

# Selecting Infrastructure Delivery Modalities: No Time for Ideology or Semantics

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**Abstract:** Developing and developed countries need to increase their investments in infrastructure to support economic growth, productivity, and the competitiveness of their economies to enhance the well being of their populations. Some of these investments, being long term, illiquid and considered public services, tend to be undertaken by the public sector. Nevertheless, in some sectors and at different points in history, there has been considerable participation by the private sector. For the purposes of enhancing these investments, all possible options of private and public participation must be considered and the needs are such that ideology and semantics should not get in the way. From the very extensive experience in developing countries, it has been learned that selecting the proper modalities can enhance the long term viability of the investments, can increase the number of bankable projects, attract investments and reduce backlash from failures. These lessons can be applied to developed countries as well. This paper presents a model for the selection of the most suitable service delivery modalities adapted to the prevailing local conditions of the country.

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## Introduction

Times of economic crisis calls for more investments in infrastructure given their potential contribution to economic growth, productivity, and competitiveness. However, during these times, there is an increased unwillingness by the private sector to invest in long term, risky, and illiquid assets; which is precisely what infrastructure investments are. These times tend to increase the role of the government as a provider of financial services (something which was only common in developing countries and in recent years has been in wane) and will most likely bring an even larger participation in the provision of infrastructure services. Not only does this lead to governments being the providers of the bulk of the financial resources for infrastructure investment, but also the private sector prefers investments in safe and liquid assets. Distrust in profit motivation of the private sector has intensified as well. Does this mean the end of private participation in infrastructure?

Although crises force tough and urgent decisions, a long term perspective must be maintained. In the case of infrastructure investments, we run the risk of throwing away the baby with the bathwater and fail to capitalize on the capabilities of the private sector. Throughout history the provision of infrastructure services has been like a swinging pendulum, going between pure public provision to pure private provision, particularly in sectors where private participation is more financially feasible such as telecommunications or energy. In other sectors, those which society tends to perceive as entitlements; such as roads, water, and sanitation, the oscillations have been less pronounced, with the public sector having had a more prominent role.

To facilitate this long-term perspective, it is worthwhile to examine the path covered by the pendulum and analyze all possible modalities of service provision so as to be able to select those most appropriate for the prevailing conditions at a given time, in a given country. Infrastructure service provision and its implications are too important to growth and economic development to be dictated by ideology.

Let us begin by recalling that in every infrastructure service provision there will inevitably be public and private participation. All projects are therefore a public-private partnership (PPP) where all infrastructure investments involve the public and the private sectors, and some partnership between them. Private enterprises or individuals will be involved; either as users, suppliers, contractors, or stakeholders in one way or another. The public sector will also be involved, be it as provider of services or at the very least, in a regulatory capacity, as infrastructure is considered a public service.

While most developing countries have embraced some form of private participation for various reasons, such as lack of financial resources, or technical or managerial competencies, some countries such as the United Kingdom have done it to better utilize available resources. In contrast, many states in the United States

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have been reluctant to allow private participation in sectors like transportation (roads, airports, and ports), water and sanitation (though it is common in telecoms and in energy) primarily for ideological reasons brought about by political and labor pressure groups [examples of this opposition are the letter of Congressmen Oberstar and DeFazio (2007) to state transportation authorities and the position of the Professional Engineers in the California Government (2009)]. In light of the recent financial crisis and its impact on economic activity, the United States will have to implement a major infrastructure investment to stimulate economic activity given its multiplier effect and, if done properly, its impact on productivity and competitiveness.

Under crisis conditions the first “P” of PPP may come to mean Political with the risk that investments are selected for the wrong reasons. Sometimes, there has been reluctance to allow for foreign private sector participation and one of the Ps may even mean Protectionist (as if the foreign private sector could take the water treatment plant or the road or the bridge with them; although some power plants are mounted on barges and can be taken away!). This aversion to private/foreign investment in public services tends to complicate matters and can cloud the selection process of the most suitable modalities of service delivery, which we will discuss below.

