

Blanc-Brude, Frédéric; Goldsmith, Hugh; Väililä, Timo

Working Paper

Public-private partnerships in Europe: an update

Economic and Financial Report, No. 2007/03

Provided in Cooperation with:

European Investment Bank (EIB), Luxembourg

Suggested Citation: Blanc-Brude, Frédéric; Goldsmith, Hugh; Väililä, Timo (2007) : Public-private partnerships in Europe: an update, Economic and Financial Report, No. 2007/03, European Investment Bank (EIB), Luxembourg

This Version is available at:

<https://hdl.handle.net/10419/45292>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



European Investment Bank

Economic and Financial Report 2007/03

PUBLIC-PRIVATE PARTNERSHIPS IN EUROPE: AN UPDATE

Frédéric Blanc-Brude, Hugh Goldsmith and Timo Vällilä* †

Disclaimer: This Economic and Financial Report should not be reported as representing the views of the EIB. The views expressed in this EFR are those of the author(s) and do not necessarily represent those of the EIB or EIB policy. EFRs describe research in progress by the author(s) and are published to elicit comments and further debate.

JEL Classification codes: H54, L33, L98

* **Frédéric Blanc-Brude** is with King's College, London. He visited the Economic and Financial Studies Division of the European Investment Bank during this research.

Hugh Goldsmith is PPP Coordinator, Projects Directorate, European Investment Bank.

Timo Vällilä is Senior Economist, Economic and Financial Studies Division, European Investment Bank.

† The authors would like to thank Rein Jüriado for assistance with the data and Eric Perée and Nicholas Jennett for comments on an earlier draft.

PUBLIC-PRIVATE PARTNERSHIPS IN EUROPE: AN UPDATE

Abstract

This paper offers an updated description of the macroeconomic and sectoral significance of PPPs in Europe, without assessing PPPs from a normative perspective. It shows that, over the past fifteen years, more than one thousand PPP contracts have been signed in the EU, representing a capital value of almost 200 billion euro. While PPPs have in recent years become increasingly popular in a growing number of European countries, they are of macroeconomic and systemic significance only in the UK, Portugal, and Spain. In all other European countries, the importance of investment through PPPs remains small in comparison to traditional public procurement of investment projects. However, PPP procurement is used extensively for major projects and this is spreading out from transport into other sectors.

1. Introduction

Public-private partnerships (henceforth PPPs) have been gaining popularity and significance as a public procurement method—at least if judged by anecdotal evidence from the media, public sector pronouncements, and specialised conferences. To the best of our knowledge, however, no systematic assessment of their macroeconomic and sectoral significance in Europe has been undertaken since an initial review by Välilä *et al.* (2005).

This paper seeks to build on that analysis using an updated and improved database of public sector and PPP investment levels. To be clear, the purpose of this paper is to fill an information gap on PPPs by offering a concise description of the changing significance of PPPs at the aggregate level in Europe. Given the paucity of available material on PPP investment, the focus is on description using historical data rather than potential deals. The paper does not strive after an academic assessment PPPs from a normative perspective; it merely presents and interprets factual information, without taking a stance for or against PPP.

Although PPP activity is well covered by the specialist press and by on-line commercial databases¹, often treated as a sub-category of project finance deals, such information sources are frequently incomplete or repetitious. Deal databases track PPP projects at different stages in the project cycle from tender publication through to financial close. However, non-project financed deals are often not included, project re-financings are sometimes included with a risk of double counting, and deals that eventually fall through and hence do not lead to investment may not be flagged as such. The reporting emphasis is on deal flow and presenting annual league tables by sponsors, sectors, and financial advisors *etc.*, rather than assessing the macroeconomic or sectoral significance of the PPP procurement.

Information on the real level of capital investment resulting from such deals is also hard to come by. It is frequently unclear exactly what reported project finance costs represent. In some cases, investments are spread over the life of the contract and may

¹ The main commercially available information sources are Thomson's Project Finance International, InfraNews, Infrastructure Journal and Dealogic's ProjectWare

include maintenance activity, whereas in others the investment is an upfront greenfield construction project. In other cases, only the proportion of financing placed on the debt or bond market is recorded rather than total investment costs. When a total project cost is recorded it is also unclear if this represents capital investment or just the private finance, which may ignore a capital subsidy element from the public granting authority. Reported costs may or may not include additional items such as financing costs during construction. To our knowledge, no commercial database has an easily accessible, comprehensive and consistent record of capital investment undertaken through PPPs throughout the EU.

An added difficulty is that there is no common definition of a PPP project. Thus, even amongst the different commercial databases, the same project may or may not have a PPP flag. The construction industry focus on PPP as a category of infrastructure projects has been dominated by trends in the UK and the specific characteristics of Private Finance Initiative (PFI) projects. Beyond the UK, concession-based financing of infrastructure is common in France, Italy, and Spain. This relies on user charges rather than payments by a public authority as the source of future revenues. Other PPP models include institutional PPPs and mixed ownership structures in which the public sector becomes a joint owner of a special purpose vehicle with a private partner. As a result, a number of PPPs are simply not recorded and deals that are not really PPPs but use project finance are.

In this paper, to be counted as a PPP, a project must be based on a long term, risk sharing contract between public and private parties and include the bundling of design, construction, operation and/or maintenance, together with a major component of private finance. This rather restrictive definition excludes structures to get investment off the public balance-sheet without any private sector investment. It also excludes all privatisations involving asset sale and regulation rather than procurement and contracting. However, projects with user charges, shadow tolls, availability charges or mixed payment schemes are all included as representing different form of risk transfer. In practice, there are always some blurred boundaries as to whether a project should or should not be treated as a PPP and judgement must be exercised based on an understanding of the underlying deal.

There is no European level monitoring of PPP activity, although national databases exist in the UK, Ireland and Italy². For the developing and transition economies, the World Bank maintains a database of private sector participation in infrastructure that encompasses a broad range of sectors (*i.e.*, including energy and telecoms) and includes privatisations³. The European Investment Bank is one of the largest financiers of infrastructure projects and of PPP throughout Europe. As such, it has a privileged view of how such projects are structured and the resulting investment costs. The Bank's own databases and project files provide an additional, detailed source of information on PPPs.

