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PUBLIC-PRIVATE PARTNERSHIPS IN EUROPE – BEFORE AND DURING THE RECENT FINANCIAL CRISIS

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Abstract

This paper offers an updated description of the macroeconomic and sectoral significance of PPPs in Europe – without assessing PPPs from a normative perspective. Building on Blanc-Brude et al. (2007), it looks at the evolution of PPPs in the EU, with a particular focus on the recent financial crisis. In 2009, PPP transactions stood at EUR 15.8 billion; a decrease of almost 50% compared to 2007. The total value of closed deals has declined more than the number of deals. At the same time, the PPP market in Europe continues to diversify across countries and sectors. In 2008, the UK share in the total number of EU-PPPs fell below 50%. In many respects, however, the reduction in the European PPP market observed during the financial crisis can be seen as a reversal of an extraordinary spike in the years preceding the crisis.

JEL Classification codes: H54, L33, R42

Key words : Public-Private Partnerships, Europe, PPP

1. Introduction

Background

Public-private partnerships (henceforth PPPs) have gained importance as vehicles to finance public infrastructure across Europe. However, to the best of our knowledge, no comprehensive macroeconomic assessment of PPPs in the EU has been undertaken since the review by Blanc-Brude et al. (2007).

This paper gives an updated description of the significance of PPPs in the EU both across sectors and countries. In this context we are also interested in the evolution of PPPs in Europe during the recent financial crisis that began with the US subprime mortgage market turmoil in 2007. In the following we will take 2008 and 2009 as basis years when referring to the recent financial crisis. To do so we updated and revised the database of public sector and PPP investment levels introduced in Blanc-Brude et al. (2007). Our paper does not offer a Value for Money assessment of PPPs; it merely presents and interprets the available data without taking a stance on the economic merits of PPPs.

In recent years, PPPs have developed from their traditional base in the transport sector to the areas of public buildings and equipment (schools, hospitals, prisons) and the environment (water/waste treatment, waste management). Also across countries, experience with PPPs has become more diversified. Beyond the UK, some countries have developed and diversified their PPP markets (France, Germany, Spain); others have shown interest and started to develop PPP programmes. Still, many EU Member States only have limited experience with PPPs or none at all.

What is a PPP?

While the term PPP has been in use since the 1990s, there is no single European model of a PPP. The European PPP Report 2009¹ states that “the range of structures used for PPPs varies widely: in some countries, the concept of a PPP equates only to a concession where the services provided under the concession are paid for by the

¹ DLA PIPER (2009).

public.² In others, PPPs can include every type of outsourcing and joint venture between the public and private sectors”. As a result, the recorded number of PPP projects may vary considerably across data sources.

In its Green Paper on PPPs, the European Commission recognised that the following elements normally characterise a PPP³:

- The relatively long duration of the relationship, involving cooperation between the public partner and the private partner on different aspects of a planned project (...);
- The method of funding the project, in part from the private sector, sometimes by means of complex arrangements between the various players (...);
- The important role of the economic operator, who participates at different stages in the project (design, completion, implementation, funding) (...);
- The distribution of risks between the public partner and the private partner, to whom the risks generally borne by the public sector are transferred (...).

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 based on a project agreement or concession contract. It must also include the bundling of design, construction, operation and/or asset maintenance, together with a major component of private finance. Payments are made over the life of the PPP contract by the public sector to the private partner and are linked to the level and quality of services actually delivered. This definition excludes for example investments made by regulated utilities, project refinancing, privatisations involving asset sale or service outsourcing. However, projects with user charges, shadow tolls, availability charges or mixed payment schemes are all included as representing different forms of risk transfer.

Data collection and methodology

The data analysed here come from a variety of sources, notably ProjectWare and Infrastructure Journal, cross-checked where appropriate against the European Investment Bank’s (EIB) own project files. The list of projects has been validated where possible by EIB country specialists and the European PPP Expertise Centre

² Concession-based financing of infrastructure is common in the UK, France, Italy, and Spain.

³ Commission of the European Communities (2004).

(EPEC). The data covers the period 1990 to 2009 and does not include smaller projects with a capital value of less than EUR 5 million. Annex 1 explains in detail how the data have been aggregated and cross-checked.

