POST CRISIS PUBLIC PRIVATE PARTNERSHIP MODELS FOR TRANSPORT INFRASTRUCTURE

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ABSTRACT

Key stakeholders in the post crisis era dictate new conditions and specifications in infrastructure finance generated by a shift in risk assessment estimates and risk allocation and mitigation preferences. By studying this shift in stakeholder perceptions and estimating transport infrastructure needs, new models in infrastructure delivery prevail. These models are intended to provide solutions to transport infrastructure funding needs and alternatives to existing PPP contracts under negotiation.

To identify the shift in stakeholder assessment of key risks and preference in risk allocation, a survey targeting experts in all transport sectors was conducted, with the ultimate scope of identifying the key characteristics of future financing/contractual models in the transport sector and the future generation of PPPs and infrastructure delivery.

Initial findings confirm estimates of differentiated risk behaviour between sovereign debt crisis and non-sovereign debt crisis countries with respect to risk related to financing/ funding and revenues. An increase in risk adverseness demonstrated as an upward trend in risk impact assessments and the proposal for most risks to be shared amongst parties including lenders/financiers. Finally, a downward trend was identified for technical risks.

These findings are discussed with respect to their impact on PPP model developments.

Keywords: PPPs, Risk perceptions, Risk allocation, Economic crisis

INTRODUCTION

The efficient allocation of risks between stakeholders has been one of the main value drivers of introducing private finance for the delivery of public infrastructure and more specifically of infrastructure in the transport sector. These have been the various forms of Public Private Partnerships (PPPs) utilized and encouraged by the public authorities in many developing and developed economies as a means to achieve value for money structures in the transport sector and respond to the ever growing need for capacity and state-of-the-art infrastructure capable to respond to present and future global demographic and societal challenges; energy and natural resource security and efficiency, environment and climate change; economy and technology prospects as they influence transport/economic behaviour and shape mobility.

In Europe, the transport sector was the most favoured in terms of PPPs. Its share in value came close to 80% over the period 1990-2006 (Blanc-Brude et al, 2007). However, the economic crisis has had a severe impact on both the financing model and the sector (cf. figure 1) with investments in transport below 50% in value since 2010 (EPEC, 2012). This is not only evident in the number of new deals but also in the number of projects entering into a renegotiations' phase, as the economic downturn is having a severe effect on traffic volumes and users ability to pay for services.

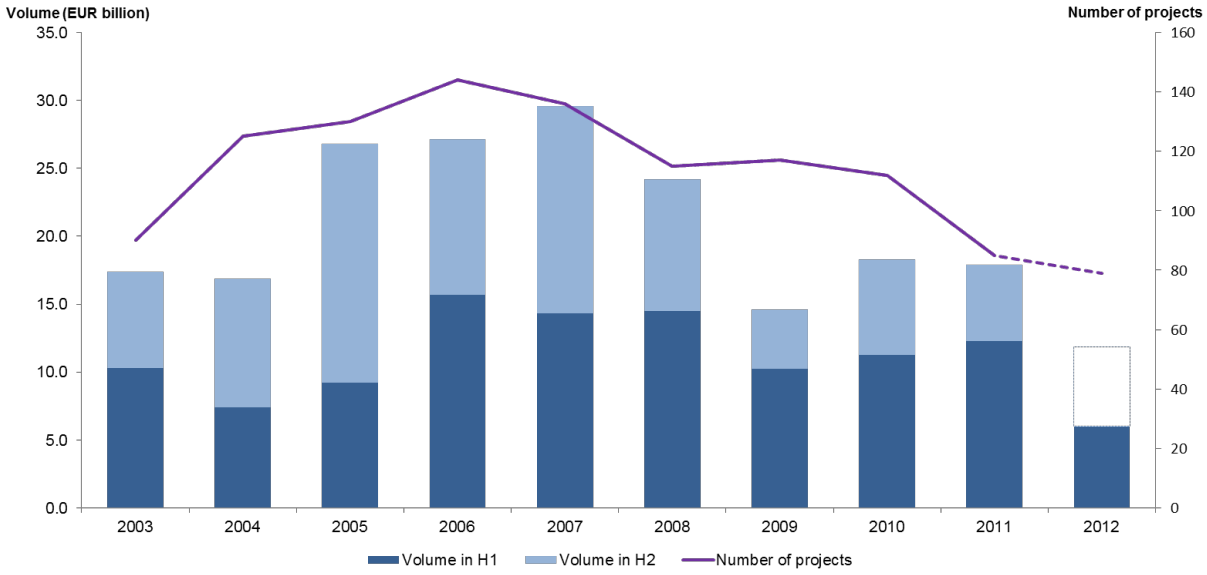


Figure 1: European PPP Market 2003-2012 by Volume and Number of projects (source: EPEC, 2012)