The expansion of PPP into Europe has been heralded for several years without ever really delivering on the promise beyond a few major deals. But now there is strong evidence that the PPP market is starting to spread from the UK to continental Europe. Standard & Poor's (2006) and DLA Piper (2007) note the growing momentum of European PPP deals, largely facilitated by recent enabling legislation in countries such as France, Germany, Greece and the Czech Republic. This momentum in the market is further reinforced by political pronouncements, such as statements by Ministers in both France and Germany that PPP procurement should attain 10 to 15 percent of overall public sector capital expenditure, similar to levels seen in the UK. Nonetheless, such political will takes time to translate into project activity due to project preparation times and the institutional maturity of different sectors. According to DLA Piper (2007)⁴, the total value of PPP deals in the "pipeline" as of July, 2007 was 73 billion euro, of which 60 percent are in the transport sector.

The PPP investment data analysed here come from a variety of sources, notably ProjectWare and Infrastructure Journal, cross-checked against the Bank's own project files and validated by country specialists familiar with local markets. The data cover the period 1990 to 2006. The database does not include smaller projects with a capital value less than about 10 million euro procured by local authorities through various

² For UK see Partnerships UK website at <http://www.partnershipsuk.org.uk>; for Italy see Osservatorio Nazionale del Partenariato Pubblico Privato website at <http://infopieffe.it> and for Ireland see <http://www.ppp.gov.ie/projects/>

³ See <http://ppi.worldbank.org/>

⁴ Analysis based on the InfraNews database, see www.infra-news.com.

forms of concession⁵. An Annex explains in detail how the data have been aggregated and cross-checked.

One additional difficulty in examining PPPs is limited data availability on actual annual investments. Only in the UK can one find data on annual capital expenditure through PPPs, allowing for comparisons with other flow variables such as aggregate public investment or GDP. In all other countries one is limited to collecting data on the signed total value of PPP projects, which is a stock variable that cannot be directly compared with flow variables. Moreover, as already noted, the reported deal costs usually refer to the total financing needs, which may be substantially higher than the “pure” construction contract costs. We suggest some simple means to alleviate such problems below; however, it is important to emphasise that the comparisons remain imperfect and should be treated with sufficient caution.

Section 2 surveys PPPs by country and over time. The sectoral distribution of PPPs is considered in Section 3, followed by an assessment of the significance of investment through PPP relative to other types investment in a few selected sectors in Section 4. Section 5 summarises and concludes.

⁵ This omission is only likely to result in a noticeable bias for Italy, France and Spain. It will tend to slightly understate the overall level of PPP activity in those countries.

2. PPPs by country

Tables 1 and 2 show the distribution of signed PPP projects—as defined above—across countries and over time. Table 1 shows the proportion of the number of projects in each country and Table 2 the total value of signed deals over time. Over the past fifteen years, more than one thousand PPP contracts have been signed in the EU, representing a capital value of almost 200 billion euro.

With 812 PPP projects closed by end-2006⁶, the UK accounts for some three-quarters of all European PPPs by number. The number of UK PPPs rose rapidly during 1995-98; stagnated somewhat in the early years of this millennium, but has risen again to some 90-100 projects annually in recent years. Spain with a total of 92 projects (9 percent of total) has become the second-biggest PPP market, with a steady increase in the number of projects closed annually. France, Germany, Italy, and Portugal all have 20-30 PPP projects. These 6 countries account for some 95 percent of all European PPPs by number.

The distribution in investment volume terms is slightly different, with UK PPPs accounting for 58 percent of the total value of European PPPs. The other 5 countries identified above share another third of all PPPs by value among them. Greece has a relatively large investment volume due to the size of the few large projects procured as PPPs, such as Athens International Airport. The fact that the UK share in value terms is so much lower than in terms of project numbers reflects differences in the sectoral distribution of PPP projects and average deal size between the UK and continental Europe, as discussed in Section 3.

⁶ The latest PFI signed deals data published by HM Treasury in July 2007 lists 582 projects (see http://www.hm-treasury.gov.uk/documents/public_private_partnerships/ppp_pfi_stats.cfm). However, they state that this list omits many deals previously reported by line Ministries, due to them being either completed, consolidated or smaller than the revised recommended PFI threshold of 30 million euro. The Partnerships UK projects database lists 816 projects for the same period of which 670 are operational (see: <http://www.partnershipsuk.org.uk/ProjectsDatabase/projects-dbase.asp>).

Table 1. Countries' Percentage shares of European PPPs

	% of No. of signed projects	% of value of signed projects
Austria	0.2	0.6
Belgium	0.7	1.1
Cyprus	0.3	0.4
Czech Rep.	0.2	0.4
Denmark	0.0	0.0
Finland	0.2	0.2
France	2.8	3.9
Germany	2.4	2.9
Greece	0.6	3.9
Hungary	0.8	2.7
Ireland	0.7	0.7
Italy	2.1	3.7
Latvia	0.1	0.0
Malta	0.1	0.1
Netherlands	1.0	1.7
Poland	0.4	0.9
Portugal	2.3	5.8
Romania	0.3	0.1
Slovak rep.	0.1	0.0
Slovenia	0.1	0.0
Spain	8.6	12.8
Sweden	0.1	0.2
UK	76.2	57.7
Total	100.0	100.0

Sources: EIB, HM Treasury, Irish PPP Unit and various commercial databases.

Table 2. Evolution of European PPPs over time

Year	Number of signed projects	Value of signed projects (euro millions)
1990	2	1386.6
1991	3	81.4
1992	4	614.5
1993	1	454.0
1994	2	268.1
1995	15	3277.0
1996	31	8420.1
1997	42	5268.5
1998	79	19965.8
1999	86	9707.8
2000	106	15746.3
2001	83	15219.2
2002	89	20521.1
2003	99	18461.3
2004	135	18124.5
2005	137	28768.1
2006	152	28427.2
Total	1066	194711.6

Sources: EIB, HM Treasury, Irish PPP Unit and various commercial databases.

A comparison of PPP stock values and public investment flows is, obviously, a comparison of apples with oranges, resulting in an overestimation of the relative significance of PPPs in one year and possibly an underestimation in subsequent years. To alleviate this bias, we have spread the signed value of capital investment over the 5 years following contract signature, taken to represent, on average, the duration of a typical major works contract. In practice, construction contract duration and annual construction expenditure patterns on site are highly variable depending on the sector and the size of the project. However, aggregation across sectors and countries should serve to counteract this micro-scale variability. The smoothed PPP investment flows can be compared with other annual flow variables.

