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Article

Editor's introduction

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EIB PAPERS

Innovative financing of infrastructure – the role of public-private partnerships:

Infrastructure, economic growth, and the economics of PPPs

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Editors' introduction

Mobilising private finance to fund infrastructure projects is not entirely new. On the contrary, historically, toll roads, bridges, canals, schools, railways, hospitals, and the like have often been supplied by the private sector. Notably, there has been a long tradition of concession agreements in countries like France. That said, what distinguishes public-private partnerships (PPPs) from other forms of private sector involvement in the financing and provision of infrastructure services is that they establish a long-term, interactive partnership between the public and private sectors. Such a partnership has many salient features. One is that the public sector purchases infrastructure services rather than the infrastructure asset itself. Another is the allocation of risks between public and private partners, with each partner assuming those risks it can control and manage better than the other partner.

Several factors have spurred the use of PPPs in lieu of traditional public sector procurement. Some observers see them driven largely by government budget constraints, arguing that they enable governments to provide public services without having to incur upfront high infrastructure investment cost. Others consider them part and parcel of a paradigm shift, calling for a greater role of the private sector in economic activities that used to be the domain of the government. Related, but not identical to this view is the notion that PPPs are better at delivering public services than the traditional way of supplying them. But are they?

The contributions to this volume of the *EIB Papers* (comprising two editions: Volume 10, Number 1 and Volume 10, Number 2) all evolve around this question. They cover a wide range of conceptual and practical themes, including trends in public investment and capital; the link between public capital and economic growth; the economic pros and cons of PPPs; contract design and risk transfer; the applicability of the PPP model across different economic sectors; PPP appraisal questions – notably how to find out whether they promise value for money; and PPP experience from a variety of countries.

Before introducing the contributions, a note on terminology is warranted. There is often confusion about the terms 'infrastructure investment' and 'public investment'. While it is true that the bulk of public investment is infrastructure investment—such as the construction, operation, and maintenance of roads, bridges, tunnels, schools, hospitals, prisons and the like—the reverse does not hold. That is, a whole lot of infrastructure investment is undertaken by commercial entities (public sector corporations or private sector ones) and often mistakenly taken for public investment. Examples include investment by energy companies in generation capacity; telecoms companies in networks; or rail companies in rolling stock or rail infrastructure. In all these cases the investment is financed and undertaken by commercially run enterprises and therefore recorded as private investment in national accounts statistics—regardless of the ownership structure of that enterprise. Only investment directly financed from the budget of the government—be it at the central or subnational level—qualifies as public investment.

With this clarification duly noted, here is our guided tour through Volume 10 of the *EIB Papers*.

In their paper on trends in EU infrastructure investment, **Timo Vällilä**, **Tomasz Kozluk**, and **Aaron Mehrotra** assess the evolution and determinants of public infrastructure investment in EU countries – old and new – and the significance of infrastructure finance through public-private partnerships, which are often portrayed as a substitute to traditional public procurement of

infrastructure. The paper offers many interesting insights; we sketch three of them here. While public investment has been on a downtrend in many pre-enlargement EU countries, public capital stocks have continued to grow in most of them, which suggests that infrastructure assets are not being eroded. Drawn-out episodes of fiscal consolidation explain most of the decline in public investment in the pre-enlargement EU countries, but EMU membership does not, and fiscal consolidation in the new member states of Central and Eastern Europe has not led to wholesale squeeze of infrastructure investment either economy-wide, or by the public sector. Finally, while PPPs have undoubtedly brought about an important structural change qualitatively speaking, their quantitative importance remains modest. The overall conclusion then is that while public investment has been trending down in many countries and while public-private partnerships are gaining popularity, the quantitative significance of these developments should not be exaggerated.

Understanding trends in infrastructure investment and their determinants is important. But even if there were a decline in the stock of public infrastructure, would it matter? **Ward Romp** and **Jakob de Haan** address this question in their survey of the theoretical and empirical literature on the link between public capital and economic growth. Non-economists may find this a superfluous question in the first place, thinking that infrastructure is an essential factor of production and a lack of it must surely stifle economic development. Although this is correct in principle, reality is more complex, and the authors highlight at least three reasons why a positive impact of public capital on economic growth cannot be taken for granted. For a start, infrastructure investment is not sufficient on its own to generate a sustained rise in economic growth. There is evidence that the effect of public investment spending depends, among other things, on the policy and institutional environment. And then, resources devoted to infrastructure cannot be used for other, potentially more productive purposes – such as private investment, maintaining the existing public capital stock, and human capital formation. Finally, even when observing a positive link between public capital and economic growth, the direction of causality is unclear: while public capital may affect productivity and output, economic growth can also shape the demand and supply of public capital services. All in all, the authors conclude that although not all studies find a growth-enhancing effect of public capital, there is now more consensus than before that public capital furthers economic growth. They stress, however, that the impact reported by recent studies is not as big as some earlier studies suggested. What is more, the effect of public investment differs across countries, regions, and sectors.