The project values recorded in this paper represents the total known funding requirements at the time of financial close. Therefore, the project value equals the sum of secured debt and equity. The financial close date is understood as the date at which all project contract and financing documentation have been signed, and conditions precedent to initial drawing of the debt have been fulfilled. From this moment there is a legally binding commitment for equity holders or debt financiers to provide or mobilize funding for the project.⁴

The database used in this paper differs from the 2007 paper by Blanc-Brude et al. (2007) in several respects. Most importantly, the 2007 paper refers to the date of signature (pre-agreement to realize the project) while the present update only considers projects reaching financial close (project contract and financing documentation signed; see paragraph above). Moreover, we slightly adjusted the list of projects for the period 1990-2006 and eliminated a few borderline projects based on both their size (only projects equal to or larger than €5 million are considered) and the definition of PPPs applied in this update. For the period 1990-2006, the 2007 paper included 1066 projects with a capital value of EUR 195 billion. For the same period we consider 971 projects with a capital value of EUR 184 billion. This database is supplemented by 369 projects with a capital value of EUR 70 billion for the period 2007-2009.

Several difficulties arise in compiling a comprehensive database for PPPs in Europe. First, PPPs are often treated as a sub-category of project finance deals by specialist press and by on-line commercial databases; such information sources are frequently

⁴ Note that with this method, the form of finance may influence the investment value. If the PPP project is bond-financed, funds from the bond are drawn all at once, even if some funds are required only later in the construction programme. This will likely cause a loss of interest (or negative carry), as the deposit rate is often lower than the coupon on the bond. In contrast, funds from a commercial bank loan are only drawn when needed. As a result, the project company needs to borrow more in a bond-financed transaction than in a bank-financed transaction (For more details, see EPEC (2010)).

incomplete. Deal databases track PPP projects at different stages in the project cycle from tender publication through to financial close. Non-project financed deals and project re-financings are sometimes included, but excluded under our definition.

Second, data availability on actual PPP investment is poor and incomplete. Only for the UK can one find data on annualised PPP commitment and actual cost figures 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 total financing requirements of PPP projects at a fixed date, i.e. financial close, which is a stock variable that cannot directly be compared with flow variables.

Finally, it is difficult to assess the relative size of PPPs in the economy as a whole. In particular, data availability of total infrastructure investment at the sectoral level is limited; also the classification of PPPs as public or private investment is sometimes ambiguous. Whether a PPP is booked as public investment in national accounts differs in many cases from one year to another and across countries. For its national accounts database, Eurostat (2004) developed a consistent framework to classify PPPs as public or private investment. This reclassification of PPPs as public or private investment, however, is not publicly available.

This paper is organised as follows. Section 2 surveys PPPs by country and over time. The sectoral distribution of PPPs is considered in Section 3. In Section 4 we try to capture the macro-economic significance of PPPs by comparing it to government investment. Section 5 takes a specific look on how the composition of PPPs evolved during the recent financial crisis, both across sectors and countries. Section 6 concludes.

2. PPPs by country and over time

This section strives to give a better understanding of the evolution of PPPs across EU-countries, both by value and number of projects.

To start with, Table 1 shows the evolution of PPPs in the EU over time. Overall, more than 1300 PPP contracts have been signed in the EU from 1990 to 2009, representing a capital value of more than EUR 250 billion. This includes roughly 369 new projects with a value of almost EUR 70 billion having reached financial close since the beginning of 2007. Having steadily increased until the middle of this decade, both the number and value of the EU PPP market first stagnated and then started to decline.

Table 1. Evolution of European PPPs per annum

Year	Number of projects	Value of projects (in €millions)
1990	2	1386.6
1991	1	73.0
1992	3	610.0
1993	1	454.0
1994	3	1148.4
1995	12	3264.9
1996	26	8488.2
1997	33	5278.0
1998	66	19972.4
1999	77	9602.6
2000	97	15018.5
2001	79	13315.3
2002	82	17436.2
2003	90	17357.1
2004	125	16879.9
2005	130	26794.3
2006	144	27129.2
2007	136	29597.9
2008	115	24198.0
2009	118	15740.4
Total	1340	253744.9

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

To gauge the importance of PPPs across EU-countries, Table 2 shows the share of each country in the number and value of projects closed in the EU during 1990-2009. For comparison we also present the numbers published in Blanc-Brude et al. (2007).⁵

⁵ Note that their numbers include all PPP projects signed by end of 2006. The 2009 update includes all projects having reached financial close by the end of 2009.