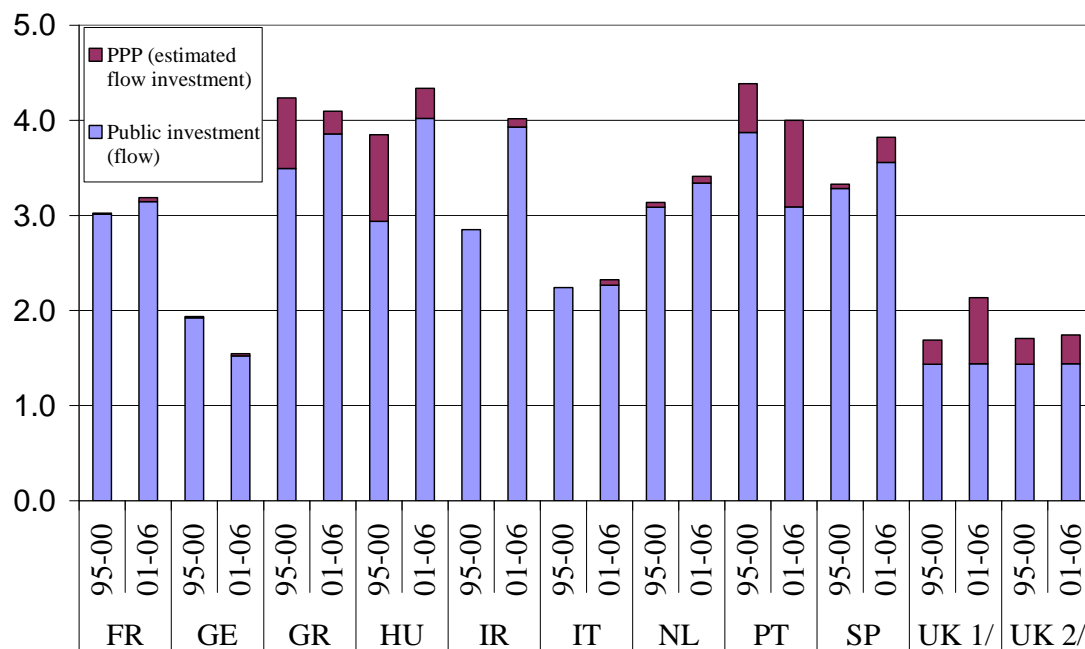
Figure 1 seeks to gauge the significance of PPPs from a macroeconomic perspective, using the smoothed annual PPP investment volumes described above. It shows the estimated aggregate value of PPP investment for each country (annual average during 1995-2000 and 2001-06, respectively) and public investment (average annual flows, as above), both expressed in percent of GDP.⁷

These data have to be treated with caution as they contain both upward and downward biases. Firstly, the capital expenditure of those PPPs that are recorded on the governments' balance sheets is also included in the public investment figures; consequently, such PPP projects are double-counted, which reduces the overestimation of the significance of PPPs. Without such double-counting the public investment figures shown would be smaller and hence the relative size of PPPs bigger. Secondly, as already noted, the investment costs reported in the press or recorded in databases are often the total investments over the life of a concession rather than initial construction expenditure and may also include additional cost items such as financing or transaction costs. This bias may tend to overstate the importance of PPPs on an annual basis.

⁷ Estimates for annual capital expenditure flows in PPP projects are only available for the UK (see Figure 2).

Despite these various caveats, we consider that Figure 1 offers a best available comparison of the relative significance of PPP procurement for major projects across Europe over the past 12 years. To gauge the magnitude of bias in the estimated PPP investment flows, the UK data are presented both based on the estimation explained above (labelled UK 1/ in the Figure) and based on published PPP investment flow data (labelled UK 2/). For the UK, the bias is small in the 1995-2000 period but large (upward bias) in the 2001-06 period.

Figure 1. Public investment and PPPs
(averages 1995-2000 and 2001-06, in percent of GDP).



Sources: EIB, HM Treasury, Irish PPP Unit, Eurostat, various commercial databases.

Note: UK 1/ shows the PPP investment flows in the UK based on the estimation procedure explained in the text. UK 2/ shows the PPP investment flows in the UK based on the data underlying Figure 2.

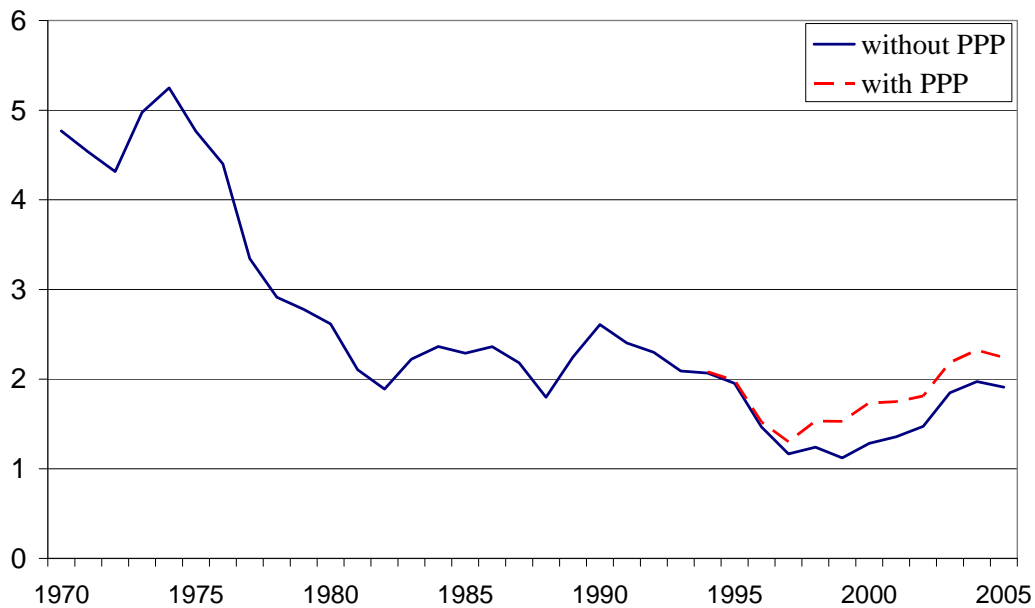
Figure 1 suggests the following conclusions. First, PPPs remain quantitatively speaking of limited macroeconomic significance in Europe. As a very rough estimate, their capital expenditure is unlikely to exceed one-quarter of public investment in any country, and in most countries that share is a just a few percent. Second, the countries where PPPs appear to have most macroeconomic and systemic significance include the UK, Portugal, and Spain. Countries such as Greece and Hungary, whose PPP bars

appear high in Figure 1, are in fact characterised by a small number of large PPP projects.