Accepting the consensus view that public capital is indeed productive on average leads to an obvious question: is there a lack of public capital in the European Union? The contribution by **Christophe Kamps** is one of the first papers trying to answer this question for EU-15 countries. He uses two measures to gauge the size of public capital. One is the ratio of the stock of public capital to GDP; the other is the ratio of the stock of public capital to the stock of private capital. For each ratio, the author estimates the growth-maximising level and compares it to actual ratios. It turns out that most countries have a ratio above the growth-maximising level, but the deviation from the optimum is not statistically significant. The exceptions are Austria, France, and the Netherlands, which have a ratio of public capital to GDP significantly above the growth-maximising level. For the second measure, the estimates show that all countries but two have ratios of public to private capital above the growth-maximising value. That said, only in four countries (France, Greece, Ireland, and the Netherlands) is the excess of public capital statistically significant. By contrast, only Portugal appears to have too low a public to private capital ratio. To summarise, the empirical results suggest that there is currently no lack of public capital in most EU-15 countries. But Kamps takes the analysis a step further and examines whether a shortage of public capital might arise if current trends in public investment were to continue. He finds that current public investment seems adequate for the EU-15 as a whole, but Austria, Belgium, and the United Kingdom seem to grossly under-invest in public capital, while there is evidence for over-investment in Portugal.

The paper by **Timo Vällilä** turns to the spotlight on public-private partnerships. It takes as a starting point two opposing views about why public-private partnerships emerged and gained popularity. Some observers claim that fiscal considerations have driven public-private partnerships as they allow governments constrained by binding fiscal deficit rules to implement infrastructure projects that would otherwise never materialise, or would only materialise with a delay. Others argue that public-private partnerships offer real benefits through higher productive efficiency at the project level. It is against this background that the paper analyses the microeconomic pros and cons of public-private partnerships by identifying the sources of both higher benefits and higher costs associated with them, as compared to traditional public investment. The broad conclusion is that public-private partnerships can offer productive efficiency gains over traditional public provision, but that such gains come with costs (in particular possibly lower allocative efficiency and higher transaction costs), which may outweigh the gains. Another key conclusion is that fiscal policy should be a non-issue in deciding how to finance and provide services. The shifting of investment between public and private sector books does not create any leeway in public finances or in the economy more broadly. In other words, there is no macroeconomic case for – or against – public-private partnerships. Taken as a whole, Vällilä concludes that despite many caveats, there is an economic case for a public-private partnership if it can deliver a socially acceptable level of allocative efficiency, while delivering a higher level of productive efficiency than traditional public provision, at non-prohibitive transaction costs.

Cognisant of the potential benefits of public-private partnerships, especially their capacity to generate life-cycle cost savings through ‘bundling’ the construction and operation of infrastructure assets, **Mathias Dewatripont** and **Patrick Legros** critically assess the implications of contract design and risk transfer on the provision of public services under public-private partnerships. Two results stand out. First, the alleged strength of public-private partnerships in delivering infrastructure projects on budget more often than traditional public procurement could be illusory. This is because there are costs associated with trying to avoid cost overruns. There is then a trade-off between these costs and the benefits of minimising cost overruns. An intriguing implication of this insight is that cost overruns, as they often occur in traditional procurement, could reflect equilibrium phenomena rather than too costly procurement of infrastructure assets. The other result is equally gripping: the use of external (i.e., third-party) finance in public-private partnerships, while bringing discipline to project appraisal and implementation, implies that part of the return on efforts exerted by the private-sector partner accrues to outside investors; this may undo whatever beneficial effects arise from ‘bundling’. In this context, the authors also argue that debt finance is less damaging than third-party equity finance, which speaks in favour of large, expert creditors when outside investors are relied on to finance public-private partnerships.

Armin Riess further delves into the microeconomic pros and cons of public-private partnerships, investigating whether the PPP model is applicable across sectors. Focussing on two key features of public-private partnerships – the ‘bundling’ of construction and operation of an infrastructure asset, for one, and private ownership for another – he argues that the PPP model is suitable for some public services but not for others. More specifically, public-private partnerships for roads, bridges, tunnels, water resources and supply, waste management, and accommodation services provided by schools, hospitals, prisons, city halls, and so on seem to make eminent sense. By contrast, they might do more harm than good in providing IT services and core services in education (i.e., teaching) and health (i.e., clinical services). Also, the case for public-private partnerships is doubtful when public safety is of considerable concern – railway networks being a prime example. What then makes a service unsuitable for a public-private partnership? The key issue here is the importance of public-interest objectives the service aims at and the ease (or difficulty) of specifying, measuring, and guaranteeing them. The author’s main conclusion is that for public-private partnerships to work for

the general good, the incentive-oriented, performance-based mechanism – supposed to give them an edge over traditionally procured infrastructure – warrants performance measures that inform well about the attainment of public-interest objectives. When they do, public-private partnerships can work wonders, but when they do not, they might backfire precisely because of their incentive-oriented mechanism.