The need to justify the existing PPP models and develop new ones, adjusted to the current and foreseeable economic conditions, requires investigating stakeholders' current risk perceptions and assessments and risk allocation preferences. Identifying shifts in risk assessments is even more important as trends may be indicated justifying changes in model development. To this end, the present research reports on the initial findings of a survey designed to identify shifts in risk assessment before and following the economic crisis, as well as preferred risk allocation. Emphasis has been placed on verifying the various forms of "demand" and identifying the project life cycle phase, which is most vulnerable to the crisis and stakeholder

risk adverse behaviour. Background to the current discussion is offered in the next section of the paper, followed by the detailed description of the survey, the ultimate scope of which is to identify the key characteristics of future financing/contractual models and verify the continued interest in the PPP model for transport infrastructure development. Initial results, presented in the fourth section, confirm estimates of differentiated risk behaviour between sovereign debt crisis and non sovereign debt crisis countries with respect to risk related to financing/ funding and revenues. An increase in risk adverseness demonstrated as an upward trend in risk impact assessments and the proposal for most risks to be shared amongst parties including lenders/financiers. Finally, a downward trend was identified for technical risks. These findings are discussed with respect to their impact on PPP model developments, as expressed in the conclusions and suggestions for future research.

THEORETICAL BACKGROUND

Involving the private sector in the financing of public infrastructure or services, especially in the transport sector, has been a favoured option by governments seeking to provide public infrastructure and services within budgetary constraints. "Arrangements typified by joint working between the public and private sector" have been termed Public Private Partnerships (PPPs) (HMT, 2008). The European Investment Bank (2005) describes PPPs as a "risk sharing investment in the provision of public goods and service, seen by governments as a means to launch investment programs, which would not have been possible within the available public-sector budget, within reasonable time". Transport infrastructure projects delivered through PPPs were based on the forecasting (expectation or anticipation) of a regular and, possibly, increasing stream of revenue generated by the respective traffic. This has been, mostly, related to the positive projection of macroeconomic figures worldwide and less on positive traffic forecasts, which may have been influenced by optimism bias (Flyvbjerg et al, 2002; 2004).

At the core of a PPP arrangement, as for any contractual arrangement, is the transfer of appropriate risks from one partner (public) to the other (private). Successful risk allocation is considered central for the success of a PPP project. The private sector, in all cases, introduces project finance. Project Finance is a financial method that allows project developers to gather the funds needed for the development of a project even though they may lack creditworthiness, as (long term infrastructure) financing is based on projected project cash flows rather than on the balance sheets of the investors (Hillion, 2001). This allows private parties to undertake new ventures without granting the lenders full recourse to their assets. Project finance, also, gives the opportunity to governments to promote large-scale projects without imposing on the current public budget but, however, equally imposes on future state/government revenue streams. Risk mitigation is imperative in these structures. To shield sponsors, a legally and financially independent project company, the Special Purpose Vehicle (SPV), is specifically created for each project, bearing its risks and not exposing the investors (Estache and Trujillo, 2007). Riskier projects may require more complex project finance structures, incorporating corporate finance, securitization, options, insurance provisions and other types of collateral enhancement, so as to mitigate unallocated risks (Tan, 2007).

Structured Finance allows companies/projects to incur debt and receive finance, due to a thorough allocation of the investment risks. Hence, transferring/allocating risks between the public and private sector has significant ramifications with respect to structuring project finance.

With respect to initial risk allocation between the contracting parties there is significant PPP literature on the topic and how it impacts Value for Money (VfM). These studies focus on different types of PPPs, different infrastructure sectors and different countries.

In classical decision theory, risk is generally understood to be the distribution of possible outcomes, their likelihood, and their subjective values (March and Shapira, 1987). Following risk identification, the effective distribution of risks, according to Loosemore *et al*. (2006) should follow established rules, whereas a risk is undertaken by a party when this party has: full awareness of the risk to be undertaken; greater capacity to manage the risk effectively and efficiently; the capacity and resources to cope with the risk eventuating; the preference to undertake the specific risk; the possibility to charge the respective risk premium. On the basis of this fundamental idea, researchers have explored risk allocation strategies in PPP projects (Roumboutsos and Anagnostopoulos, 2008, Akintoye et al, 1998). Evidently, changes in risk assessment lead to effectively different optimum risk allocation strategies. This hypothesis is to be tested in the present research, especially with respect to the impact on traffic volumes and users willingness-to-pay regional and international market structure, economic growth and land-use patterns may have.

Moreover, as highlighted by Evenhuis and Vickerman (2010), transport infrastructure is highly exclusive and asset specificity confers to hold-up risks for both the public and private sector. Once constructed by the private sector the asset cannot be used otherwise to generate revenues, but, simultaneously, the private sector as "owner" of the asset (say in a concession contract) creates for himself a "temporary monopoly" with any policy or regulatory interventions incorporated upfront in the PPP contract. However, the very issue of asset ownership rights is at the heart of a very complex and interrelated set of risks specific to the transport sector (Hart, 2003). These issues concern ownership, planning, network integration and pricing and have a different impact depending on the project type, the transport sub-sector and the locality directly correlated to demand and respective revenues (Roumboutsos *et al*, 2012, Lemp and Kockelman, 2009). The various "market", "revenue", "demand", "traffic" etc. risks reported in literature are not but describing the source of risk "triggers". This is addressed in survey design.