Zooming in on the UK, Figure 2 depicts actual capital expenditure through PPP projects (which is only available for the UK) against the long-term evolution of public investment. To the extent that the public investment figures include capital spending through those PPPs that are recorded on-budget, we are now underestimating the relative significance of PPPs. Nevertheless, the Private Finance Initiative (PFI) remains of limited significance, as also confirmed by HM Treasury (2006):

“PFI continues to play a small but important role in the Government’s investment in public services... This means that the proportion of government investment in public services through PFI remains relatively stable at 10 to 15 per cent... and PFI is expected to account for around 10 per cent of total investment in public services in 2005-06... The vast majority of increased investment in the UK’s public services has been conventionally procured.”

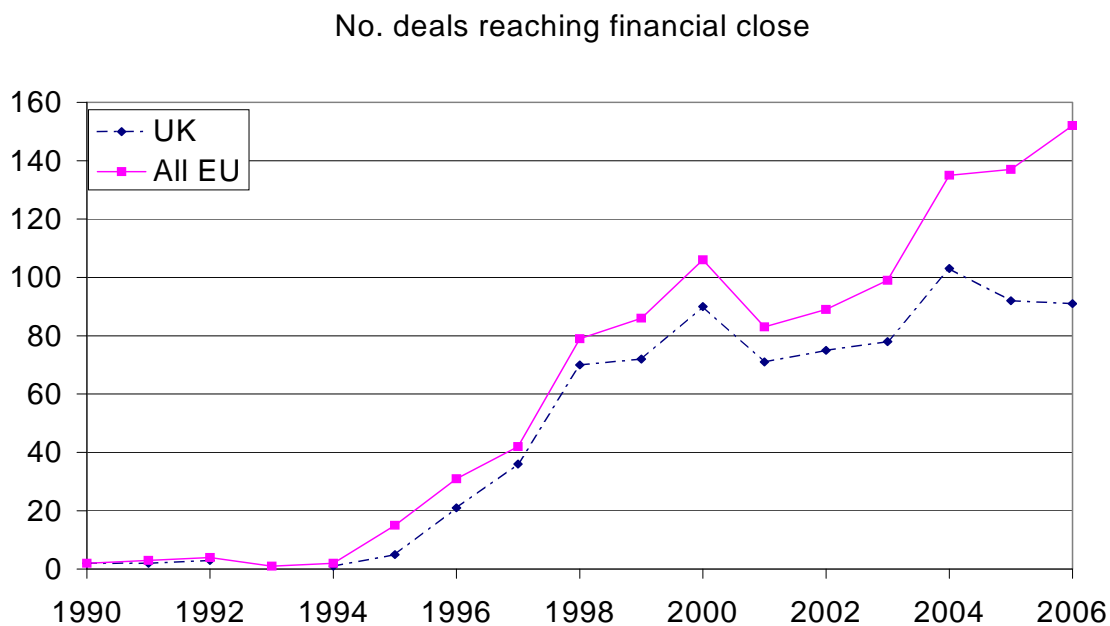
Figure 2. Public investment and investment through PPP projects in the UK (in percent of GDP).



Sources: HM Treasury, OECD.

Finally, Figure 3 shows the trend in the number of deals per year since 1990, with rapid growth starting in the mid 1990s and a relative increase in the number of non-UK projects since 2001. The momentum of UK deals reaching financial close has flattened off since 2000 to around 90 per year, whereas the number of European projects continue to grow and now represent 40% of the total. PPPs are clearly growing in significance across Europe.

Figure 3. Number of deals reaching financial close per year.



Sources: EIB, HM Treasury, EirePPP, Eurostat, various commercial databases.

Note: The All EU figure includes the UK.