### Recent Evolution of Private Participation in Infrastructure

It has been estimated that in developing countries, each 1% investment in infrastructure can lead to a 1% growth in gross domestic product (GDP) (see World Bank 1994). These relationships are very hard to estimate and may only be valid in the aggregate of many countries and therefore may not apply at the level of individual countries given different stages in the business cycle, levels of natural endowments, institutional development, and complementary investments, among other factors. For many reasons (lack of resources, more pressing priorities or the political economy of public spending) developing countries are not investing in infrastructure at the pace required to support needed levels of growth. In particular, Latin America is investing less than 2% yearly on the average (Calderon and Serven 2004), when sustaining modest growth rates of 5% would barely reduce poverty levels, and so it should invest at least 5% of GDP (Fay and Morrison 2008). Countries in developing Asia are investing between 6 and 8% and China sometimes reached 10% to support the expected levels of growth. For this, countries must resort to all possible actors and to all feasible sources of finance and expertise, with the appropriate project modalities.

Private participation in infrastructure in developing countries has cycled in the last two decades, starting in the early nineties and reaching a peak in 1997, with many countries providing a favorable investment environment. Subsequently, some failures and change in political and economic conditions stimulated a retrenchment, reaching a through in 2003. When economic conditions turned again, favorable private participation increased until the crisis of 2008, where the search for safety and liquidity prompted a significant fall in private participation (Torres de Mastle and Izaguirre 2008).

It is likely that whatever private participation remains it will be allocated in less risky structures and less risky sectors, with the public sector taking on an increasing role. For instance, in transportation projects, different modalities have been used with a trend toward lesser exposure by the private sector, with less risk

appetite, which is likely to be exacerbated by the recent crisis. This however does not mean that private participation is not possible. During 2005–2007, 48 low and middle income countries implemented new transport projects with private participation, with the number of projects (60) reaching closure in 2006 surpassing the peak levels of 1997. But modalities changed from mostly tolls as the only source of revenue to some form of government support (full or partial shadow tolls, availability fees, capital grants, minimum traffic or revenue, among others).

Even in the very difficult water sector there has been progress in the last few years as more than 250 contracts have been awarded to private operators since 1990, 85% were still active at the end of 2007 and only 8% terminated early. Population served is only 4% but has gone from 96 million in 2006 to 160 million at end of 2007 and of the 67 countries that introduced PPPs at least 44 still have private operators, whereas 23 reverted to public management. Another interesting tendency reflecting preference for lower risk is that 90% of the growth since 2001 was covered by private operators from developing countries with smaller projects, local operators, more wastewater projects, and less private supply that include more private risk exposure. Also, management and lease contracts, where the private sector has less exposure, have increased (Marin and Izaguirre 2008; PPIAF 2008a,b; Quiroz and Izaguirre 2008).

Several countries announced stimulus packages during the crisis that started in 2008 that involve heavy investment of public resources in infrastructure. Should these investments be managed purely as public investments? Do governments have the capacity to do the investments and deliver the services? Or does the private sector have to get involved, either because of its technical and managerial capabilities or even because of its limited financial resources? Is private participation in infrastructure dead? Given that infrastructure assets are long term assets, we must take a long term view of the problem. Eventually, the public sector, particularly in developing countries, will start running unsustainable deficits and private credit will eventually return.

Under normal economic conditions, and more so under difficult conditions, we must use the best that both the public and the private sector can offer, adapting the intensity of their participation (management, investment, risk taking, etc.) to the prevailing circumstances in the country. There are many modalities with different degrees of involvement, from almost total control by the government to almost total control by the private sector. The confusion that private participation means legal ownership of the assets or a long term concession to operate and profit from them must be avoided. There is more to private participation than just privatization, build operate and transfer (BOT); build, own and operate (BOOs); design, build, operate and transfer (DBOT); etc. and concessions. There are also leases and management contracts, with varying degrees of private involvement in managerial and financial responsibilities and risk exposure. There are also state owned enterprises (SOEs) where the private sector can provide services like management, construction and operation and maintenance. In some cases, SOEs have proven to be rather efficient providers of public services and if that is the case, they should continue to be supported.

