) reports in their survey of 171 PFI projects (from all sectors) for the year 2006 that *"One in five projects responding to our survey stated that work requested as a change since they became operational had been considered for inclusion in the original deal. In just under a half of these cases, work was taken out of the original deals for reasons of affordability, including changes or additions to assets ranging in value from £70,000 to £17 million. It is likely, however, that these projects will have paid more to introduce this work after they were operational, partly because of a lack of competitive tension once the incumbent contractor was in place and partly because the original design may not have incorporated the extra work."* As already noted, however, the impact of these changes was limited (a 1.1% change in annual charges). In addition, 90% of these changes resulted from a handful of projects. Even if the trend was the same year on year during, for example, 20 years of operation, it would be difficult to suggest most renegotiations in the UK result from opportunistic behaviour of either party. It is clear, however, that such reasoning cannot be simply translated to all shapes and sizes of the projects. Major projects will always run the risk of attracting opportunistic behaviour on either side and a few renegotiations on that scale can lead to massive budgetary impacts (e.g. the Channel Tunnel Rail Link).

NAO (2008) provides practical examples of changes in PPP contracts reported in their survey for different sectors of the economy (see Table 5). The table presents two types of changes – examples of changes in broader policies (which would affect all projects) and examples of localised change (which regard the specific project). Perhaps some of the changes leading to renegotiation could have been anticipated and a nearly complete contract could have been written. But over the decades a PPP contract might last, everything will not be possible to anticipate.

⁶ The IRR-Internal Rate of Return is the rate at which the present value of all future cash flow is equal to the initial investment. The higher the IRR, the more attractive the investment is to investors. Reducing the payments to the private partner for the initial investment (CAPEX - Capital Expenditures) or the payments for the operation of the asset (OPEX - Operational Expenditures), will reduce the IRR.

Table 5. **Examples of contract changes in PFI projects in the UK**

Sector	Examples of policy change	Examples of localised change
Hospitals	Agenda for Change – updating the terms and conditions of NHS staff transferred to the private sector.	NHS Trust needs to change the cleaning and isolation regimes in response to infection control issues.
	Payment by Results – hospitals may need to alter bed numbers to reflect changing demand.	Hospital staff request new data points and sockets for an office.
Schools	A move to electronic whiteboards requires new infrastructure.	Head teacher wants to reorganise a classroom or to introduce air conditioning.
	Changing food standards for school dinners require different service responses.	
Prisons	National Offender Management Service – integration of prisons and probation services leading to a change in service level requirements and key performance indicators in existing PFI contracts.	CCTV cameras are needed to combat poor behaviour or vandalism.
		Existing prison buildings are extended to increase capacity in light of higher demand for prison spaces.
Roads	New road widening or traffic management scheme.	Safety study indicates that the layout of a junction needs improving.
	New road surfacing standards.	Changes to signs or safety fencing.
Social housing	Carbon emission policies require upgrading of insulation.	Installation of additional electricity sockets in existing houses.
Waste	Changes to statutory targets for recycling and composting.	Alterations to deal with expansion of local waste recycling.
		Accommodating advances in technology.
Street lighting	Energy saving policies require changes to lighting units.	Adding Christmas decorations and advertising to lamp posts.

Source: NAO 2008.

There is less information available for other countries on the exact nature and reasons for renegotiations, but given this brief overview, there is a multitude of reasons from clearly objective to highly subjective motivations. Not all renegotiations are the manifestation of opportunistic behaviour. De Brux et al. (2011), from large sample of French car park sector contracts, found a relationship between the frequency of renegotiation and the probability of contract renewal. The sooner the renegotiation after contract signature, the lower the probability for contract renewal. This finding, subject to caveats, suggests that renegotiations between the contract parties could be cooperative (without dis-benefit to the users). In this specific case the occurrence of later renegotiations suggests they may have been the result of the objective need to alter the contract. Conversely, early renegotiations, immediately after the contract signature, suggest potential strategic behaviour by one or the other party, which did not benefit their relationship.