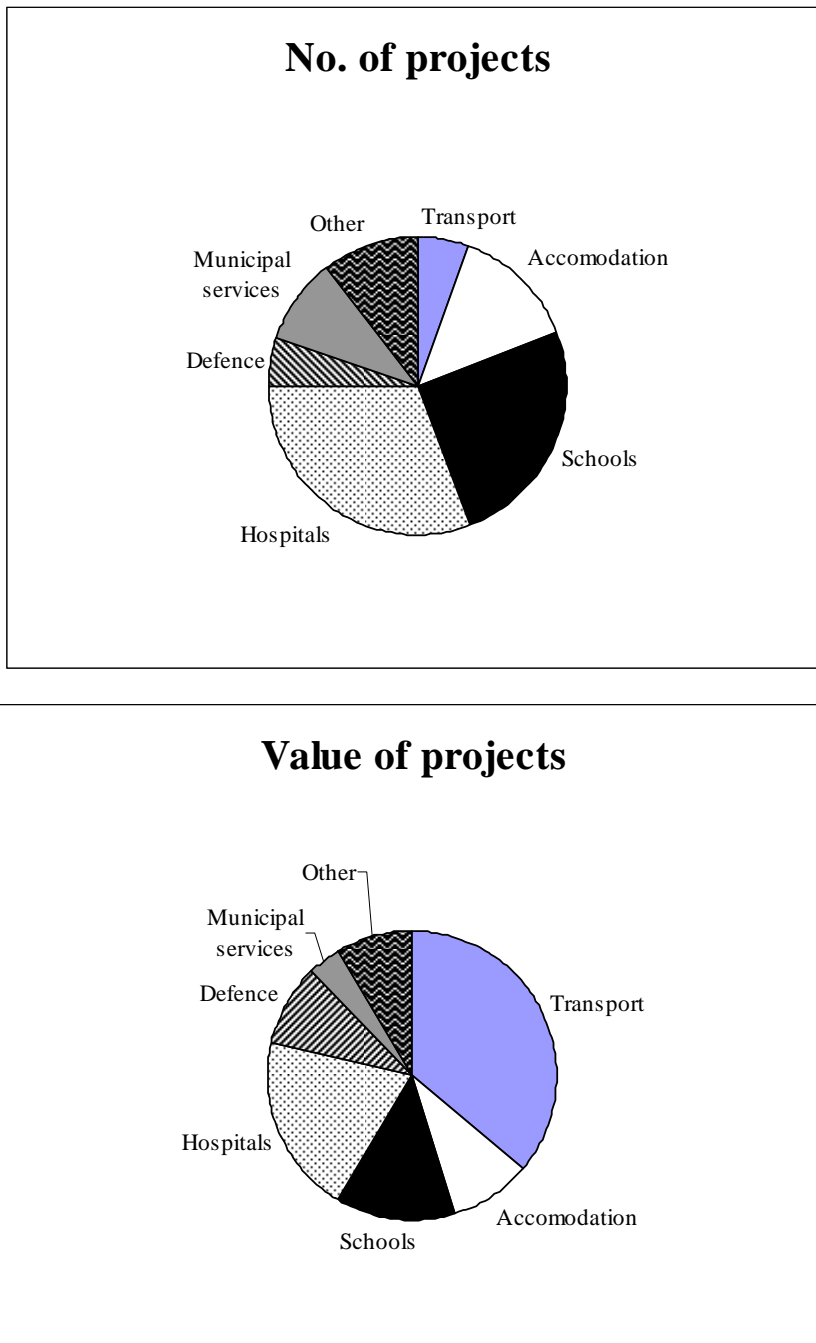
3. PPPs by sector

We now turn to describing the distribution of PPPs across economic sectors using the number and value of signed PPP contracts. The description is done separately for the UK and continental Europe, given the differences in the maturity and sectoral structure of the PPP market.

Starting with the UK, Figure 4 shows that hospitals have the biggest share of PPPs by number (31 percent), followed by schools (25 percent). Accommodation—including not only communal housing, nursing homes *etc.*, but also government buildings, police, military buildings and prisons—accounts for 14 percent of the number of UK PPPs. Notably, the transportation sector—including airports, bridges, rail, road, and urban railways—only accounts for 6 percent of the number of PPPs.

In contrast, in value terms the transport sector is the biggest one (36 percent), largely due to the London Underground PPPs. Hospitals account for 20 percent of PPPs by value, followed by schools, accommodation, and defence (all about 10 percent).

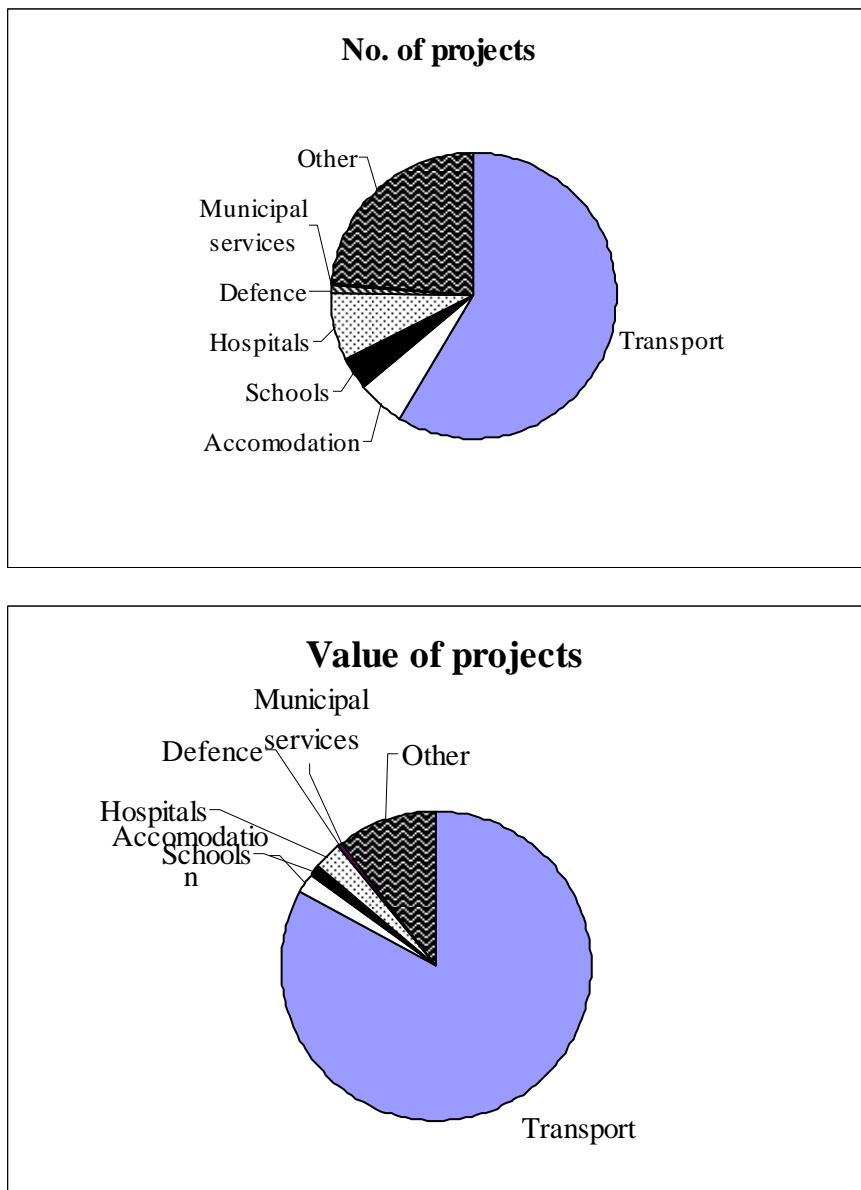
Figure 4. Sectoral distribution of PPPs in the UK, by number (top panel) and by value (bottom panel).



Sources: EIB, HM Treasury, various commercial databases.