Notably, risk assessments and risk allocation preferences may change as they are influenced over time by the realization of events. These have a significant impact on the financing structure and the overall model of project financing. Identifying major shifts in risk assessment and allocation allows for the development of new financing models and sets the grounds for mutually effective re-negotiations.

SURVEY DESIGN

Survey Framework

The ultimate objective of the survey is to identify shifts in stakeholders' assessment of risk probability and impact, as well as risk allocation between the major stakeholders involved. These shifts either reflect changes to be anticipated in the financial/contractual PPP structure; problems encountered in the participants' experience in PPP's or an evolution in risk perception based on acquired experience and increased level of trust (or the opposite).

The above, defines risk perceptions, expressed as assessments of probability of occurrence and level of impact (severity) as latent variables dependent on respondents' personal overall experience and background; the transport sector, as risk characteristics differ; by the political and macroeconomic conditions of the country/region wherein the project is implemented. Assessments may also be affected by recent information/news and developments on the national and international political and economical scene. In addition, developments in the particular transport sector including upstream and downstream markets may also affect perceptions.

Figure 2 illustrates the sets of factors and revealed parameters that influence risk perceptions and their correlation to risk adverseness expressed as risk allocation.

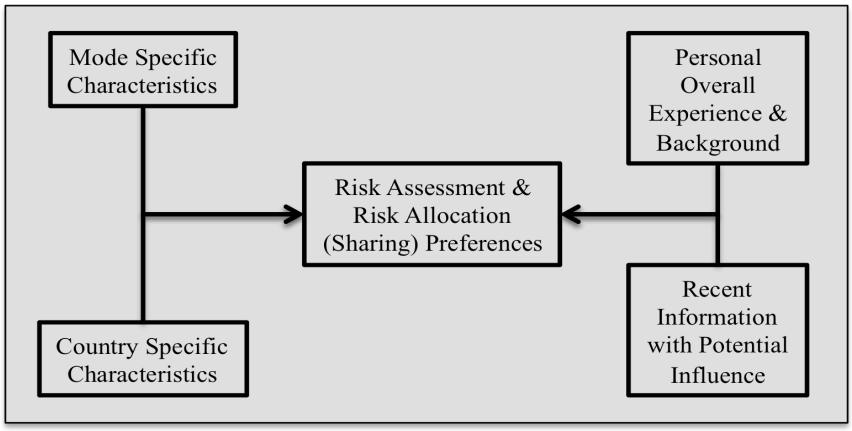


Figure 1: Survey Framework

Survey Design

Following the survey framework, it is important to identify the required respondent profile. The basic scope of the survey is to register stakeholders' (experts') shifts in the assessment of the risks involved in transport PPPs and the preferred or proposed risk allocation /sharing between the key stakeholders. Therefore, respondents should have significant experience prior to 2007/8 and continue to be active in the sector. Since, conditions may vary between transport sub-sectors, countries and time, respondents were asked to focus on a specific

project and country and assess risks for this project today, as well as register what the respective assessment would have been prior to the crisis.

Therefore, key respondent information registered concerned:

1. Years of experience in PPP's
2. Years of experience in transport projects
3. Sector of work experience with respect to the survey (State, SPV, Lender, Sponsor, advisors/consultants, other)
4. Transport subsector of activity with respect to the survey (Road, rail, air, ports, dry ports, transit, light rail, other)
5. Country of project assessed
6. Educational Background (Economics, Engineering, etc.)
7. Nationality

Finally, in order to assess the influence of recent developments, the respondent is asked to reflect on the last piece of news/information he received in the range of very positive to very negative.

A major issue in the design of the survey questionnaire was the selection of the appropriate risks to be included, as numerous listings exist in literature. In addition, it was also important to provide sufficient analysis and differentiation of risks influenced by the economic crisis and the particularities of the transport sector. The risk register (see Table 1) used in for the survey was prepared based on extended literature review (Roumboutsos *et al*, 2012) and risks were represented as with respect to their key project phase of occurrence. Risks that could demonstrate at any time were considered "life cycle risks". In addition, some risks were further detailed, expressing the need to differentiate the initial source. Such is the case of the "demand risk", which is at the heart of transport PPPs, as follows:

1. *Demand risk – Revenue (Background):* Traffic growth risk, as it is linked to macroeconomic factors, social and political environment.
2. *Demand risk – Revenue (Legal & Regulatory):* Legal environment and regulatory framework risks; e.g. change in transport taxation laws, vehicle ownership and fuel regulations.
3. *Demand risk – Competition/governance:* Government Unwillingness to honor tariff adjustments; unforeseen competition risk due to change in transport policy.
4. *Demand risk – Network:* Delays in integration to the central transport network risk, as they affect demand/traffic growth.