With public-private partnerships, a government has now more options than before to ensure the provision of public services. When projects were traditionally delivered solely by the public sector, the government's main decision was whether to undertake the project or not. Now the government also has to decide whether to choose the traditional mode of delivery or whether to opt for a public-private partnership. In the latter case, it also has to decide between alternative private sector suppliers.

But how should governments assess alternative service delivery options? This is the question pursued by **Paul Grout** in his paper on value-for-money measurement in public-private partnerships. He considers alternative value-for-money tests, discusses their main conceptual problems, and looks at their use in the United Kingdom. The focus is on three broad tests: a full cost-benefit analysis of alternative procurement options, an assessment of the cost to the government budget of alternative procurement options (which rests on a comparison of private PPP bids with a so-called public sector comparator), and – much simpler – a comparison of private PPP bids. The author shows that under reasonable assumptions the second test yields the same ranking of procurement alternatives as the first one, putting the second test ahead of the first given it is less costly to carry out. But this does not mean these tests correctly guide decision-makers. On the contrary, as Grout argues, they come with major problems. One is that when comparing the cost of a public sector comparator to the budgetary cost of a public-private partnership, adjustments need to be made for differences in the underlying cost and benefit streams, where these differences should be assessed at social values rather than market prices. This gives rise to huge scope for error. Moreover, Grout reasons that the correct discount rate for evaluating the budgetary cost of a public-private partnership is likely to be higher than the discount rate for the public sector comparator. It follows that if the same discount rate is used for both types of cost – as is often done in practice – there is a built-in bias against public-private partnerships. This leaves the simple tests of comparing private PPP bids. Obviously, the scope for error just discussed does not fully disappear, but it is likely to become much smaller. In sum, the paper argues that value-for-money tests centred on comparisons between private sector alternatives are well focussed, less prone to measurement error than other tests, and more likely to deliver the best candidate from the group it considers. It also stresses that competition for public-private partnerships is key for getting value for money – not only in terms of obtaining a good price but also in generating a sound understanding of the project – and that with sufficient competition, public sector comparators play a secondary role.

The lessons **Patricia Leahy** draws from the UK Private Finance Initiative (PFI) – launched in 1992 – echo some of Paul Grout's findings. For one thing, there is the importance of competition in the bidding for public-private partnerships and the prerequisites for effective competition. For another, there is the need for a value-for-money appraisal framework conducive to choosing PFI when it is most likely to deliver value for money. To this end, the UK appraisal framework has been changed in recent years, including a reduced emphasis on the public sector comparator. But there are other lessons that go beyond the procurement phase of PFI projects. For a start, while the experience with the operational performance of PFI remains limited to-date, work carried out by the National Audit Office points to several factors affecting the performance of PFI projects. Such factors relate, most notably, to the management and evaluation of the contract, with any contractual changes calling for an in-depth analysis of their costs and benefits, and the monitoring

and sanctioning of the private partner's performance, including a credible threat to terminate the contract. Another lesson is that excessive risk transfer to the private sector should be avoided, as it would only create problems for the public sector further down the road. A final lesson worth highlighting is that financing arrangements can affect value for money. In conclusion, the UK Private Finance Initiative – covering a much wider range of sectors than similar initiatives in other countries to-date – offers lessons that, if learned, promise better value for money.

This takes us to the paper by **Rui Sousa Monteiro**, who reviews the PPP lessons from Portugal, the only other country next to the UK where public-private partnerships are significant in terms of both the number of projects undertaken and their size relative to public investment. In fact, the importance of public-private partnerships relative to overall investment, sectoral investment, and – in particular – to GDP has been considerably higher in Portugal than in other EU countries. Related to this is the fact that compared to countries with a higher per capita income – such as the UK – public-private partnerships in Portugal have often implied a major extension of infrastructure assets rather than small additions to the existing infrastructure. A key message transpiring from Monteiro's analysis is that one must not confuse the effectiveness of public-private partnerships in rapidly developing infrastructure and in improving the quality of public services, for which Portugal provides considerable evidence, with the ultimate goal of enhancing the efficiency of using and allocating scarce resources. The author observes that on this count, Portugal's PPP projects may not have scored as high as they could have. Against this background, Monteiro discusses recent changes to Portugal's institutional framework for public-private partnerships (especially a more rigorous appraisal of public-private partnerships, their long-term budgetary implications, and of the contractual arrangements supporting them) that aim at ensuring efficiency in the provision of infrastructure services and, thus, value for money. A key lesson is that one needs to thoroughly analyse the long-term budgetary impact of future public-private partnerships, as payment obligations the government has taken on under previous PPP deals have given rise to considerable fiscal pressures. To illustrate the scope of the challenge, shadow toll payments to PPP concessionaires are projected to soon reach an amount equal to the current central government public investment budget for the road sector (around 0.5 percent of GDP). Another aspect worth noting is that Portugal's PPP appraisal framework now calls for public sector comparators to guide the decision for or against public-private partnerships. In this sense, Portugal – as well as other countries – seems to be swimming against the UK tide and the recommendation of Paul Grout, which – of course – does not mean that Portugal is on the wrong track.