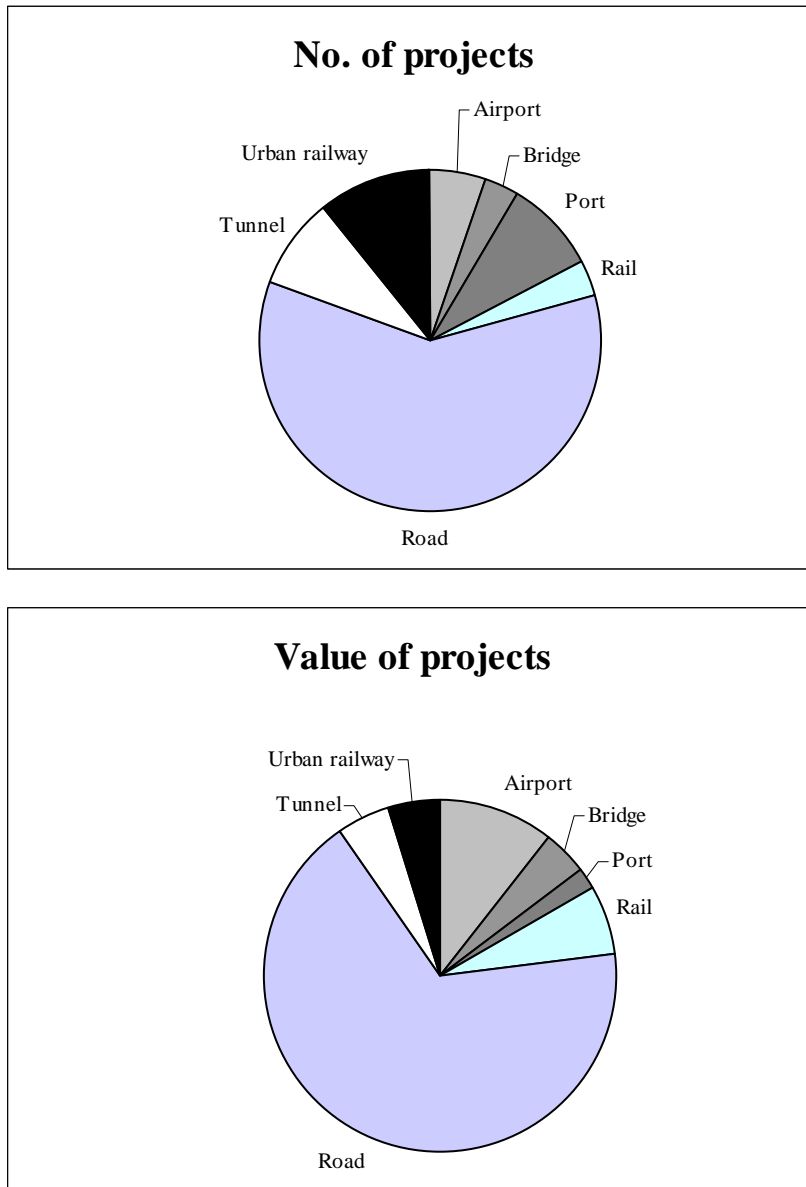
The sectoral distribution is much more concentrated in continental Europe, where the transport sector dominates the PPP market (60 percent of PPPs by number and 84 percent by value). As shown in Figure 5, within the transport sector road projects dominate (60 percent by number, 67 percent by value). In mainland Europe to date, PPP has predominantly been used as a procurement route for very large motorway and fixed link projects.

Figure 5. Sectoral distribution of EU PPPs outside the UK, by number of projects (top panel) and by value (bottom panel).



Sources: EIB, Irish PPP Unit, various commercial databases.

Figure 6. Breakdown of transport PPPs outside the UK, by number of projects (top panel) and by value (bottom panel).



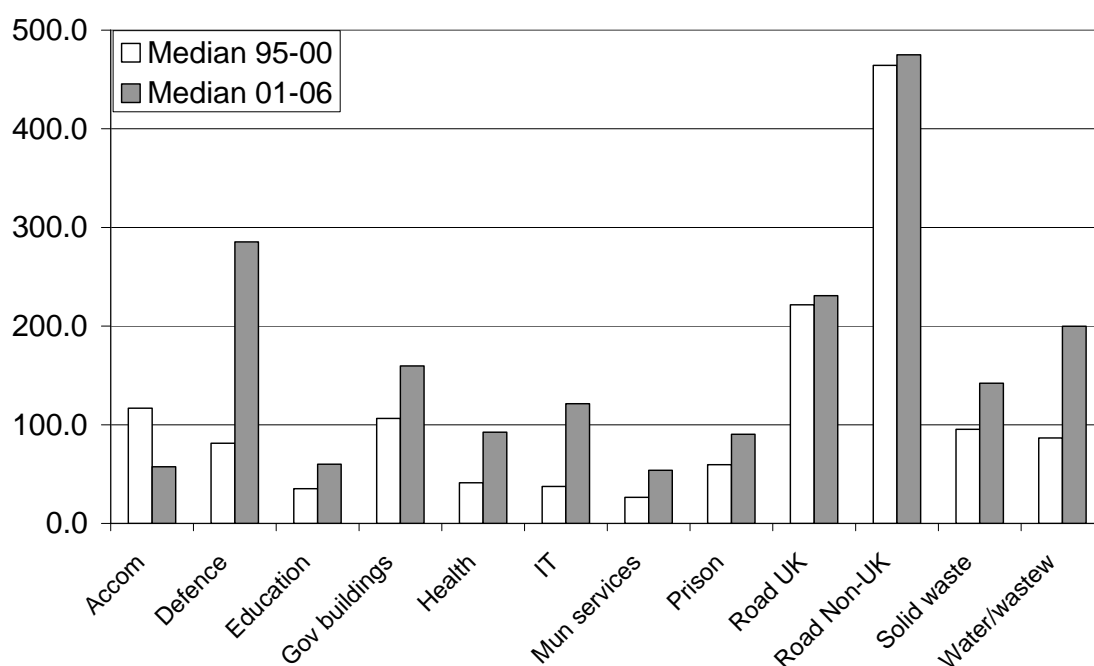
Sources: EIB, Irish PPP Unit, various commercial databases.

Based on data on the value and number of PPP projects, we can examine their typical size in the various sectors. Figure 7 depicts the median project size in a number of sectors, both for 1995-2000 and 2001-06. All sectors except for “Road Non-UK” refer to the UK. Both in the UK and outside, road projects are significantly bigger in size than others. The peak in UK defence PPPs represents a small number of large military accommodation and IT projects. In all other sectors the value of the median PPP project is about 100 million euro, and even less in education and municipal services.⁸

In all sectors, with the exception of accommodation, the average project size has increased from 1995-2000 to 2001-06. In some sectors—including health, municipal services, and water and wastewater—the rate of increase has been high, with the average project more than doubling in value. Even in other sectors the increase has been substantial at over 50 percent. Only in road projects the median nominal value has grown hardly at all. In the UK, the larger project size reflects guidance by HM Treasury (2006) to only use PFI for larger projects (above 30 million euro) as a result of the high fixed transaction costs and therefore to bundle individual projects to achieve this minimum size.

⁸ Municipal service PPPs covers a wide range of projects including street lighting; fire stations; district heating; libraries, *etc.*

Figure 7. Median size of PPP projects in the UK by sector (in euro millions).