Table 2. Countries' percentage shares of European PPPs, 1990-2009 aggregate

	% of No. of projects		% of value of projects	
	2009 update	Blanc-Brude et al. (2007)	2009 update	Blanc-Brude et al. (2007)
AT	0.2	0.2	0.5	0.6
BE	0.9	0.7	1.3	1.1
BG	0.1		0.1	
CY	0.2	0.3	0.3	0.4
CZ	0.2	0.2	0.3	0.4
DE	4.9	2.4	4.1	2.9
DK	0.1	0.0	0.0	0.0
EL	1.0	0.6	5.5	3.9
ES	10.1	8.6	11.4	12.8
FI	0.1	0.2	0.2	0.2
FR	5.4	2.8	5.3	3.9
HU	0.7	0.8	2.3	2.7
IE	1.3	0.7	1.6	0.7
IT	2.4	2.1	3.3	3.7
LV	0.1	0.1	0.0	0.0
MA	0.0	0.1	0.0	0.1
NL	1.2	1.0	1.8	1.7
PL	0.4	0.4	1.7	0.9
PT	3.1	2.3	7.0	5.8
RO	0.1	0.3	0.0	0.1
SE	0.1	0.1	0.2	0.2
SK	0.1	0.1	0.5	0.0
SI	0.1	0.1	0.0	0.0
UK	67.1	76.2	52.5	57.7
Total	100	100	100	100

Sources: Blanc-Brude et al. (2007), EIB, HM Treasury, Irish PPP Unit and various commercial databases.

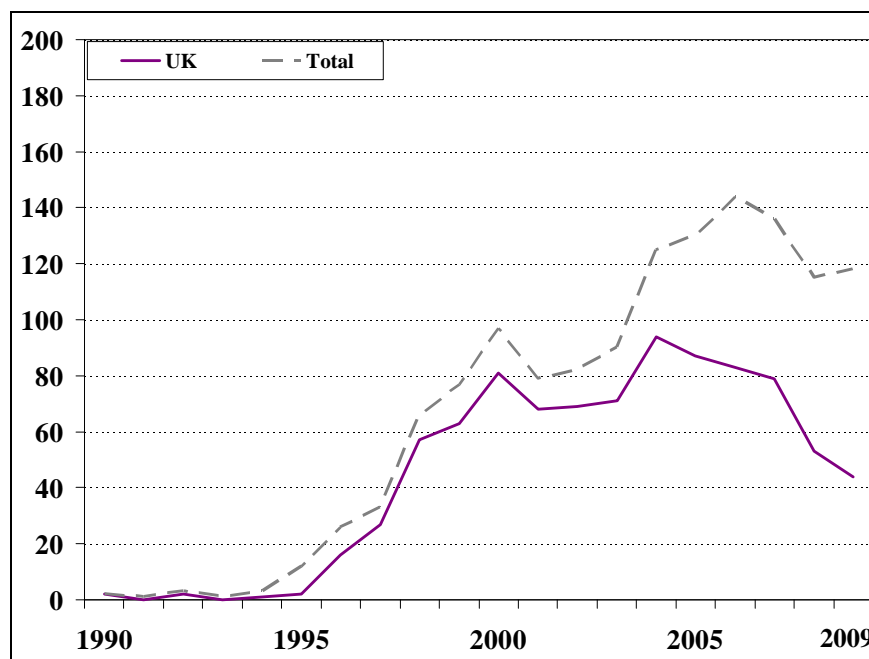
During 1990-2009, the UK accounts for some two thirds of all European PPP projects, that is almost 10 percentage points less than in Blanc-Brude et al. (2007).⁶ With 10% of the total number of projects, Spain remains the second-biggest PPP market; and it has gained slightly in importance in recent years (9% in Blanc-Brude et al. (2007)). France, Germany, Italy, and Portugal all represent 2-5% of the total number of projects, respectively. The UK, Portugal, France, Germany, Spain and Italy together account for some 92% of all European PPPs by number; 3% less than in Blanc-Brude et al. (2007). Overall, this suggests that the PPP market in Europe continues to slowly diversify across countries.