Fig. 1 below shows a continuum of possible modalities of infrastructure service provision, with different levels of private sector involvement and exposure, some of which are detailed in Fig. 2. To make them manageable, these figures only include some of the major modalities, but the reader can extend the analysis to other possibilities. For instance, a common modality is the Design, Bid and Build, which is a form of procurement in stages,

# Public to private continuum

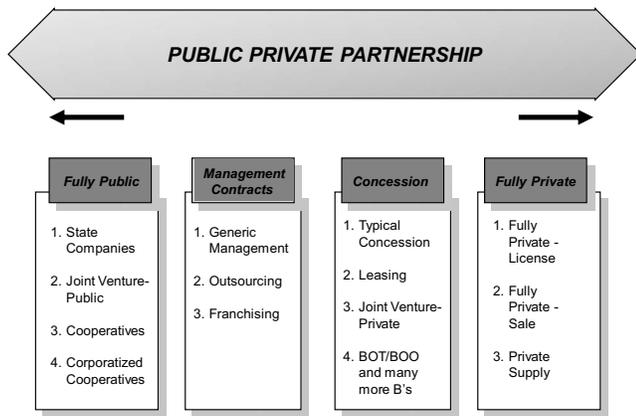


Fig. 1. Continuum of public-private partnerships

which may involve some risk taking by the private sector in the “Build” stage. Another modality, common in the United States, is the Design, Build, Operate and Maintain, which is a form of concession.

Some of the major obstacles to taking full advantage of private participation in infrastructure services are ideology and semantics. Ideology, with the mistaken notion that the private sector can and will exploit the monopoly position of infrastructure services. Semantics, when private participation is confused with private ownership or total control over the revenues or the assets. Infrastructure investments are too important for the economic progress and well being of the country and too necessary in the current times to be mired in a discussion of ideology or semantics. These services must be provided with the modality which is most suited to the prevailing conditions.

How do we select the most appropriate modalities of service provision to maximize the likelihood of success and avoid problems?

## Conceptual Model

The conceptual model presented below has been developed through the study of numerous cases of private participation, suc-

## Responsibilities in PPPs

Option	Asset ownership	Operation and maintenance	Capital investment	Commercial risk	Duration
Public Corporation Service contract	Public	Public	Public	Public	Indefinite
	Public	Public and Private	Public	Public	1-2 years
Management contract	Public	Private	Public	Public	3-5 years
	Public	Private	Public	Shared	8-15 years
Build-operate-transfer BOT	Private	Private	Private	Private	20-30 years
Concession	Public/Private	Private	Private	Private	25-30 years
Divestiture	Private	Private	Private	Private	Indefinite

Fig. 2. Allocation of responsibilities in PPPs

cessful, renegotiated and failed, in developing countries, mostly in Latin America (see Andres et al. 2008). Given that the key to the conceptual model is the consideration of the prevailing local conditions in the country, it can also be applied to developed countries and at different points in time.

One of the most important lessons learned is that the selection of the modality for service provision should not be based on ideology or confused by semantics. It should be based on the understanding that there will always be a tradeoff between service efficiency, on the one hand, and effective protection of investors’ property rights, on the other hand. The goal must be to attract the most investments possible, given the prevailing conditions and constraints in the country. Fig. 3 below presents a conceptual model for the selection of the most suitable modality. It is based on the key premise that not all modalities are suitable to prevailing local conditions, although some may become feasible if tools for risk mitigation and enhancement exist in the country. The potential modalities must be “filtered” through an analysis of the local conditions. The model proposes eight key conditions that must be analyzed, as can be seen in the middle block of Fig. 3, but the user of the model can postulate whichever conditions he or she thinks are critical in their country. For instance, “Legal Framework” refers to respect for the rule of law, respect for property rights, workings of the judicial system, and corruption, among others. These characteristics determine the likelihood of success of a given modality. For instance, if the legal framework is considered weak, say because of very low respect for the rule of law, modalities that rely on quick access to reliable and fair courts (“third-party enforcement”) will tend to be rejected, as it may facilitate opportunistic renegotiation ex post. If the Fiscal Space (i.e., governments’ capacity to meet its fiscal obligations) in the country is considered compromised then modalities that rely on government payments, like shadow tolls or water subsidies for the poor, may not be feasible.