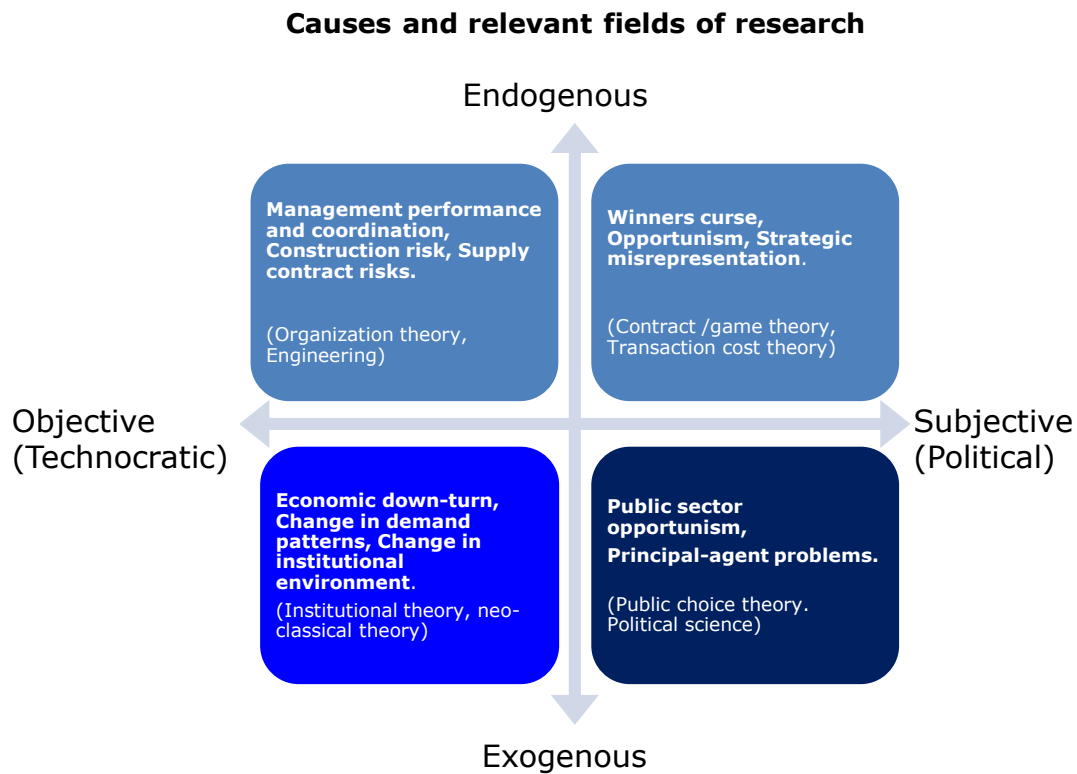
De Brux et al. is one of only a handful of studies that investigate whether renegotiations are an adaptation to unpredicted changes in external conditions and aim to improve outcomes for both parties to the contract. The principal difficulty faced by such studies is availability of data (or the willingness of contractual parties to disclose it). Although much

remains to be understood about the nature of renegotiations, it may be useful to situate the different types of renegotiation and their causes in a logical framework. This is the subject of the next subsection.

Conceptualization of PPP renegotiation causes

The discussion so far has revealed the many different arguments for PPPs as a collaborative structure between the private and the public sector and suggested reasons why renegotiations might arise. In this section an attempt is made to group these arguments and causes into a figure with four fields. Any attempt of formalization is subject to simplification but provides a better overview of the issue at hand.

In the figure below the endogenous and exogenous factors (as seen in relation to the specific PPP-project under consideration) are crossed with objective and subjective (or alternatively more technocratic/more political) factors. In practical terms endogenous reasons pertain to triggers for contract change coming from within the project (e.g. materialisation of a construction risk), while exogenous reasons refer to triggers coming from outside of the project (e.g. economic recession). Objective/technocratic triggers include problems in organisational or management capacity and experience, while the subjective/political aspect pertains to the strategy of each party to the contract. The subjective part of the figure pertains to deliberate behaviour while the objective part does not. The idea is that renegotiation is rooted in one or more of the four fields in the figure. Each of the quadrants also identifies the relevant field of economic theory dealing with the issue.

Figure 1. **Causes of renegotiation – four different categories**


Source: Authors.