Table 1: Survey Risk Register

PHASE	Risk category	Description
PROJECT DEVELOPMENT	Bid Cancellation – pre investment risk	Bid cancellation, non recuperation of pre-investment costs risk
	Land use and acquisition risk	Site availability risk – surveys and studies pre-investment risk
	Financial close risk	Project financing risk – negotiation stalemate with financing parties, inability to form successful lender syndication.
	Specifications risk	Technical and legal specifications risks, as they affect construction cost overruns and/or changes in infrastructure/construction/environmental legislation.
CONSTRUCTION	Failure to meet performance criteria risk - Time	Delays in completion and/or certification of constructed sections risk.
	Failure to meet performance criteria risk – Quality	Quality shortfall/defects in construction/commissioning tests failure risks.
	Construction Cost overruns risk	Volatility of material costs, overhead cost estimation risk, legal risk of technical specifications changes.
	Permit risk	Delays in project approvals and permits
OPERATION	Operating cost overrun risk	Labor regulation volatility risk; taxation regulatory and legal risks; maintenance materials and labor cost overruns.
	Political risk	Government delays in granting or renewing approvals; government stability and willingness to honor/manage contract.
	Failure to meet performance criteria risk – Quality	Non meeting of contractual operation standards risk
	Demand risk – Revenue (Background)	Traffic growth risk, as it is linked to macroeconomic factors, social and political environment.
	Demand risk – Revenue (Legal & Regulatory)	Legal environment and regulatory framework risks; e.g. change in transport taxation laws, vehicle ownership and fuel regulations.
	Demand risk – Competition/governance	Government Unwillingness to honor tariff adjustments; unforeseen competition risk due to change in transport policy.
	Demand risk – Network	Delays in integration to the central transport network risk, as they affect demand/traffic growth.
TRANSFER	Asset residual value risk	Technical (out-dated) obsolescence, residual transfer value
PROJECT LIFE CYCLE	Financial risk	Interest rate volatility, Market event and funding shortage risks
	Inflation risk	Inflation volatility and growth risk, as it affects costs during development/construction and revenues during operation.
	Currency risk	Volatility of foreign currencies exchange, if applicable.
	Force majeure events (nature)	Force majeure events (floods, earthquakes, riots, strikes, weather changes, geotechnical conditions, et. al.)
	Force majeure events (political/economic/social)	War, political violence, insurrection or through change in Government policies that affect the ownership, profitability and behavior of the SPV.
	Social - project acceptance risk	User stance as it affects the project's development and operation. This could refer to passive opposition (boycotting the project) to active (e.g. refusal to pay tolls during operation, demonstrations preventing construction, claims in court against project et.al.)
	Governance Risks	Risks in third party relations or issues related to buyouts etc., which impact the ability to "govern" the project and provide the transport service.

In addition, as the impact of the economic crisis on transport PPP projects may be considered as "outside the control of all involved stakeholders", the force majeure risk was further detailed to:

1. *Force majeure events (nature):* Force majeure events (floods, earthquakes, weather changes, geotechnical conditions, etc.)

2. *Force majeure events (political/economic/social):* War, political violence, riots, strikes, insurrection or through change in the macroeconomic environment that affect the ownership, profitability and behaviour of the SPV.

For all risks listed, respondents were asked to assess their probability of occurrence on a qualitative five (5)-point scale and, then, the potential impact of realized risks on a similar qualitative scale. They were, also, asked to note their current assessments and what their, respective, assessment would have been before the crisis. Undoubtedly, the accuracy of the offered estimates is limited, but the objective of the exercise is to identify acknowledged shifts in perceptions and assessments.

For the same list of risks, experts were asked to propose an optimum risk allocation. As opposed to many previous surveys (cf. Akintoye et al, 1998), experts were asked to assign shares of risk allocation. As in the case of risk assessment, risk allocation also is carried out for the present and prior to the economic/financial crisis. The exercise includes an additional novelty: instead of only including in the risk allocation register the "public" and the "private" party, as the key stakeholders – contractual parties sharing project risks; for the present, experts are given the possibility of allocating and, effectively, involving in the risk sharing activity other parties, who are currently playing an important role in defining the parameters of PPP contractual agreements and re-negotiation processes. These proposed stakeholders include: the State/Public; the SPV; the Sponsors; the lenders; the financiers; and others to be defined by the expert respondents.

Data Collection Methodology

This pre-requisite of participation in the survey defines a semi-convenience sample, in so much as the survey is addressing selected experts identified through business networks. The questionnaire used for the survey is circulated electronically in order to reach international experts. However, given the particularities of the research questions, in-depth structured interviews would have been a more appropriate data collection methodology but more difficult to apply.