The prevailing local conditions must be analyzed prior to setting the project structure and prior to the normal due diligence which is done once the structure has been determined. To aid in this analysis, many sources of general information have been developed, that can be relied upon for a “first approximation” (for instance, The Global Competitiveness Report, produced by the World Economic Forum (2008), and Doing Business produced by the World Bank (2008), both yearly publications, produce a myriad of indicators based on surveys of experts and sector executives). However, depending on the extent of the risk exposure by the private sector, a more thorough and specific analysis may be required.

It must be emphasized that there are many variations within each service delivery modality, some of which involve risk mitigation tools. There is no universal model for each one of them. For instance, a concession for a toll road may be structured with tolls paid by the user, totally or partially paid by the government on the basis of traffic (shadow tolls), a fixed payment based on estimated traffic (availability payment), minimum traffic guarantees, with or without government contribution to the investment costs (capital grants) and so on. All of the variations have a large impact on the risk exposure of the private operator and on the obligations of the government, even though the modality may be termed simply as a “concession.” Some of these risk mitigation tools or enhancements are part of the tool box (lower left box in Fig. 3), that can be used to make some of the modalities feasible. For instance, if some form of government contribution is used, then the fiscal space becomes a critical local condition that must be considered, if found weak, the project may require that some

# A Conceptual Model

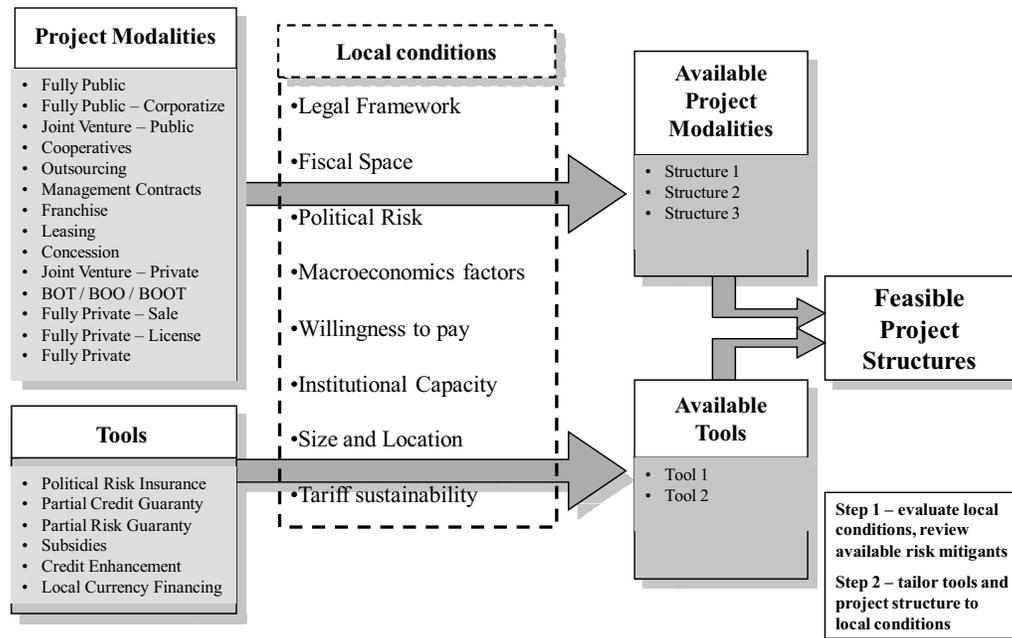


Fig. 3. Conceptual model for selecting PPP modalities

of these government payments be guaranteed by third parties, like multilateral institutions.