The upper left quadrant covers causes relating to the business and management aspects of PPP-projects. These are technocratic to a high degree and can also be seen as objectively identifiable. How is the management structure of the project organized? Does it provide for clear management of the project or is it blurred and imprecise, allowing for ambiguities as regards responsibility and costs? Is the management competent? Is it able to coordinate the partners in the special purpose vehicle set up to finance and construct the project? Is the project well designed from an engineering point of view, or is it designed in a way that will likely lead to inefficiencies and higher than expected costs? This quadrant basically refers to the private sector knowledge base to manage and deliver projects well, which is one of the economic rationales behind the introduction of PPP structures.

Reasons for seeking renegotiation include that that the PPP-project team has not succeeded in setting up a sufficiently clear-cut organizational structure to allow for cost efficient performance in the project. Other reasons could be that a less than optimal engineering solution has been arrived at, that will lead to higher than necessary or expected costs. These inefficiencies would be the responsibility of the private partner. One example is the 2007 bankruptcy of Metronet, holder of two of the three London Underground PPP contracts (NAO 2009).

There may be other causes, related to lack of experience on the public side, leading to problems with project execution, once underway. Gifford et al. (2014) cite some relevant examples in the US. These might include the failure of the public sector to specify technical or functional criteria for the construction of the asset included in the PPP-structure.

The lower left quadrant represents the exogenous technocratic (objective) factors that can lead to PPPs failing to perform as expected. Here the macroeconomic environment is important manifested as, for example, traffic/revenue risk. The 2007-2008 economic down-turn falls into this quadrant. Over the longer term, public policy and changes in consumer preference can alter the modal split, changing the attractiveness of travel by car compared to public transport for example. This can also affect the demand for the services to be provided by PPP projects.

Situations such as these may speak against transferring risks to the private sector, in particular if the private sector can do little to manage them or is no better at prediction than the public sector. Where such risks are transferred to the private sector, substantial risk premiums are likely to be incurred. Traffic demand risk is in nature no different. The private sector can do little to manage it in some cases⁷ and some studies show that the private sector is generally no more accurate in predicting future traffic than the public side (Button & Chen 2014). In addition, at least for the road sector, the studies of Flyvbjerg et al. (2005) and Naess et al. (2006) have suggested that traffic levels are systematically underestimated (so using the private sector as a “detector” of public sector misrepresentation is a costly method, without clear merit).

In general, if the risk allocation between the private and the public side is adequate, then renegotiations due to exogenous events will normally not occur as their risks are clearly dealt with ex-ante (and borne by the public sector). The exception will be a situation where the solvency of the state is threatened, as happened in Portugal in 2008.

This points to the importance of the institutional setting in the specific jurisdiction where the PPP is situated. A strong institutional environment might make the initial allocation of risk and the way challenges to the contract are handled predictable. A weaker institutional environment on the contrary might lead to major uncertainty in respect of these aspects of PPPs. Institutional theory therefore is important as the exogenous causes of renegotiations are analysed.

The upper right quadrant involves issues related to the imperfect and perhaps asymmetrical information available to each party to the project and their strategy for maximizing their payoff. This points to the subjective and often more political nature of causes of renegotiations. Private sector opportunism, such as aggressive bidding with the expectation of ex-post renegotiation, is one strategy. The public sector might be opportunistic as well by colluding with the private partner to get a project through hurdles for project approval or by concealing relevant information from the private side on the risks of the project.

⁷ The point made is case specific. It applies to roads for example, but not so much to passenger franchises in rail, where the operators with their pricing policies and products can substantially influence the ridership on their trains.

The criteria on which contracts are awarded and consistent behaviour in awarding contracts to bids that promise more than can realistically be delivered can drive similar behaviour, even without the strategic intent to game the system. This is termed the winner's curse, implying the only way to get a contract is to make an unsustainable bid. Mechanisms have been devised to counter this, one possibility being to select the second rather than highest bid in closed-envelope auctions. An alternative is also the average bid approach. While this technique has been used in Italy, Belgium, Switzerland, Taiwan, Japan and other countries (De Carolis 2009), its welfare properties are unclear⁸.

More often however, information asymmetries make it feasible for bidders to game the system in different ways. One strategy is back-ending, promising more in the later years of the contract after break-points that provide for renegotiation without serious penalties. This affected some passenger rail franchises awarded in the UK for example.⁹

Finally, **the bottom right quadrant** is concerned with the behaviour of the public side in PPPs and whether government actions represent the best interests of all voters, including the future ones. Governments with a more long-term perspective behave differently than those with a short-term perspective (Olson 1993; Persson & Tabellini 2002). Politicians may commit to PPPs ex-ante knowing that the contract will be opened and adjustments will be needed. The purpose of the PPP in this case may be to transfer the fiscal burden of the investment to the next government, or to bypass budgetary spending restrictions.