Sources: EIB, HM Treasury, various commercial databases.

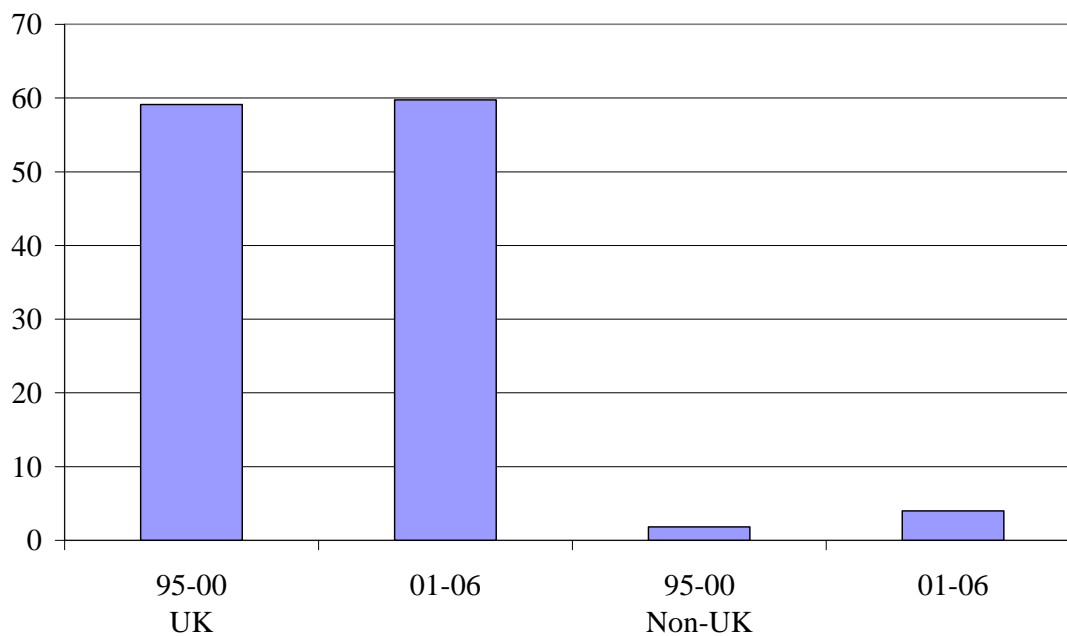
4. PPPs’ “market share”

It was suggested in Section 2 that the macroeconomic significance of PPPs remains limited in Europe. To examine this issue at the sectoral level, this section seeks to gauge the importance of PPPs in three key sectors—namely transport, education, and health—in relation to total investment in those sectors. As will become obvious, data availability limits the precision of this examination. Nevertheless, it helps us gain a rough idea about the “market share” of PPPs in the three sectors.

Starting with the transportation sector, Figure 8 depicts the average value of transportation PPP investments (again averaged over 1995-2000 and 2001-06) relative to the total investment in transportation, storage, and communication (no further macroeconomic breakdown available) by both public and private sectors (similarly averaged over 6-year periods). This comparison is subject to a number of caveats, such as using the total life-cycle value of projects as a basis for estimating investment flows; double-counting of PPPs in both nominator and denominator; and the inclusion of storage and communication investment in the denominator. Some of these

shortcomings introduce an upward bias in the estimation of the significance of PPPs, others a downward bias.

Figure 8. Estimated investment flow of transport PPPs relative to total economy investment in transport, storage, and communication (in percent).



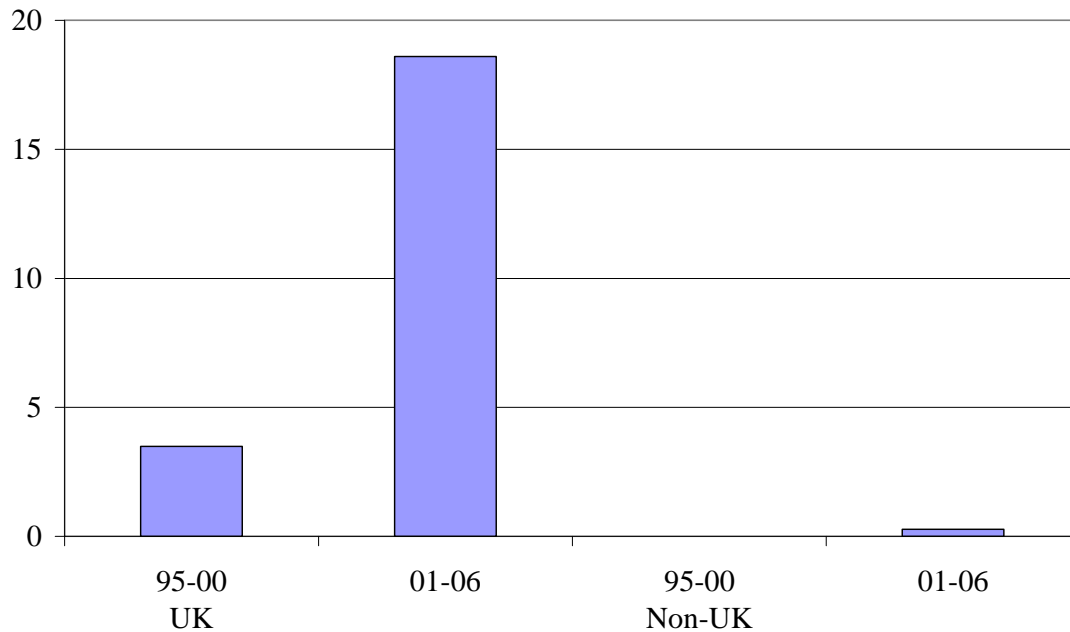
Sources; ProjectWare, EIB, HM Treasury, Infrastructure Journal, Irish PPP Unit, Eurostat.

With these caveats in mind, Figure 8 suggests clearly that PPPs are significant in the transport sector in the UK, while they remain small in continental Europe—despite the fact that the bulk of PPPs in continental Europe are exactly in the transport sector. Notwithstanding their low level outside the UK, transport PPPs have more than doubled in relative terms from 1995-2000 to 2001-06.