SURVEY FINDINGS

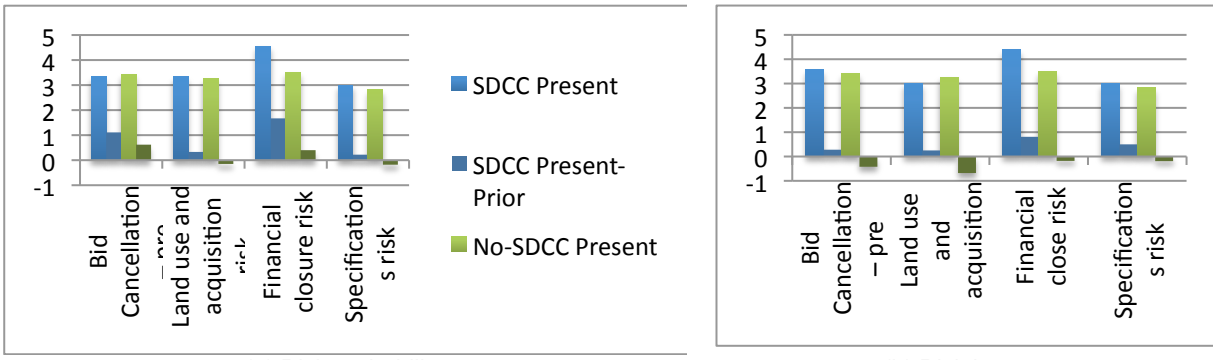
The present analysis of findings is considered preliminary, as it corresponds to a very limited number of surveys (22) with a great variance in the representation of countries and transport sub-sectors. More specifically, while the survey was distributed to a wide professional audience from both the public and private sector, there was a limited response rate. This is considered to be due to the quota applied for experienced respondents. It was noted that very few people in the public sector could compile with pre-requisites, due to the post – rotation in the public sector. Private sector respondents were difficult to identify due to the downturn in the international market.

However, it is impressive to note that the survey reflects 254 years of cumulative experience in PPPs and 362 years, respectively in the transport sector or that the average respondent had 11.5 years experience in PPPs and 16.5 years experience in the transport sector. In addition, responses were collected from the UK, France, Belgium, Sweden, Albania, Czech Republic, Greece, Spain & Portugal and, thus, allowed for an initial segmentation in Sovereign debt crisis countries (SDCC) and not (No-SDCC).

Analysis of findings follows by project phases.

Project Development Phase

The risks considered in this phase are Bid Cancellation – pre investment risk; Land use and acquisition risk; Financial close risk; Specifications risk. Results are illustrated in figure 3 Sovereign debt crisis countries (SDCC) and not (No-SDCC), respectively.



(a) Risk probability (b) Risk impact

Figure 3: Risk shift for Risks in the Project Development Phase

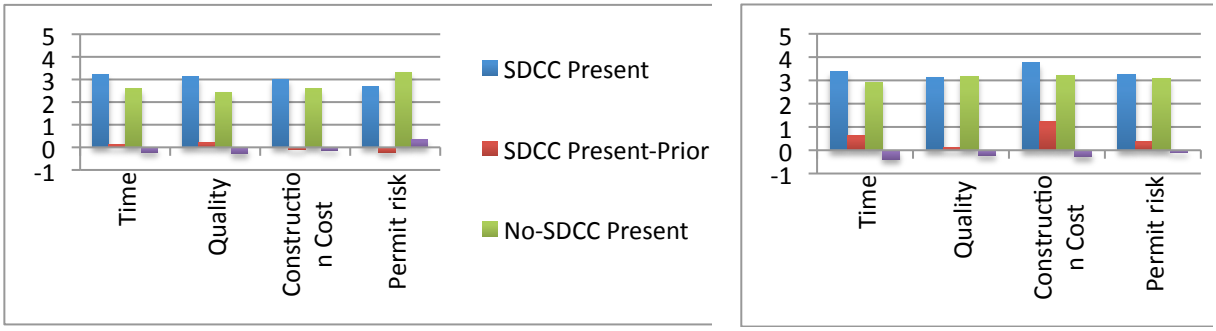
Probability and Impact of Financial close risk are highest both in crisis-struck countries (SDCCs) and countries with relatively stable budgets (non-SDCCs). Problems caused by technical and legal specifications, on the other hand, are seen as relatively least risky within the project development phase. Both Bid Cancellation and Land use risks recorded medium perception rates both in terms of probability and impact. Probability of all risks has risen in

crisis-struck countries while in the others it has remained fairly stable. In cases of Land use and Specifications risks, non-SDCCs demonstrate a negative shift. That is, today these risks are considered less probable than were considered before the crisis.

As for the perceived impact of risks, the survey again showed increases in countries hit by crisis in all categories. In contrast to that, the rest of countries have recorded decreases as compared to the situation before crisis. Particularly significant is a decrease in the perception of impact of the land use and acquisition risk in the non-sovereign debt crisis countries – a fact that may reflect recent changes in countries' legislations that made it easier for governments to resolve the land-related disputes. As a result of these reforms gaining control over the future construction sites have become easier for sponsors. Such a law on expropriation was passed in the Czech Republic in 2012 following years of disputes that caused long delays in delivery of several major projects.

Construction Phase

The risks considered in this phase are failure to meet Time, Quality and Construction cost specifications, as is the attainment of respective Permits. Results are illustrated in figure 4 Sovereign debt crisis countries (SDCC) and not (No-SDCC), respectively.



(a) Risk probability (b) Risk impact

Figure 4: Risk shift for Risks in the Construction Phase

Risks connected with keeping the timetable and agreed quality standards scored similar results in the survey both for SDCCs and non-SDCCs. They appear to be of average significance in terms of probability together with construction cost overruns risk while the impact of cost overruns risk is perceived somewhat higher with major increase as compared to the pre-crisis situation in SDCCs. Such an outcome is not surprising given the bigger financial constraints in countries facing excessive debt problems and overall greater instability.