Engel et al. (2014) finds evidence for this in Latin American road PPPs. The public sector may behave opportunistically by trying to adopt policies that compromise the business model of the private partner. An example of such behaviour is the case of State Route 91 east-west freeway in Southern California, described by Gifford et al. (2014). Here the state decided to build competing infrastructure parallel to the SR91 P3 toll road to relieve congestion in spite of a non-competition clause in the P3 contract to protect toll revenues. After the private partner blocked the action in court, the state eventually bought back the P3 expressway in order to be able to expand the network as it wished, which could be considered a renegotiation. Many policy changes, however, may not have an opportunistic element and are an inherent risk element of any long term PPP contract (belonging more to the bottom left quadrant).

Principal agent aspects might also be especially difficult in public sector settings. The involved actors (the legislature, individual politicians, executive government and its agencies) might relate to each other in many different ways following a wide spectrum of

⁸ In the absence of insurance, the first price bid (the low bid) carries with it the risk of the bidder being unable to fulfil its contractual obligation (or pushing for renegotiations) at considerable cost to the public. This risk can be reduced with the average bid approach, where the price paid will be higher. Another way to approach the risk of the first price bid is to devote resources to monitoring (benchmarking, preselection etc.) to carefully eliminate bidders likely to default on their obligations. Excessive restrictiveness will also adversely affect competition, leading to a suboptimal outcome for the public partner. Thus in theory, the average bid approach beats first price auctions if the cost of monitoring is high.

⁹ This highlights the relevance of obtaining the financial models of bidders for concession contracts as part of the offer documents and rigorously assessing – if necessary with independent expertise – of the *prima facie* sustainability of the offers based on the models.

aims and objectives, sometimes consistent and sometimes inconsistent with each other. This, of course, introduces a number of possible situations where the relation to the private sector parties and the PPP-project might be extremely difficult to analyse and to manage. Renegotiations might be one result of such principal agent phenomena.

The four quadrants constitute a simple but holistic view of the causes of renegotiation. The basic message on renegotiations as a tool to preserve the economic purpose of the PPP during the life of the project is:

- the contract should not be opened due to endogenous reasons (top two quadrants) to the project;
- if the risks are allocated appropriately, objective exogenous reasons (bottom left quadrant) could lead to renegotiations only in extreme circumstances (imminent bankruptcy of the country);
- some renegotiations may be necessary due to changes in policy (subjective/political and exogenous reasons), but that can also open the window to opportunistic behaviour of the policy maker (not all policy initiatives are legitimate);

In general one could say that objective endogenous and exogenous reasons (upper left and lower left quadrants) are less problematic for PPPs. Issues in these two quadrants can be resolved through learning or considered as *force majeure* (general crisis). Issues in the right hand quadrants are more problematic. Opportunistic behaviour on either side is ultimately self-defeating if the purpose is to involve private capital in infrastructure delivery and harvest potential efficiencies.

The electorate is generally not indifferent when massive PPP failures are reported and yet it appears that in some cases the public and the private side can collude in mutual opportunistic behaviour. Given the needs for infrastructure investment and the preference for financing investment from capital markets rather than tax revenue in many countries, remedies against opportunistic behaviour, starting with ruling out renegotiation on all but defined and exceptional grounds, are essential. These are discussed in the next section.

4. How to Approach Renegotiations

As was noted in the introduction, the economic purpose of a PPP is fulfilled only if the competition for the contract was effective. At risk of oversimplifying, one could state that any change to the contract after it was signed that undermines competition is undesirable. The question is, are there conditions in the contract that can be changed without inducing opportunistic behaviour, and might therefore legitimately be renegotiated?

Based on our four quadrants, only the bottom left quadrant (exogenous and objective circumstances) has that property; circumstances such as the global financial crisis cannot be predicted or managed within the scope of the contract. Arguably, if you have no awareness of a possible event or its probability it makes no sense to bet for or against it. Moreover, there are numerous other easier ways to behave opportunistically, so why bet on a global economic crisis.