⁶ The latest data published by HM Treasury in September 2009 lists 661 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 Ministries, due to them being either completed, consolidated or smaller than the revised recommended threshold of EUR 30 million euro. In contrast, our database also includes deals that are smaller than EUR 30 million.

The distribution in terms of project value over the past 20 years gives a similar picture. PPPs in the UK account for 53% of the total value of European PPPs (58% in Blanc-Brude et al. (2007)). PPP market share in Spain by value is even larger than by number of projects. Portugal is the third largest PPP market by value - and has become more important in recent years. This reflects mainly the completion of some large road projects such as the Douro Litoral Toll Road or the Transmontana Highway in recent years. France, Germany and Greece together represent about 15% of the value of PPPs in Europe (11% in Blanc-Brude et al. (2007)). The PPP market in Hungary remains the largest one among New Member States (NMS).

To assess the evolution of the relative size of the PPP market in the UK over time, Figure 1 shows the total number of deals per annum for the UK and the EU as a whole since 1990. The number of PPPs in the UK increased rapidly from the mid 1990s onwards, reaching its peak in 2004. For the EU as a whole, the number of projects continued to increase until 2006. The share of UK projects in the EU started to decline in 2001. During the recent financial crisis, this trend accelerated with the UK market share in the annual number of EU projects falling below 50% in 2008. This highlights once more the ongoing diversification of PPPs across countries.

Figure 1. Number of deals reaching financial close per year



Sources: EIB, HM Treasury, Irish PPP Unit and various commercial databases.
 Note: The total figure includes the UK.

3. PPPs by sector

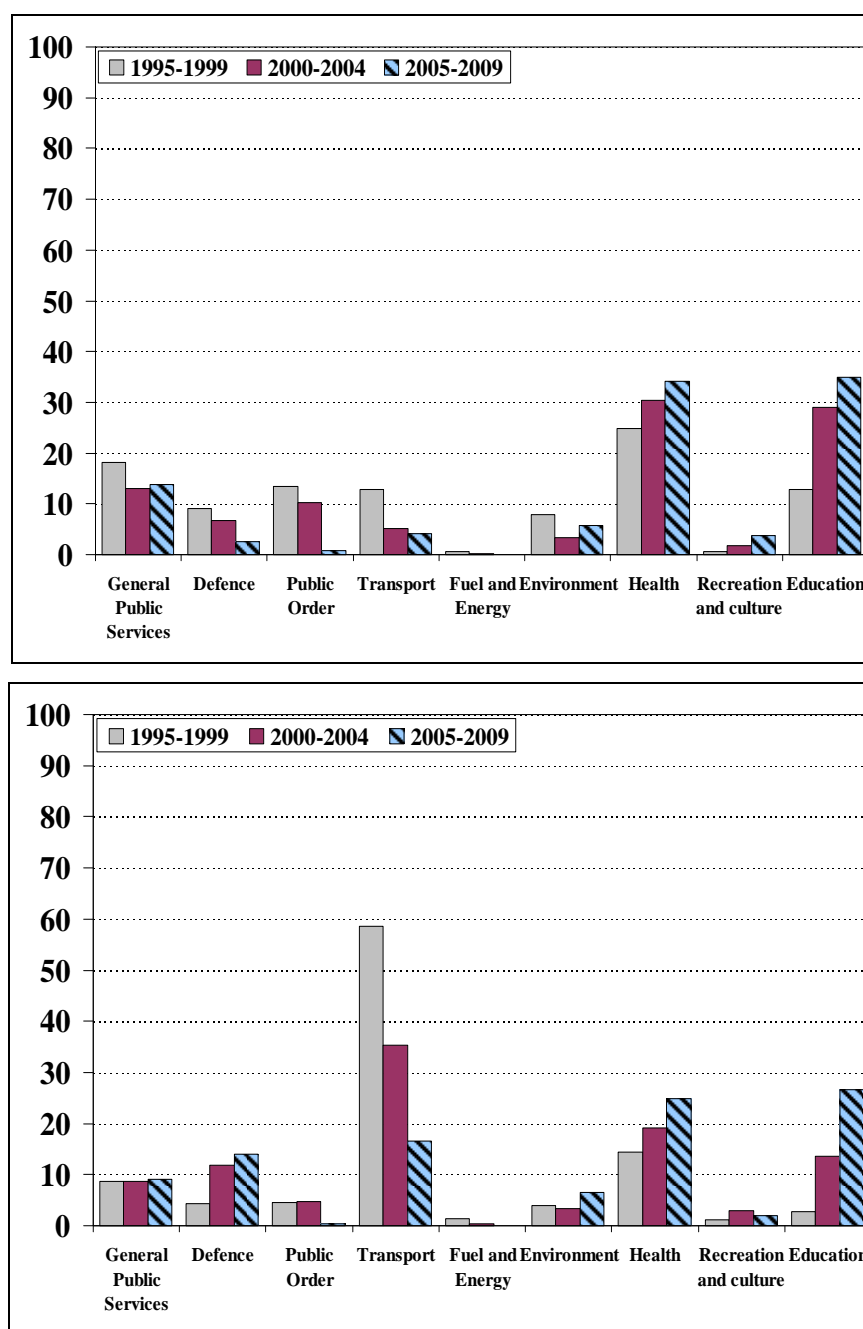
This section concentrates on the distribution of PPPs across economic sectors.⁷ Given the differences in the maturity and sectoral structure across national PPP markets, data are reported separately for the UK and continental Europe.