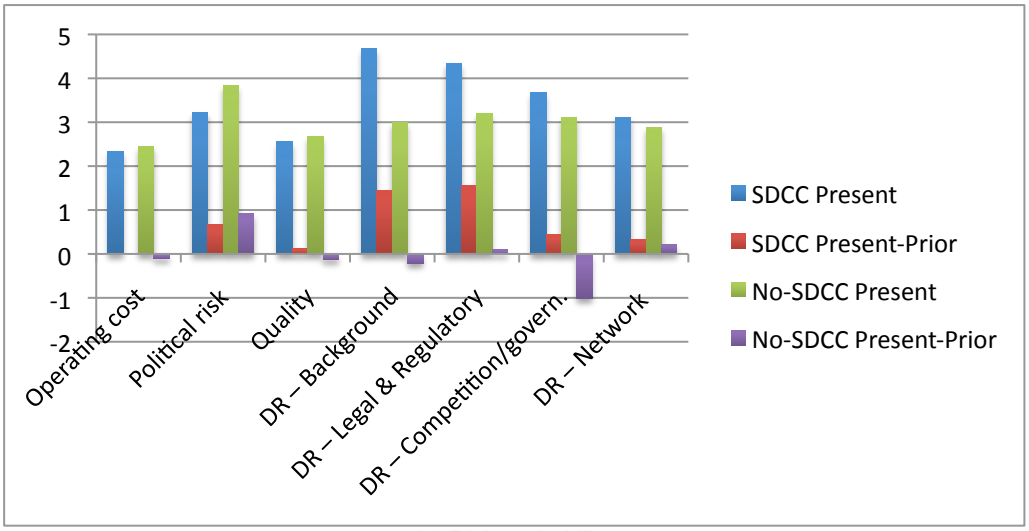
It is interesting that delays in getting approval for projects are more likely to occur in non-SDCCs according to the respondents. It seems that even the countries not so severely hit by the crisis have become much more cautious, sceptical and more demanding when it comes to project safeguards. It is especially true for countries that had not developed a significant programme of PPP projects in the pre-crisis period. If there were projects waiting for approval, they were often put on hold, sometimes indefinitely, or outright scrapped. PPP Policy as a whole was in some cases put into cold storage because of uncertainties and overall

lack of experience with the model. Clearly, the permit risk is somewhat less acute in the SDCCs comparing to other more immediate and more serious risks.

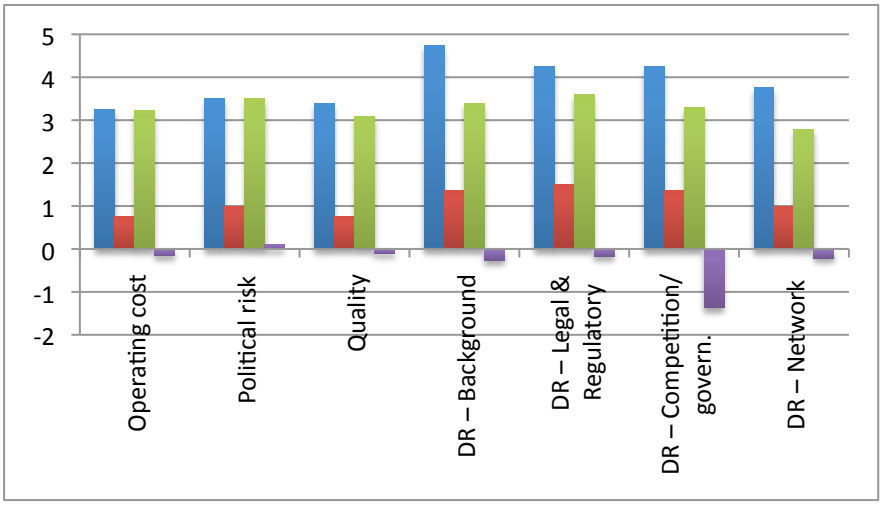
All in all, it can be said that the respondents from the SDDCs have been particularly concerned with the volatility of the market and ability to raise funds for the project. Both the likelihood and impact of financing related issues and costs instability have been on a rise since the outbreak of the crisis as the respondents' perception implies. In contrast to that, the results from non-SDCCs indicate no major increase in either probability or impact of the risks in project development and construction phases.

Operation Phase

Figure 5 presents the results for Sovereign debt crisis countries (SDCC) and not (No-SDCC), respectively, of the risks, which demonstrate during the operation phase.



(a) Risk probability



(b) Risk impact

Figure 5: Risk shift for Risks in the Operation Phase

Some of the most imminent risks are associated with the operation phase according to the responses received in the survey. All three types of demand correlated risk are perceived as both particularly likely and potentially damaging for PPPs in SDCCs with general economic background, which involves traffic growth risk linked to macroeconomic factors, social and political environment, causing more fear than any other category of risks in the whole survey. This is not surprising, given the fact that most PPP contracts are under re-negotiation or struggling due to the impact of the economic downturn on traffic volumes and cash flows.