Modalities must then be analyzed in the context of prevailing local conditions and the available risk mitigation tools to determine the most suitable project structure, which may involve different degrees of private sector participation. Vives et al. (2008, 2006) includes more details on the workings of the model including description of the modalities, the local conditions, sources of information, and risk mitigation tools. It also presents examples of their application in real life projects

## Risk Mitigation Tools

As already described above in the example of a transportation concession, project sponsors may have access to other risk mitigations tools that can make some modalities feasible.

Most common commercial and financial risks are those involved in the operation of the investment and include exposures to inflation, currency depreciation, revenue losses, interest, and tenor of financing (that is, risks that arise when debt has been incurred at variable interest rates or for short periods of time, requiring refinancing). Political risks refer to changes in the contractual conditions of the investment and in the legal and regulatory environment (including devaluations and currency convertibility issue), outright expropriation and acts of war or terrorism. Some of these risks affect all projects regardless of ownership, while others are a function of the ownership and financial structure. Some are mitigated with insurance (accidents, war and terrorism, and currency convertibility), others require guarantees or other contractual arrangements with third parties, and still others cannot be mitigated at any reasonable cost. There is the possibility that some of these risks can have a significant impact on the feasibility of the investment.

Political and regulatory risks are some of the most critical risks impacting the choice of service modality (the other classes of risks, commercial and financial are more related to the actual operation of the service and the form of financing). Those refer to the exposure of the investments to political and regulatory decisions. Investment in public services, which is normally provided by a monopoly, cannot be left to the market to allocate. Government regulation is needed regardless of the ownership of the assets and responsibility of the operation. The nature of water resources makes its regulation even more compelling. Tariffs, quality, coverage, termination payments (to a private operator at the expected or unforeseen termination of the project), and offtake payments (say, for the purchase of bulk water) are some of the areas subject to regulation. Additionally, the regulatory regime is the key to allocating risks, and deterring or stimulating investments: rate of return regulation leads to a better delineation of property rights than price cap schemes, as investments are isolated from demand or usage level risks. Of course, this comes at the price of reduced incentives to cut costs or innovate.

Government and regulatory risks gives rise to what could be termed *policy risk*; that is, risk resulting from government policies. Governments may have different interpretations than the service provider regarding the need to increase tariffs, the quality of the services, required investments, and the speed with which service coverage is increased (or not increased) because of events unforeseen in the agreements. Or governments may simply refuse to honor agreements to increase tariffs, for example, or grant smaller ones than existing agreements envision. These risks place the most conditions on the types of modalities than can be used to provide the services.

After an initial project structure has been selected, including the risk mitigants, further analysis must be conducted to make sure that one risk is not substituted by another, for example, converting a commercial risk (revenue) into a political risk by taking