Starting with the UK, Figure 2 shows the sectoral distribution of its PPPs by number (top panel) and by value (bottom panel). By number, PPPs in education (35% of total) and health (34%) are most important in the UK and kept growing. The number of PPPs in general public services is large as well (14%), but remained fairly stable. In contrast, transportation has fallen to only 4% of the number of PPPs. Also the number of projects in defence and public order and safety declined over time.

The bottom panel shows that the relative importance of transport PPPs in the UK also decreased by value. The share of transport PPPs by value (17% of total) remains more important than by number. Having said this, its value share has fallen behind education (27%) and health (25%). The figure also shows that the value of PPPs in defence increased. With the number of defence PPPs declining, this suggests a notable increase in the size of defence projects (see also Figure 5).

⁷ The sector specification used in this paper deviates slightly from the one used in Blanc-Brude et al. (2007). As in the 2007 paper, each project is characterized by one sector and one sub-sector. The 2009 update tries to stick as closely as possible to the Classification of the Functions of Government (COFOG) as defined by the United Nations. The sector specification used here distinguishes among 9 functions of government and 27 sub-sectors based on the more detailed COFOG breakdown. Both sectors and sub-sectors used in this paper have been selected and if needed re-specified to match our sample of PPP projects. To limit the number of sub-sectors, we deviate from COFOG in so far as projects characterised by a certain sub-sector may be assigned to different sectors. For instance, while both a military barrack and a student hostel fall under accommodation (sub-sector), the former is assigned to defence(sector) and the latter to education (sector).

Figure 2. Number (top panel) and value (bottom panel) of PPPs in the UK by sector, in % of total , 5 year averages

