



Financing Infrastructure

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Observations Concerning Public Infrastructure Challenges

The global need for infrastructure investments has never been more pronounced as mature economies grapple with the high cost of infrastructure reinvestment to replace aging infrastructure or to maintain economic competitiveness within regional and global markets. Accordingly, a strong consensus prevails that investments in public infrastructures will continue to grow at an accelerated pace. This strong demand stems from four major factors or developments occurring concurrently at the global level:

- The rapid growth and continuing urbanization of large emerging economies such as China, India and Brazil.
- The need of several countries to replace or improve inadequate or dilapidated infrastructures (e.g. Eastern European countries).
- The need to protect or reinforce one's competitive position in the face of rapid technological changes and global competition (e.g. Panama Canal).
- The urgent need to rehabilitate, renew or replace a substantial portion of the existing infrastructures in Western economies. To a large extent, these infrastructures were built in the 60s and 70s and are now reaching a critical point in their life cycle. These deteriorating essential public infrastructure facilities are often structurally deficient or obsolete. At the same time, congestion and rising demand is putting pressure for additional public infrastructures.

Despite being confronted with this enormous need for investment in public infrastructures, a sound infrastructure policy must not limit itself to the funding of projects. It should stress competition among investments, the viability of nonstructural alternatives, cost sharing among users and between all levels of government, a strong role for the private sector and the use of new technology. At the very least, the following questions need to be answered:

- How can these investments be made efficiently, within the appropriate timeframe, without undermining public finances?
- How can we ensure that the upkeep of new and rehabilitated infrastructures will not be neglected and that their maintenance will be performed in a better and more consistent manner than in the past?

A calamitous history of cost overruns

The evidence is unassailable: large infrastructure projects completed through the conventional public sector procurement approach are generally saddled with significant cost overruns and delays.

In the United Kingdom, the Comptroller and Auditor General has reported that 73% of the projects undertaken by ministries and agencies using the conventional approach were completed at a cost exceeding the bid price and that 70% were delivered late. More recently, in Australia, the Allen Consulting Group reported that, on average, projects procured through the conventional approach were completed 23.5% behind time.

The extent of the cost overruns is significant. In the UK, the average observed was 47%. In Australia, a study found that infrastructure projects procured by the conventional method experienced cost overruns of 35.3% when measured from original approval.

Similar results are observed in all jurisdictions.

The implications are consequential

In most countries, governments are financially constrained. Debt levels remain relatively high and the funding requirements to fulfill core government missions such as health care, education and revenue support programs make it almost impossible to initiate any new major program in a fiscally responsible manner. Hence, to the extent they can be avoided, cost overruns on major infrastructure projects constitute an important waste of scarce resources.

Assuming a government commits to an infrastructure program valued at \$400 billion, this investment commitment would generally reflect the estimated cost of priority infrastructure projects and the financial capacity of the government. However, since under conventional procurement approaches cost overruns are most likely to increase actual costs to about \$560 billion, this means that within the budgetary constraint and given time horizon only 70% of the priority projects can be completed. Clearly, more efficient approaches are required.

The story does not end there. Government appropriation regimes are notorious for the lack of appropriate levels of funding for the maintenance and capital improvements over the life cycle of infrastructures. This myopic behavior invariably translates into shortened life cycles, rapid deterioration of the assets and, in the end, much higher costs than would have otherwise been required.

In the United States, the National Research Council concluded that “[d]espite the historic, architectural, cultural and functional importance of, and the economic investment in, federal facilities, studies by the General Accounting Office and federal government agencies indicate that the physical condition of the portfolio of public assets is deteriorating. Many necessary repairs were not made where they should have been most cost effective and have become part of a backlog of deferred maintenance.” This report

was published in 1998. Since then, report after report makes the same diagnosis with the caveat that the deterioration of public infrastructure assets is accelerating.¹

The new generation of infrastructure procurement

The large infrastructure requirements are far in excess of currently available public financing resources. While the size of this funding gap differs from country to country, it extends from the poorest to the richest of nations. Recognition of this situation has resulted in a widespread acceptance that the private sector can and should play a larger role in the financing and management of infrastructure in partnership with the public sector.

The gradual development of the public-private partnership approach was a pragmatic response to a public policy conundrum: how can the State reap the benefits of privatization without abdicating public service missions to the benefit of private concerns. The essence of public-private partnerships is to transfer to the private partner the asset risks of public infrastructures from inception and throughout its life cycle while retaining the use of the facilities or, at the very least, the regulation of the public service activities.

The results of this infrastructure procurement approach are compelling. The evidence is to the effect that the PPP approach optimizes project impacts while raising profitability for a given level of investment, in comparison with the conventional public procurement approach. These advantages are manifested in the following aspects:

- better coordination and greater synergy between the phases of design, construction and operations,
- an innovative design, the application of reengineering principles and efficient management techniques,
- emphasis placed on the quality of service offered to the user-customer through the payment mechanism,
- an approach aimed at minimizing total project costs throughout the entire project life cycle (capital investment and maintenance and operations),
- a more effective use of capital.