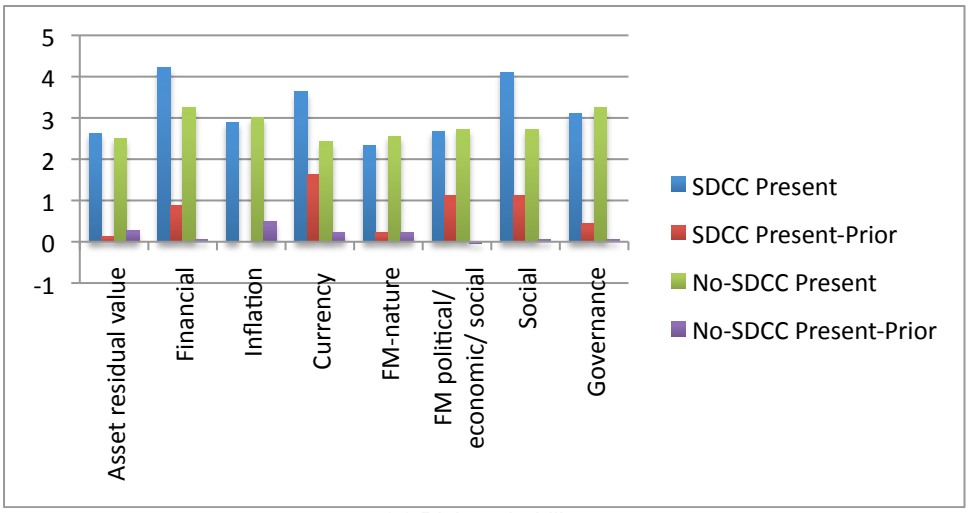
This is in sharp contrast with the feelings of professionals interviewed in non-SDCCs. Their concerns lay mainly in the sphere of politics - government stability and the willingness to honour/manage contracts. Probability of this kind of risk in non-SDCCs has surged during the crisis while its impact remained fairly serious with no major increase. This again may reflect, on the one hand, general nervousness of the actors expecting the outcomes of the PFI Reform process in the UK and the uncertainty about the new attitude of the coalition government towards the model. On the other hand, a wide-spread scepticism among the participants of the PPP implementation process in countries like the Czech Republic may be to blame. As the Czech example shows, hesitation and sometimes open opposition of the political circles towards PPP threatens to influence and hamper individual projects even after the deal is signed. This for instance happened to the Central military hospital PPP project in Prague. The decision to abandon the already concluded contract was partly affected by fears of the crisis looming for the public budgets. It sent a very negative message to the market together with other government direct and indirect measures that have cast doubt on the future of PPPs in the country.

Explaining the drop in DR Competition/Governance in non-SDCCs in comparison with the situation prior the crisis may be somewhat trickier. It seems the risk connected with government being reluctant to approve tariff adjustments and unforeseeable competition challenges resulting from transport policy decisions used to be seen as a major problem in non-SDCCs a few years ago. This has changed quite significantly since then and such a finding would be worth further analysis to find the reasons behind this development.

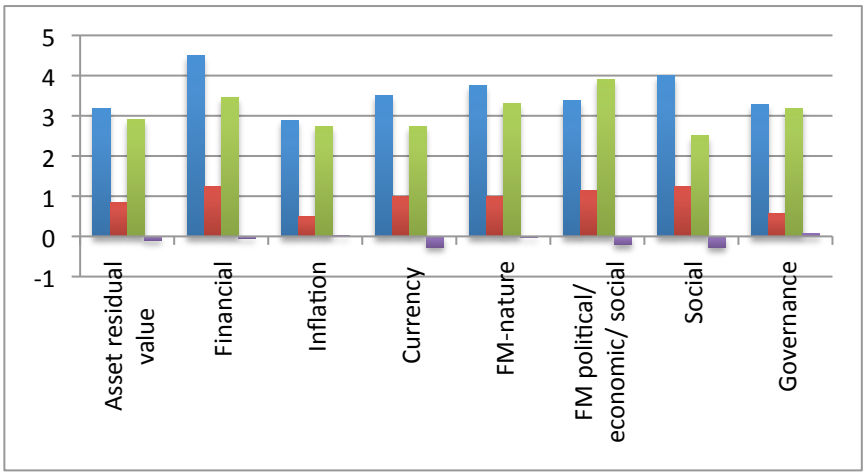
Project life cycle

Risks that may manifest throughout the project life cycle are presented under this section. The results, as presented in Figure 6, are quite in line with the original expectations. It was anticipated that *financial and financing-related risks* would appear high on the list of the most serious risks. To some the high score for perception of *social risk* – both in probability and impact - in SDCCs may come as a surprise, but after the relative success of popular initiatives such as No vull pagar in Catalonia or similar activities in Greece and the general increase in number of people refusing (or even not being able) to pay tolls at the toll collection points in the debt-struck countries, the risk of a rise of social movements boycotting the mechanisms of PPP projects on a large scale cannot be underestimated, let alone ruled out. Quite understandably, the social risk is not considered such an issue in non-SDCCs. Nevertheless,

the awareness of potential public resentment has lead several governments to delay or abandon any plans for introduction of tolls on highways. In the Czech Republic, for example, the availability payment mechanism is seen as the only politically acceptable solution when PPP is considered as an option for transport infrastructure projects.