A similar comparison for the education sector is shown in Figure 9. This comparison is more precise than the one for the transport sector, as the denominator (total economy investment in education) is directly comparable with the nominator (school PPPs) in terms of economic sector. Again, PPPs are of significance in the UK, with their relative importance increasing six fold from 1995-2000 to 2001-06. School PPPs

have emerged in continental Europe only recently, and their sectoral significance remains small.

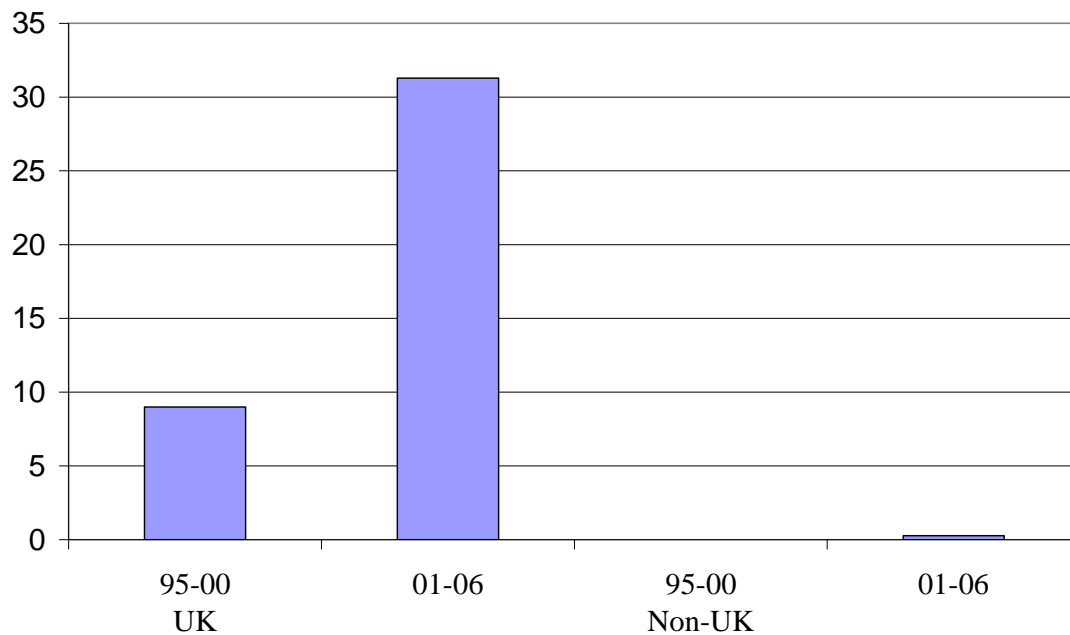
Figure 9. Estimated investment flow of education PPPs relative to total economy investment in education (in percent).



Sources; EIB, HM Treasury, Irish PPP Unit, Eurostat, various commercial databases.

The picture is similar in the health sector (hospitals). PPPs are a significant source of investment in the UK, with their relative significance trebled from 1995-2000 to 2001-06. In the rest of Europe, hospital PPPs are recent and so far of limited significance.

Figure 10. Estimated investment flow of health sector PPPs relative to total economy investment in health and social work (in percent).



Sources; EIB, HM Treasury, Irish PPP Unit, Eurostat, various commercial databases.

5. Summary

This paper has had the sole and simple aim to fill an information gap on PPPs by offering an updated description of European PPPs from a macroeconomic and sectoral perspective, without any ambition to provide an academic normative assessment of PPPs as a procurement method. It shows that, over the past fifteen years, more than one thousand PPP contracts have been signed in the EU, representing a capital value of almost 200 billion euro. While PPPs have in recent years become increasingly popular in a growing number of European countries, they are of macroeconomic and systemic significance only in the UK, Portugal, and Spain. In all other European countries, the importance of investment through PPPs remains small in comparison to traditional public procurement of investment projects. However, PPP is used extensively for major projects and this is spreading out from transport into other sectors.

That the UK is in its own league in terms of the maturity of the PPP market is evidenced also by the widespread use of PPP procurement in a large number of

sectors and by all levels of Government for major projects. In continental Europe, in contrast, the transport sector, especially roads, continue to dominate the PPP market. While PPPs are spreading into other sectors as well, the relative importance of investment through PPPs remains small. The trend, however, in terms of number of projects reaching financial close is clearly upward.

Literature

DLA Piper (2007). European PPP Report. July 2007. Available at: <http://www.franchisecounselors.com/files/Publication/34d8ee56-757a-4238-81af-0102bc35cc79/Presentation/PublicationAttachment/60378925-ce10-4299-88e2-1155edfdb670/European-PPP-Report2007.pdf>

HM Treasury (2006). *PFI: Strengthening long-term partnerships*. Available at: http://www.hm-treasury.gov.uk/media/1E1/33/bud06_pfi_618.pdf

Standard & Poor's (2006). Public Private Partnerships. Global Credit Survey 2006. Standard & Poor's. May 2006.

Välilä, T., T. Kozluk, and A. Mehrotra (2005): "Roads on a downhill? Trends in EU infrastructure investment", *EIB Papers*, Vol 10 (1), pp. 18-38.

Annex: Data aggregation methodology

The data presented in this paper includes both the number of projects and the total amount of private capital raised by the project company. Significant variations in the data can often be found depending on the source used. The following rules were used to aggregate the data:

- **Project count:** the different lists of projects available from commercial databases, public sources and EIB files were flagged (colour-coded) compiled, sorted and checked for doubles project by project. The public source available for the relevant country was used as the reference and other sources (EIB, commercial) to complete and check the existence and the date of financial close of each project.

Note: In the UK, the most recent list of projects published by HMT features significantly less projects than previous versions because the data has been 'restructured'. We chose to use all known UK projects as per previous HMT versions of the PFI list and in line with the PFI database published by Partnerships UK (PUK).

- **Project investment:** Here the list of reference was not the public list of existing PPP projects since national definitions of what counts as 'investment' tend to be different. Instead the main data source is the most comprehensive commercial database of project finance and infrastructure transactions (Projectware). The data thus consists of the amount of debt and equity committed to a project at financial close as reported by lead arrangers. This figure has the important advantage of being directly comparable across European countries.

This information was then cross-checked with other commercial sources, national databases and EIB files. When significant discrepancies were found further research was done for individual projects (through EIB investment officers and news sources).

Note: For the UK, our choice of using the project financing raised as the 'investment' figure explains the difference between our results and HMT's figure for total PFI capital expenditure, which is remarkably lower.

Also note that 19 projects in our database featured some degree of public grant financing.