# Project Feasibility Map – Analytical Process

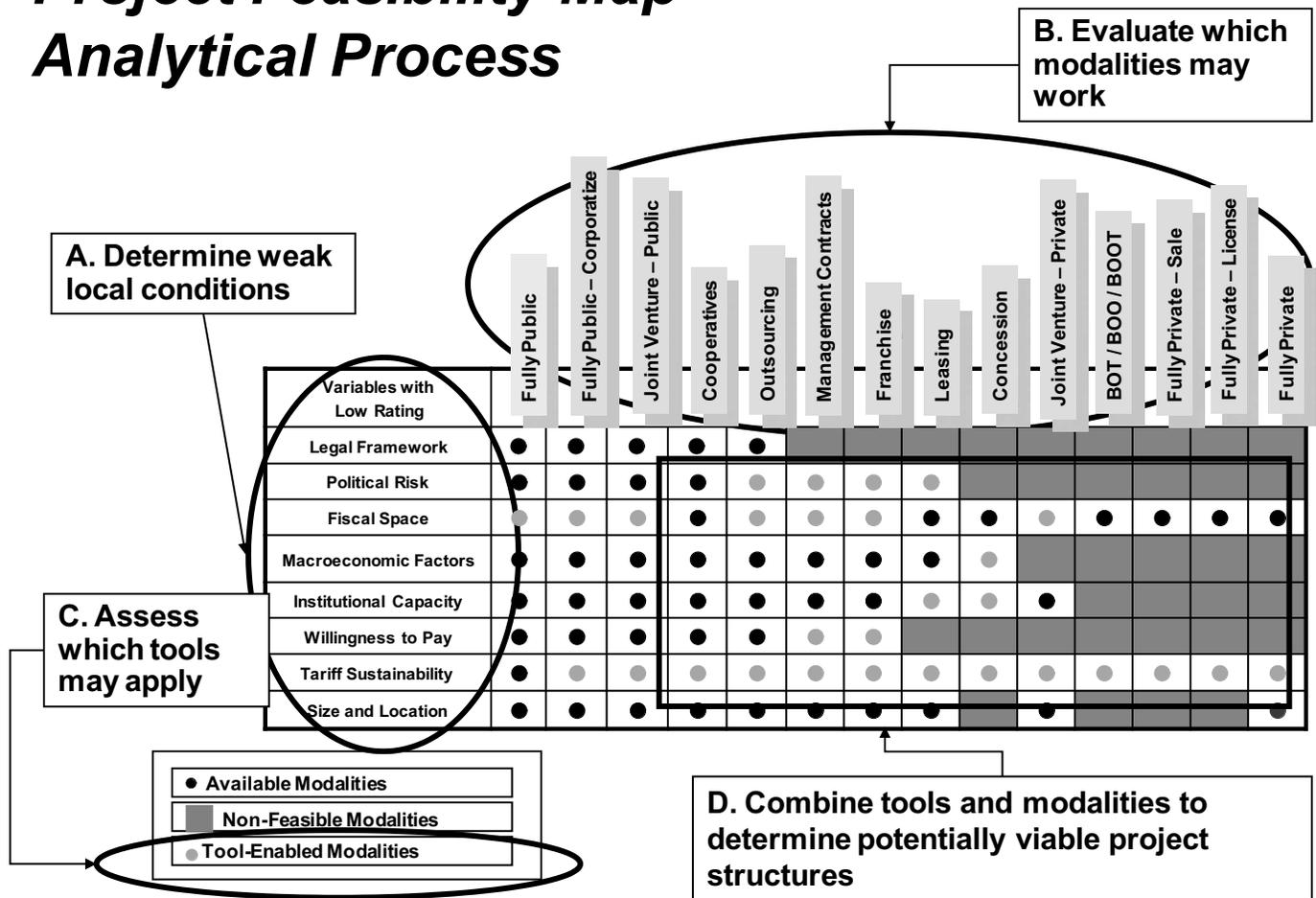


Fig. 4. Project feasibility map

on a government guarantee. If this is the case, then the government's political and fiscal capacity to pay, its political will and freedom from political interference to honor those commitments will have to be considered.

## How to Select the Most Suitable Modality: Model

The analysis of the possible modalities, given the current local conditions and the possibility of accessing risk mitigation instruments and enhancements would provide the project feasibility map, which would show the modalities that are feasible with and without risk mitigation tools.

Fig. 4 shows a possible map. Some modalities are shown to be not feasible; others are feasible only if enhancements are available.

For instance, consider the first row. If the legal framework is considered to be weak, there is no sense in moving beyond outsourcing, as all the other modalities with more intense private participation will require the existence of rule of law, respect for property rights and eventually, access to the legal system. The figure, as shown, is only an opinion of the authors and each case must be analyzed in detail by the sponsors according to their willingness to accept the remaining risks, as it not possible to eliminate all risks. The project feasibility map ends up being a personal map.

The selection of the modality and mitigation tools or enhancements will depend on which conditions are considered to be weak. For instance, let us assume that in a given country, the fiscal space and macroeconomic conditions (inflation, currency depreciation, etc.) are considered weak. Then the feasibility map may look like Fig. 5, where some modalities are outright not feasible, some are feasible outright and some will require enhancements. Consider the case of leasing the assets, say of a water distribution system. If the structure does not require government subsidies (fiscal space) and does not require foreign investment (macroeconomic factors) then the structure could be feasible. However, under those conditions, a concession, which requires financial investments, would not be feasible as it would be exposed to the macroeconomic conditions of inflation and currency exposure. The box indicates the modalities that are feasible under those two weak local conditions.