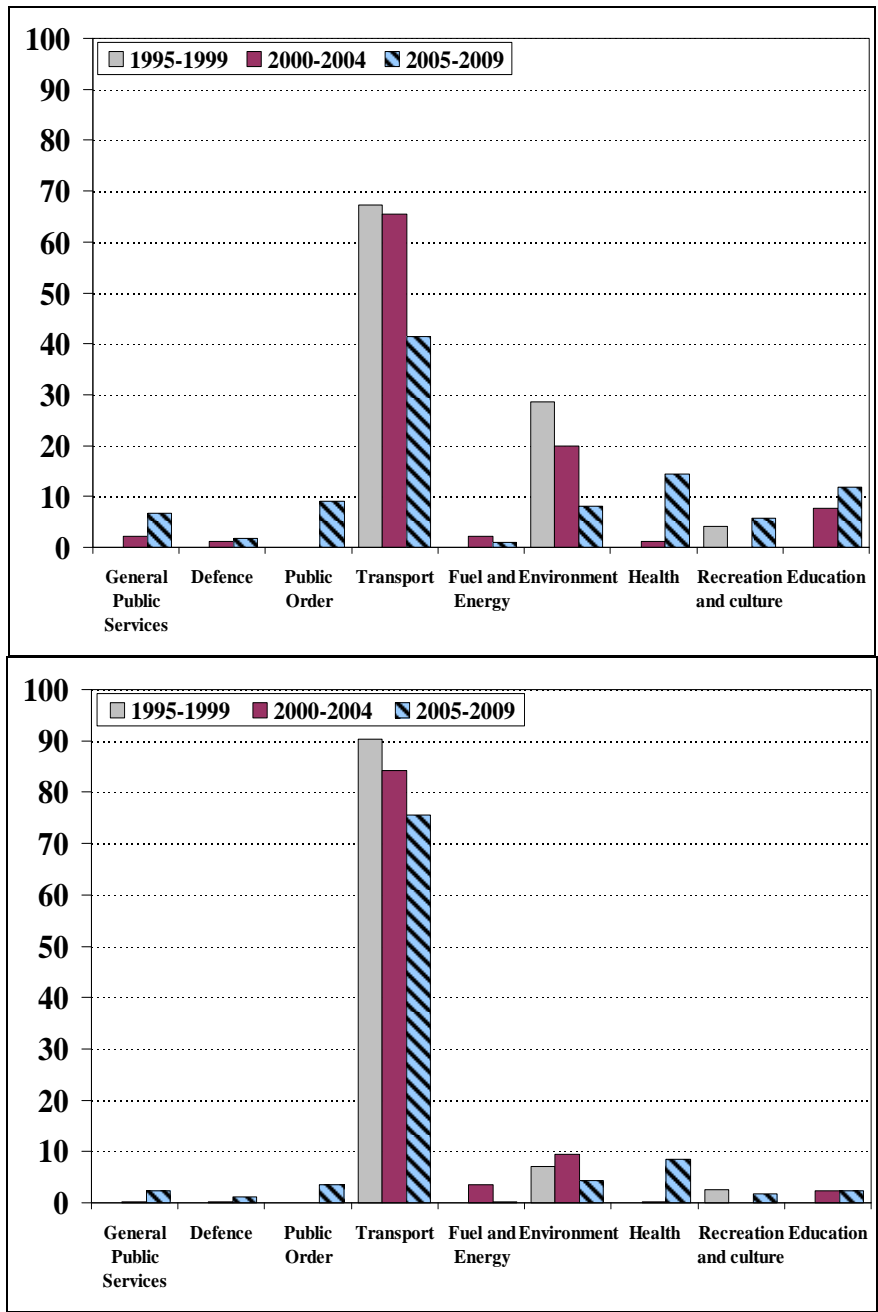


Sources: EIB, HM Treasury, Irish PPP Unit and various commercial databases.

As shown in Figure 3, the sectoral distribution outside the UK remains concentrated in transport, but gradually diversifies. Over the past 5 years, the transport sector represented 41% of the number and 76% of the value of PPPs in continental Europe. Education and health PPPs are gaining ground, but remain less significant than in the UK. Together they constitute 26% of the number and 11% of the value of PPPs in continental Europe in 2005-09 (in the UK 69% and 51%, respectively). The

importance of the environmental sector in PPPs decreased over time, particularly by number.