Given the urgency of expanding and modernising public infrastructure in countries moving from plan to market, it would not be unreasonable to expect an important role for public-private partnerships in countries of Central and Eastern Europe (CEE). That this has not been the case is a key message emerging from the paper by **Andreas Brenck, Christian von Hirschhausen, Thorsten Beckers, and Maria Heinrich**. Although the authors focus on the highway sector in selected CEE countries, their findings explain more generally why public-private partnerships have not lived up to their potential and, by extension, what needs to be done so that they will in future. Institutional shortcomings top the list of explanations. Looking forward, the authors stress the need for a systematic assessment of procurement options, a more transparent and clearly defined contract awarding process, a credible commitment by the government not to interfere and/or backtrack on agreements, and a rational framework for renegotiating contracts. Improvements in these areas should lead to better-prepared PPP tenders, more competition for public-private partnerships, fewer delays in project implementation, and lower transactions costs. Other factors explaining why public-private partnerships have underperformed include the 'usual suspects' known from countries such as Portugal and the UK: too narrow design specifications, which discourage contractors to choose innovative solutions, and far too optimistic demand projections. Factors specifically

applying to highway PPPs include too optimistic an assessment of users' willingness to accept tolls and failure to properly take into account network effects – notably the diversion of traffic to toll-free roads. In sum, the complex structure of public-private partnerships has been a formidable challenge for transition countries and, in fact, may have exceeded their institutional capabilities. That said, the authors note substantial progress towards a more stable, focused, and transparent institutional framework. This bodes well for the future, promising that PPP projects will be more successful, result in higher efficiency, and be chosen because they offer value for money and not because governments perceive them as a means to circumvent budget constraints.

The contributions outlined so far look at public-private partnerships from a variety of angles: trends in public investment, the quantitative importance of public-private partnerships in EU economies, the impact of public investment on economic growth, the economics of public-private partnerships, and the PPP experience of several countries. An obvious question that remains is: and what about the public-private partnerships supported by the European Investment Bank?

Campbell Thomson sheds light on this question. Summarising the findings of an evaluation carried out by Operations Evaluation of the Bank, his paper suggests that projects were largely completed on time, on budget, and to specification. There is also evidence on some projects that the standard of the works was higher than would have been found in a public procurement project. But he also reports evidence that optimistic demand forecasts may compromise the efficiency and financial sustainability of some projects. The key impact of the PPP mechanism was, however, that the projects were implemented at all. For all the projects evaluated, public sector budget constraints meant that the alternative to a PPP project was no project, or at least no project within the foreseeable future, rather than a public procurement project. The paper observes that in such cases the use of a public sector comparator to examine whether a public-private partnership offers better value than public procurement might be questioned and, indeed, a public sector comparator was carried out only for a minority of the projects evaluated. As to the prerequisites for prime performance of public-private partnerships, Thomson concludes that projects should have clear boundaries and output specifications, the underlying project must be economically and financially sustainable, competition must be maintained to minimise costs, and the private sector partners need to carry risk. That said, the paper also emphasises that public-private partnerships are not a panacea for public expenditure. They create new challenges for promoters, private sector partners, and financiers. But in the right circumstances, they can make public infrastructure available earlier, more effectively, and more efficiently than traditional public procurement. The challenge is to match their use to the circumstances.

Taken together, the contributions to this volume of the *EIB Papers* identify a few prerequisites for meeting this challenge. Perhaps most importantly, both theoretical considerations and practical experience suggest that the seeds of success or failure are sown early on in the procurement phase. The soundness of the framework for appraising value for money; the transparency and competitiveness of the bidding process; the importance of getting the contractual relationship, especially risk transfer right; and the need to keep in check the additional transaction costs of setting up and following through a PPP receive ample attention across contributions. Get these prerequisites right, and a PPP is an attractive route to follow. Get them wrong, and the public sector is in for an expensive ride.

Armin Riess and Timo Vällilä