As more local conditions are weak, the range of feasible modalities is reduced, as can be seen in Fig. 6 which assumes that all eight are weak and there is no modality that is outright feasible without some enhancements. Even SOEs (fully public) may require some enhancements if the fiscal space is weak and the government cannot subsidize the operation in the case that it is not commercially viable in its own right.

This model should not be used mechanically and it is not a panacea. It shows that all possible modalities must be explored, analyzed in light of the prevailing local conditions and the avail-

## Project Feasibility Map

Example with Tool Application

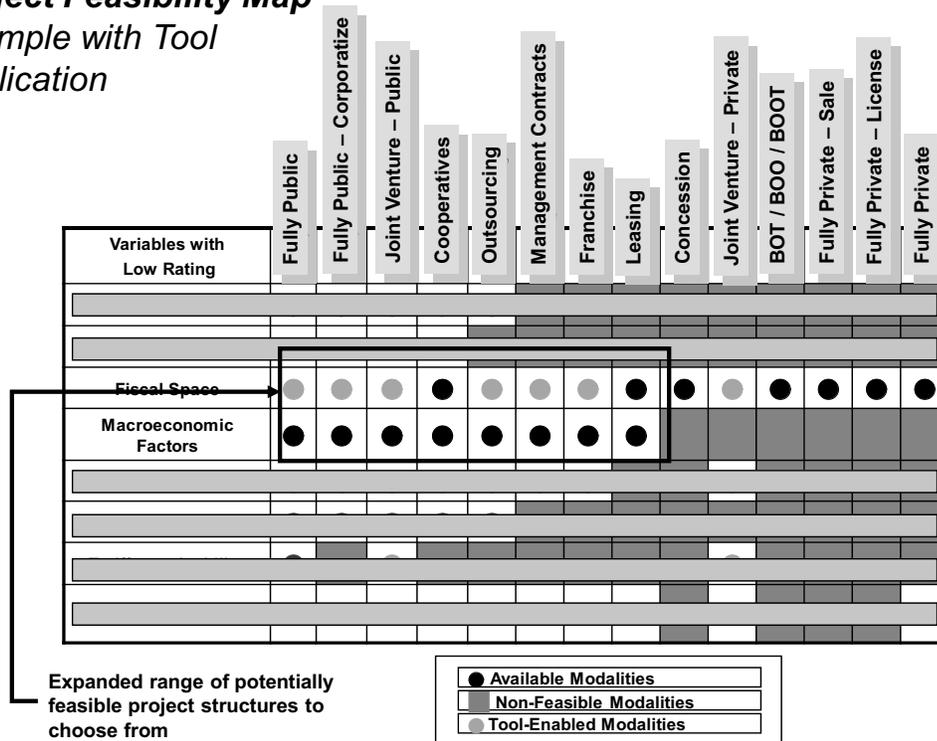


Fig. 5. Example of feasible modalities with risk mitigation tools

able risk mitigation tools and enhancements. It is a methodology of analysis to select service delivery modalities, instead of making ex-ante dogmatic decision as to what is feasible and what is not.

## Value for Money

Finally, once the most suitable modalities have been identified, there is still the all important analysis of value for money, i.e., if