The lower right quadrant deals with situations that are subjective but influence the project from the outside. Renegotiation may be needed here to adjust the PPPs to legitimate changes in policy through the long life of the project. At the same time, opportunistic behaviour on the part of the public side is possible after the contract is agreed, as changes in local government policy towards accommodating traffic in southern California, involving the SR91 expressway P3 example illustrates (section 4.2)¹⁰. Over the long life of typical of transport sector infrastructure projects changes in transport policy may arise that have a material effect on a PPP and could make it necessary to renegotiate the contract.

All the issues covered in the upper quadrants can drive opportunistic behaviour.

- Honest mistakes in the contract can be due to inexperience and are a professional risk (upper left quadrant). If any party to the contract could open it at any time to correct its projections of costs or benefits what would be the point of the contract in the first place? In extreme cases (e.g. if the public side has mis-specified the service required), the contract should be cancelled and retendered¹¹.
- Situations that are subjective, derived from the behaviour of parties to the contract, (e.g. deliberate omissions in the contract with the hope of ex-post renegotiation) and endogenous to the project (upper right quadrant) are by definition managed by the

¹⁰ It should be added, that this was an early US experience with PPPs, and that subsequent contracts define "compensation events" that allow the public to build competing facilities or facilities that harm the demand for the project and how the SPV will be compensated if they do.

¹¹ In this case the cost incurred by the private party in the initial bidding and later on should be taken into account and compensated. In 2012 in the UK, for example, a mistake over passenger forecast methodology in the tendering process for the West Coast Mainline rail franchise on the part of the Government resulted in cancellation of the process, with bidders compensated for the cost of bidding so as not to deter them from taking part in future tenders (<https://www.gov.uk/government/news/west-coast-main-line-franchise-competition-cancelled>).

contract. It is difficult to imagine examples where renegotiation in this area would improve the outcomes for all involved parties (including the users) and not risk inducing opportunistic behaviour.

There may be a need to retain some flexibility and allow for some renegotiation but as soon as that possibility is allowed, there is no guarantee that through this opened door only genuine and objectively necessary changes will pass. We divide our discussion below into two sections, one where the public party has a record of opportunistic behaviour and second, where protection from opportunistic behaviour by the private party is the object.

Guarding against opportunistic behaviour from the public side

Moszoro et al (2014) provide a literature review of studies addressing political and institutional maturity and private investment. In their study, using the World Bank's Private Participation in Infrastructure (PPI) Project Database and other databases, they confirm that the volume of private investment in infrastructure is highly sensitive to the quality of government variables. These include freedom from corruption, rule of law, quality of regulation and the number of legal disputes in the sector. They quantify the increase in investment through PPPs that can be expected as a result of decreasing corruption, improving the rule of law and improving the quality of regulation as well as the negative impact on investment of having one more project going to court. The direction of causality, though intuitively appealing, is not entirely clear nor necessarily linear. Banerjee et al. (2006) for example showed that countries with higher levels of corruption actually attract more PPPs.

That contractual arrangements are no replacement for political credibility can also be concluded from the experience of economic regulators around the world. In the UK, for example, the Regulatory Asset Based model (RAB)¹² for financing infrastructure through capital markets has the lowest cost of financing, right after the government bonds. This reflects effective insulation from time-inconsistent behaviour on the part of the government through the use of independent regulatory agencies. It represents an alternative to the PPP model for large enough assets or packages of projects. In place of contracts, making regulators dependent on periodic mandates conferred by the legislative arm of government (Parliament) rather than the executive (Cabinet and line Ministries) protects regulatory decisions from short term political imperatives. The executive has the opportunity to make changes by amending the primary legislation (with passage through Parliament) establishing the regulatory agency and can influence regulatory attitudes through the choice of regulators as their mandates arrive at term, although change is constrained by the attitudes of potential investors. As Stern (2013) notes:

"[The RAB models] ... are primarily intended as protection against actions by regulators or governments that could lead to asset stranding. *However, precisely*

¹² In a PPP, all efficiency gains are determined in the competition for the contract (e.g. to construct and operate infrastructure), which will be in place for its duration. There are no additional instruments in place, to capture or share any additional efficiency or provide incentives for those during the operation of the asset. In a RAB model, the efficiency gains are primarily derived from incentives of an economic regulator (a dedicated independent institution) to the infrastructure manager (the company, with a license to construct and operate infrastructure). The incentives involve putting the recovery of cost of the private investors at risk, in case the agreed efficiency targets (improvements) are not met. Both approaches have their challenges, which are beyond the scope of this paper.

because they have no explicit legislative support, their reliability as a commitment device depends crucially on regulators keeping to the spirit as well as the letter of RAB commitments. If UK regulators were seen by investors as violating that spirit, then the RAB's credibility as a commitment device could disappear very quickly – and would probably be virtually impossible to retrieve. In this regard, investor perceptions are almost as important if not more important than observed developments. ...