The advantages of the PPP mode of procurement also translate in the fact that the great majority are delivered to the public authority on budget and on time. Here again, the evidence from several jurisdictions is compelling. In Australia, for example, the Allen Report shows that PPP projects were completed 3.40% ahead of time, whereas projects procured through the public sector conventional approach were completed 23.5% behind time.

The approach also addresses the issue of the neglect of maintenance of infrastructures over their life cycles. With their long-term characteristics and their emphasis on

¹ See, for instance, "Public Works, Public Wealth : New Directions for America's Infrastructure", Centre for Strategic and International Studies, November 2005, and "Transportation for Tomorrow", National Surface Transportation Policy and Revenue Study Commission, December 2007.

performance and quality, PPP contracts provide a powerful antidote to this disease of neglect.

Up to the end of 2007, 900 PFI (PPP) projects in the United Kingdom, and 193 contracts elsewhere in Europe, had been signed. Projects in the UK totaled €42 billion and €32 billion elsewhere in Europe. The rise in procurement since 2004 points to steady growth in signed PPP contracts in Europe over the next few years. We observe a similar trend around the world. But, as the significant difference in the level of PPP procurement activity in the UK relative to elsewhere in Europe demonstrates, the adoption of the more efficient procurement approach is hampered by several factors.

The weak link

The impact of the strong demand for private and public infrastructures on the real sector of the economy, particularly the architecture, engineering and construction industries in Western economies, should not be underestimated.

The level of investment in public infrastructures has been relatively low in the last two or three decades. The high interest rates in the early 1990s caused a severe contraction of investments in residential and non-residential construction. Not surprisingly, the industries have adjusted to the actual level of demand: the number of firms and employment in the engineering and construction industries has dwindled; young talent choose more promising fields of activities. Moreover, the conventional public approach to procurement has led in most countries to a fragmentation of the architecture, engineering and construction industries. From a global perspective, it is worthy of note that half of the twenty largest construction companies are European. Although Japan counts five of them, thus far they have not been meaningful players in international markets.

Strong demand should incite a resurgence of the engineering and construction industries and attract talent and capital. However, this transition cannot occur overnight. It takes time to train qualified architects and engineers, to acquire the experience to manage large construction projects and to build the cadre of people capable of designing and completing complex infrastructure projects on time and within a reasonable but tight budget.

Moreover, the current structure of the industry and the resulting under-capitalization of firms is inadequate for the requirements of the new approaches to the procurement of infrastructure projects such as DBFOT or its public variant (PFI, PPP).

These factors constitute major constraints to a more rapid and broader adoption of the PPP approach despite its demonstrated superiority over conventional approaches, much anticipation and effort.

Financing Trends

I submit that the financing of the public infrastructures is unlikely to be the stumbling block in the future. Such financings possess a number of very desirable attributes. First,

these infrastructures serve essential public service needs. Moreover, a large proportion of the projects do not bear commercial risks since payments are based on availability conditions. Second, the financings are long term which corresponds to a definite need of significant pools of capital, namely life insurance and pension funds. The potential annuity value created by infrastructure assets cannot be matched by any corporate sector.

In a nutshell, public infrastructure has become a class of financial assets popular for its stable and recurring long-term cash-flows, often in regulated environments and enjoying semi-monopoly status. Therefore, as long as underwriters and funders remain disciplined, the market for this class of assets should remain very receptive.

We should be mindful, however, of the compounding effect of the construction risks and the fragile structure of the construction industry. Fragmented and undercapitalized, significant infusions of equity will be required to allow the industry in several countries to meet the demands inherent in the new procurement approaches, notably the public-private partnerships, imposed on the industry.

Finally, there is a need to secure other sources of risk capital. Insurance companies should play a much more significant role in the financing structures. For instance, inherent defect insurance can be an effective substitute for cash deposits and fund retention. Yet, such an insurance coverage is unavailable in several large markets. One would also hope that the monoline insurance industry will recapitalize and soon re-establish the stellar credit rating they require to render an effective contribution to the functioning of the debt markets.

Conclusion

My observations can be summarized as follows:

- Rapid growth in public infrastructure investments is fueled by real and objective factors that portend an increase in the proportion of GDP allocated to such activities relative to the preceding decades.
- The resulting additional demand on public funds raises two major policy questions:
 - Can the procurement of these new or rehabilitated infrastructures be effected in a manner that considerably reduces the likelihood of significant cost overruns and delays, a problem which plagues the conventional procurement of public infrastructure projects?
 - How can we ensure that the maintenance of these infrastructures will be carried-out at an adequate level throughout their life cycle?
- A pragmatic response to these two major policy questions is the adoption of the PPP approach. A sufficient number of projects have been completed to date to demonstrate the superiority of the PPP approach over the conventional public sector infrastructure procurement methods.

- The PPP approach makes a substantial call on private capital. The availability of capital to finance this burgeoning public infrastructure market is unlikely to become a constraining factor. However, it would be prudent to focus more attention on the present limited capabilities of the engineering and construction industries to meet both the growth in activity and the financial demands inherent to the new procurement approaches.

Thank you.