(a) Risk probability



(b) Risk impact

Figure 6: Risk shift for Project Life Cycle Risks

Force majeure - nature ranks among risks that are rather less likely to occur but if so, the impact is perceived as equal to or even worse than that of man-made disasters especially in countries destabilised by the current crisis. It is quite surprising that this risk remain rather stable, especially with respect to the intense phenomena the world has been experience due to global warming and climate change. Interestingly, the impact of *Force majeure political/economic/social* risks worries the respondents from non-SDCCs more than natural disasters.

In the shadow of economic indicators that are currently in the spotlight and require more attention, inflation risk somewhat lags behind the more acute ones especially in the case of SDCCs. It would be interesting to see how the perception of this particular risk changes when the countries observed in this research escape the prolonged recession and start to grow again.

Risk Allocation and Other Findings

An interesting preliminary finding of this survey is the fact, for very few risks (and mostly those potentially demonstrating in the construction phase) was there a clear allocation of risk. In most all other cases, risk was "shared" at various percentages between the private and public sector and, in some cases, between the public, private sector and the lenders/financiers. Evidently, the latter concerned finance-related risks. In addition, this "sharing" of risks was registered by experts regardless of the country concerned and in contrast to "sharing" considered prior to the crisis, where respondents chose in many cases only one party to bear the entire risk.

Respondents came equally from technical and financial/economic backgrounds. It was interesting to note a slight tendency of risk adverseness (otherwise expected) for risks the respondent was less knowledgeable of. This once again supports the need to developed multi-disciplinary teams for PPPs.

DISCUSSION, CONCLUSIONS AND FURTHER RESEARCH

Investigating the impact of the economic/ financial crisis on PPPs in the transport sector is of high importance, with respect to justifying the continued interest in the method. Key parameters influenced by the economic crisis are on the one hand the assessment of risks and their allocation and the development of new models capable of responding to the stated needs of the transport sector.

To this end, a survey was administered containing a number of novelties in an effort to respond to the particularities of the issue to be addressed. More specifically:

- The survey registers inter-temporal shifts in respondents' perceptions and estimates. This presents an analysis challenge as it implies the comparison of an ex-post evaluation with an ex-ante.

- The survey framework contains two parts to be used in the analysis, the one external with the introduction of an independent system of indicators representing the transport mode concerned in the assessment and the country/region or locality.

- The introduction of a set of risks, which are transport sector specific and reflect the different origins of transport project finance risk.

- The differentiation of force majeure events to natural and of economic and political origin.

- The provision in the survey of describing risk allocation as proposed shares rather than a preference of whether a specific risk should be allocated to the public or private sector or shared between the parties.

- The introduction as potential risk allocated parties and, therefore, inclusion in the PPP agreement of parties other than the prime stakeholders: the public and the private sector, but, also financiers, lenders etc and other parties considered by the responding experts.

The initial findings on risk assessment shifts and risk allocation provide initial guidance as to the parameters of future transport project finance. More specifically, based on the interpretation of the data collected in this survey, it can be said that the construction phase was found the least risky as compared to other three phases. Operation and Project life cycle phases, on the other hand, appear to be relatively more dangerous in the eyes of respondents. Significant differences were recorded in the intensity of risk perception depending on the category of countries and period (crisis/pre-crisis). As anticipated, risk levels in SDCCs have mostly risen or remained stable whereas in non-SDCCs a decreasing tendency was registered for several types of risks. This presents, initially, an understanding that there has been a "maturing" process around the application of PPPs, which at least for the construction phase allows for the inclusion of flexibility that may have a positive impact on the operational phase risks but also on risks likely to surface through the project life cycle.

Potential ramifications of these findings on PPP models and future research are:

1. In the tendering procedure (project development phase), evidence of varied risk allocation implies the need to:

    a. Move away from standardization of procedures and employ other more flexible procedures (eg. Competitive Dialogue)

    b. Improve on incomplete contract theory and development of respective models

2. With respect to Project / Contract Development, evidence of improved confidence with respect to technical risks allows for the potential to include:

    a. Technical (and therefore financial/economic) Flexibility

    b. Real Options

    c. Greater project size in terms of horizontal & vertical bundling [development of integrated projects, inclusion of innovation etc.]

3. In contract monitoring, evidence of improved confidence in "quality" supports the need for further including Key Performance Indicators (KPIs) in PPP contracts.

4. With respect to renegotiations, improved confidence on technical issues may indicate the potential to overcome respective holdups by increasing the scope of work rather than decreasing it.

5. Finally, with considering training and taskforce units, evidence of adverse risk behaviour towards the topics of lesser knowledge indicates the need for cross-training and addressing issues of Public Private Partnerships in multi-disciplinary teams.

Further conclusions may be drawn with the completion of the survey.

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