The key conclusion [...] is that the role of the RAB as a commitment device is a consequence of the quality of its implementation rather than from the definition of the RAB per se."

Political or regulatory credibility is a form of reputation, it takes many actions to build, but is easily undermined. As the public side is ultimately the responsible parent of a PPP contract, it has to signal whether it condones opportunistic behaviour or not. The behaviour of the state will determine the strategy of the private sector. As Guasch et al (2014) report, many countries are signalling that they are willing to progress in terms of political credibility. Lessons learned in PPP renegotiations in Latin American countries have motivated changes in the legislative frameworks of Peru, Chile, Colombia and Mexico for example. Some specific measures include:

- Transparency, publishing PPP contract conditions in detail on a public website and use of a PPP delivery unit independent from the line Ministry to control/regulate PPP contracts (Colombia);
- Referral to a sectoral regulator for contract templates and review of PPP contracts (Peru - although negotiation and renegotiation remain the prerogative of the line Ministry with the regulator providing opinions);
- Disuse of clauses providing for adjustments to preserve 'financial equilibrium' (Chile and Peru);
- Platforms for renegotiations led by the Ministry of Finance (Chile and Peru);
- Use of regulatory accounting tools (Peru and Chile);
- A freeze period for renegotiations for the first 3 years (Peru, Colombia).

Given the US example, institutional arrangements providing for the continuity of service provision in case of bankruptcy by a transport operator can be very useful. They greatly strengthen the bargaining position of the public side in enforcing contracts.

Whether all of the measures above will turn out to be efficient or feasible (the freeze period for renegotiation for example) in the long run and not produce other adverse consequences is a matter for further investigation. What is clear is that in general they are directed at maintaining the spirit of the contract.

In many instances the solution is to move some of the responsibility for renegotiation away from the part of government that enters into a PPP contract. Ideally there could be a requirement that if renegotiation is sought by either party to the contract this should involve an application to reopen the contract to an independent regulator to determine if there are legitimate grounds for allowing renegotiation. Such measures would be aimed at reducing the risk of public sector opportunism and of different actors and levels in the public sector acting in inconsistent ways. No country has yet gone this far in the separation of responsibilities.

Guarding against opportunistic behaviour from the private side

The analysis in the previous chapters suggests that opportunistic behaviour from the private side in PPPs can be induced by the behaviour of the public side. Arguably, if institutional measures of the kind discussed in the preceding section were put in place and the spirit of the contract credibly maintained by the public side (with bankruptcy the usual result of deficiencies in the upper left quadrant of figure 1), there would be much less contract renegotiation and the economic impact of the renegotiations that were undertaken would be less significant.

Whilst addressing government credibility is fundamental, a number of other approaches to containing opportunistic behaviour by the private party can be taken. One of the serious problems, highlighted in Latin American case studies (Engel et al. 2014 and Guasch et al. (2014)), is the issue of low-balling or aggressive bidding in PPPs, which lead to large cost overruns, not always with collusion on the public side.

The low-balling issue also concerns traditional procurement. A new EU Directive on Concessions¹³ prescribes overall economic advantage for the awarding body as the basis for awarding contracts as opposed to the lowest bid, which has generally been preferred by some EU countries to avert fears of corruption through inflation of contract prices, as it is a simple and straightforward method. Other approaches are possible, such as pricing the contract according to the average bidding price and awarding it on non-pricing criteria. It is recognized, however, that these approaches are inferior to the surety bond system used in the USA.