## Project Feasibility Map Resulting from Two Step Analysis

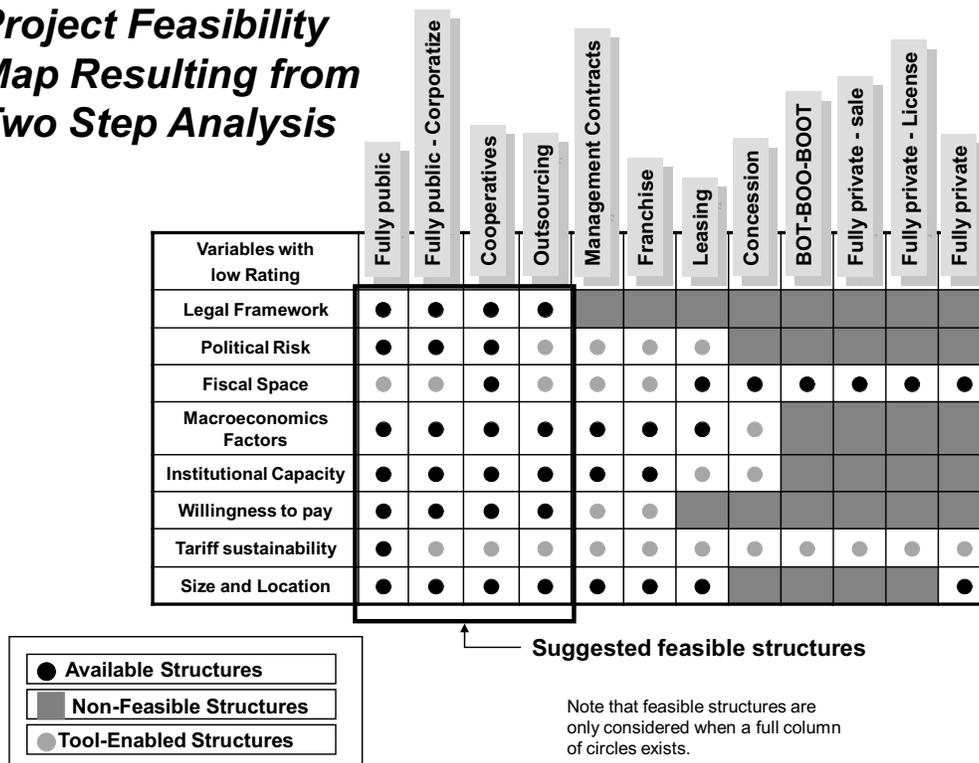


Fig. 6. Feasible modalities if all conditions are poor

the extent to which private participation delivers more value for money than the pure public provision, as is in many countries the default option as infrastructure are normally considered public services. The analysis must consider the value added of the private participation. It is generally assumed that the private sector investment may be less costly and management may be more efficient, at least in developing countries (although it is not always the case) and that the public sector may have lower financing costs, among other benefits. There are many more factors this analysis must consider (1) the costs of higher risk allocation to the private sector (higher cost of capital); (2) the cost of weak contract or regulatory supervision capabilities (i.e., poor performance or opportunistic renegotiation). It is not immediately clear that one option will be better than another and the “value for money” must be shown. As an example of the methodology see Partnerships Victoria (2001).

## Concluding Remarks

Developing and developed countries need to increase their investments in infrastructure to support economic growth, productivity, and the competitiveness of their economies to enhance the well being of the population. Some of these investments, being long term, illiquid and considered public services, tend to be undertaken by the public sector. Nevertheless, in some sectors and at different points in history, there has been considerable participation by the private sector. For the purposes of enhancing these investments, all possible options of private and public participation must be considered and the needs are such that ideology and semantics should not get in the way. Selecting the proper structures can enhance the long term viability of the investments, can increase the number of bankable projects, attract investments, and reduce backlash from failures. However, the design must be adapted to prevailing conditions (no cookie-cutter approach). For this, due diligence and proper judgment, particularly in the assessment of the long term local conditions are the key.

Most importantly, infrastructure investment is a long term proposition that can have significant impact on the fiscal position of a country, particularly in developing countries. While in the short run, there may be great willingness on the part of governments to provide public funding and run fiscal deficits, over the long run, the position may become unsustainable and it would be wise for countries to keep in mind the potential benefits of some form of private participation, either for fiscal reasons or for efficiency reasons to maintain the long term viability of the investments. All modalities of private sector participation must be explored and in this article, we have offered a model to analyze the most suitable service delivery modalities. Do not throw out the baby with the bathwater!

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