A surety company¹⁴ guarantees that a contractor that has obtained a surety bond will fulfil its duties under its procurement contract. In case of failure, both the surety company and the contractor are liable to forfeit the value of the bond to the procuring entity. Calveras et al. (2004, 43) explain that surety companies are regulated and required to have sufficient capital reserves to back the bonds they issue. Because they are responsible for completing the contract or compensating the procuring entity, they are heavily incentivised to screen potential contractors' technical ability and financial status. Many countries require bonds but these are sometimes too small to act as a deterrent to over-bidding.

In some cases, reputation tracking (contractor performance benchmarking) has been employed to avert opportunistic behaviour. The UK Highways Agency for example applies that principle in some simpler contracts. Whether and how such an approach could be employed for the delivery of large and complex infrastructure projects is a challenge as it would have to draw on the international performance of private partners in PPPs that usually involve a special purpose vehicle comprised of a number, sometimes a large number, of construction companies and finance companies. These do not always compete in the same constellations with the same partners.

It is worth noting that the PPPs reviewed in the Latin American case studies (Guasch et al. 2014 and Engel 2014) did not generally employ total lump-sum contracts, or turnkey

¹³ Directive 2014/23/EU of 26 February 2014 on the Award of Concession Contracts, Article 41.

¹⁴ An insurance company that issues a surety bond or a guarantee.

contracts, which require delivery of infrastructure for a fixed price and date. The performance of this kind of contract in PPPs and other project finance deals in the UK, Australia and elsewhere has proved superior to other procurement contract types in terms of on budget and on time delivery. Blanc-Brude & Makovsek (2013) find a median cost overrun rate for turnkey projects of 0% and an average rate of 2%. But such complete transfer of risk opens other questions in terms of a substantially higher price that has to be paid¹⁵.

Other challenges with regard to the PPP renegotiations involve non-opportunistic changes in policy that require an extension of or an addition to existing infrastructure tied into a PPP. Normally, to avoid opportunistic behaviour on the private side, the new extension should be publicly tendered (where new operators can bid together with the existing operator to create competition). But this can be difficult in cases where the additional infrastructure would infringe on the business model of the existing PPP. One way to proceed would be to cancel the existing PPP (the state would have to buy it from the private partner) and retender the existing and new infrastructure together under a new PPP. The EU sets a limit on the value of such changes in Directive 2014/23/EU, but negotiations softened the (extremely tight) limits initially proposed to such a degree that in practice they provide very limited restraint (50% of the value of the initial contract per round of renegotiation). It remains to be seen if the transparency requirements in the form of the obligation to publish Concession Modification Notices will in practice act as a constraint on significant modifications to concession contracts in the EU.

Unsolicited transport infrastructure investment proposals are often viewed as problematic as it is difficult to generate competition for them and there may be a temptation for public authorities to alter priorities to accommodate private finance – at the cost of reduced overall program efficiency. However, unsolicited proposals can be a source of innovation and for that reason they are welcome in some US States. For example, variable tolling in real time as introduced on SR91 in southern California was never in State DoT plans, neither were Virginia’s Capital Beltway express lanes. Virginia requires competing proposals to be sought when such proposals arise, but with only 120 days required for consultation alternative proposals will not always be forthcoming.

Transport infrastructure is not generally created in a competitive market through unsolicited proposals but is subject to a national or regional government plan. Integration of PPPs into such a plan could be challenging if every substantive policy change were to lead to a wave of renegotiations over a host of contracts. From this viewpoint alternative forms of private capital involvement in network industries might have merit. The RAB model is better suited to accommodate changes, which would appear as renegotiations in a PPP. It creates an independently managed environment to accommodate exogenous impacts and policy changes. It has other advantages (such as a lower cost of finance than a PPP) and challenges of its own. Establishing a value for the initial asset base (which in turn determines the returns on investment allowed) is always controversial and the cost of regulatory oversight makes it too costly an arrangement for the average PPP project.

¹⁵ Daito and Gifford (2014) find a statistically significant difference of 66% in contracted prices for CAPEX between P3 DBFOM and Design Build highway projects. Makovsek (2013) based on the study of Blanc-Brude et al. (2006) on EIB financed road projects in Europe illustrated that PPPs can be 19% more expensive (for CAPEX) than traditional procurement even after the construction risk has been taken into account. It is not immediately clear whether this premium in could be explained by life-cycle cost optimisation decisions (building higher quality infrastructure to reduce later cost of maintenance) or other causes.

Some of the advantages of the RAB approach to asset management can be transferred to PPPs. The RAB model relies on an independent regulator to set the framework for alterations to initial contractual conditions and adjudicate on what changes are legitimate. An independent regulator can be given responsibility for some aspects of the oversight of PPPs, as for example is the case with OSITRAN in Peru, or given the authority to adjudicate on when a distressed project should legitimately enter renegotiation rather than bankruptcy proceedings.

5. Conclusion

Although contracts can never be complete, they can be very nearly complete. Foreseeable risks can be allocated between the parties. Clauses in the contract can provide procedures for dealing with unforeseen circumstances – with a test to verify that the existing allocation of risks does not already address the situation. When renegotiation is triggered under such arrangements, an independent jury might be used to check that the outcome is what the parties might have been expected to negotiate if they had foreseen the change. Of course populating such a jury is not without controversy and its judgements may be questioned (and subject to review in court). Establishing such procedures, however, increases transparency.

Renegotiation should not be treated casually. It should be used only exceptionally, as the direct effect will usually be adverse to the public interest – fiscally or through user charges (even if there are long term benefits through maintaining a positive investment climate). The real possibility of bankruptcy, demonstrated through contract terminations, is essential to the market discipline and efficiencies that PPPs are expected to bring to infrastructure investment. Routine renegotiation is a symptom of a disease, reflecting a gap or weakness in contracts, or tolerance towards opportunistic behaviour. Preventing renegotiation is as important as doing it properly. The risk in designing a contract in a way that provides for renegotiation is that it will induce strategic bidding and this has to be countered by a clear policy that renegotiation is reserved for exceptional circumstances.

Provided a nearly complete contract is written and the behaviour of the public side is not opportunistic, (the public side who is the ultimate parent of the contract and ultimately responsible for its outcomes), renegotiations of substantial impact will be few and they will normally be far between..

A crucial element when renegotiations do occur is that the spirit of the contract is maintained. If the parties of the contract are allowed to take back promises given at contract signature, the economic purpose of the PPP contract dissolves. In many countries “taking back promises” has often been the case, with government part of the problem with its own opportunistic behaviour. What the state chooses to signal with the creation or respect of new regulatory institutions or commitment to stick to contract provisions is thus of crucial importance. India has a short track record but now has a large number of PPPs and provides a clear example that it is possible to avoid any renegotiations in the early years after signing PPP contracts, in contrast to the general experience in Latin America and elsewhere. Florida also has a record of only rarely renegotiating, with only one out of 13 road sector PPPs renegotiated.

Where fixed price, fixed date turnkey contracts are not applied, PPPs and traditional procurement contracts seem subject to similar forms of strategic behaviour from bidders. The application of the lowest bid as the principal selection criteria in such a context can lead to over-aggressive bids, unsustainable offers and ultimately renegotiation. Reputation and demonstrated competence ought to be included in selection criteria. Surety bonds to demonstrate the seriousness of bids have proved effective in deterring opportunistic over-bidding when they are sufficiently large. And a supervisory board or regulatory agency separate from the contracting authority to advise or determine when renegotiation is legitimate appears to be a worthwhile safeguard.

It should be noted that there are cases, albeit rare, of renegotiation that benefit all sides, including the users of transport infrastructure. Whilst the Latin American tradition of 'concessionarios progresivos', concession extensions, probably reflects opportunistic behaviour as much as the efficiencies to be achieved by extending contracts while construction equipment is on site, government led or unsolicited proposals from existing concessionaires to extend or bundle old contracts with new can resolve difficult coordination and planning issues.

When governments are not part of the problem, PPPs still remain subject to challenges. Policies will evolve, national infrastructure plans will change. If a transport network consists of many PPPs an adjustment in the national policy might be impeded by the need to renegotiate each and every PPP contract. There are challenges with extending infrastructure managed by an existing PPP contract without losing the benefits of competition. Other forms of private capital involvement exist and the governments would do well to explore their comparative advantages and weaknesses in relation to PPPs when they seek large scale financing of transport infrastructure from capital markets.

Acknowledgements: We would like to thank the participants of the roundtable, on which this paper is based. For the comments on the draft version of this paper, we would like to thank in particular Robert Poole, Jonathan Gifford, Jan Eric Nilsson, Michael Burnett, Porter Wheeler, Patrick Harder and Lisardo Bolanos.

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