Figure 3. Number (top panel) and value (bottom panel) of PPPs outside the UK by sector, in % of total, 5 year averages

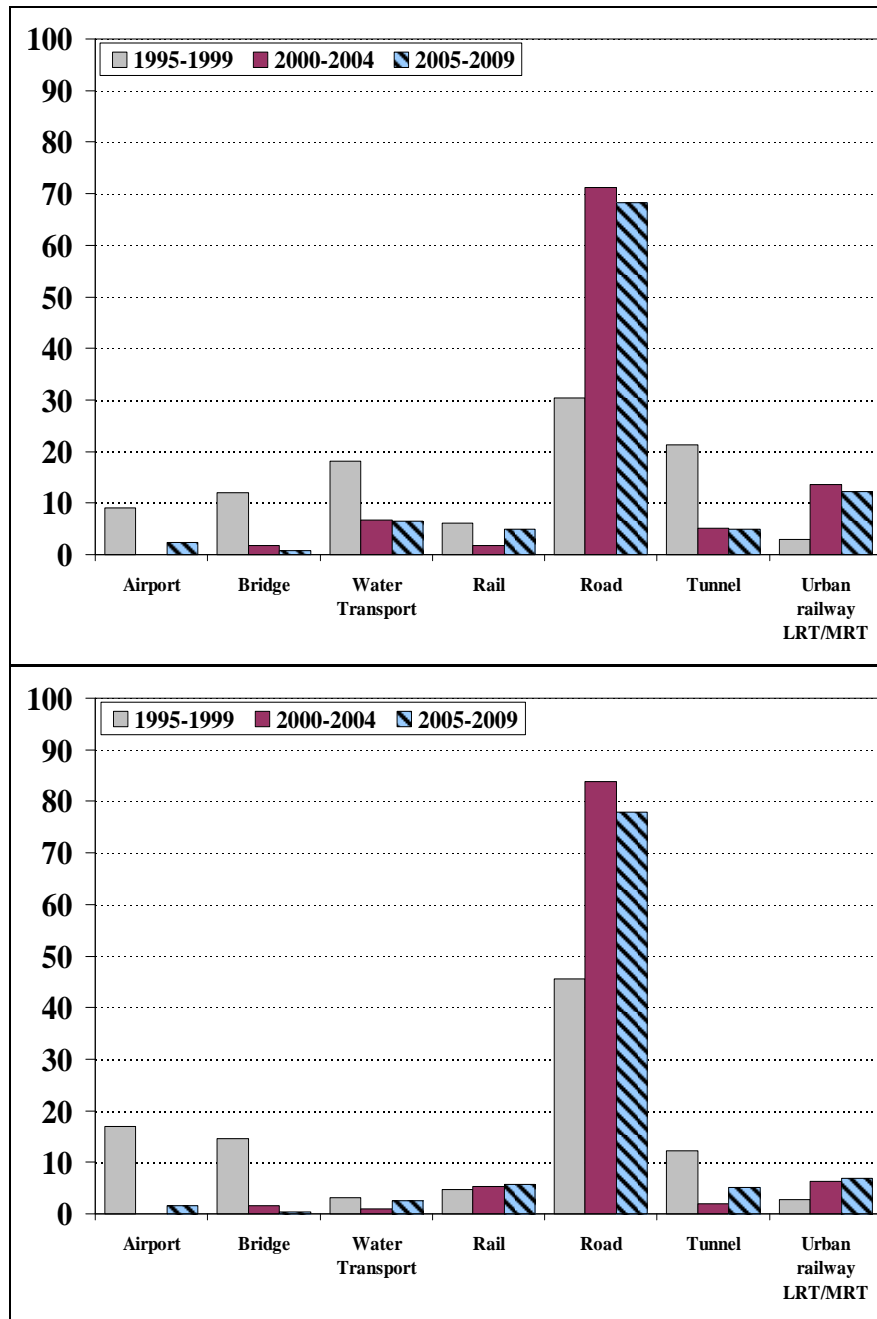


Sources: EIB, HM Treasury, Irish PPP Unit and various commercial databases.

For a finer breakdown, Figure 4 shows the composition of transport PPPs in continental Europe by various sub-sectors. Outside the UK roads remain by far the dominant component of transport PPPs representing more than two thirds of its total

number and value. The importance of urban railway increased; the importance of bridges, tunnels and airports decreased.

Figure 4. Number (top panel) and value (bottom panel) of transport PPPs outside the UK by sub-sector, in % of total, 5 year averages

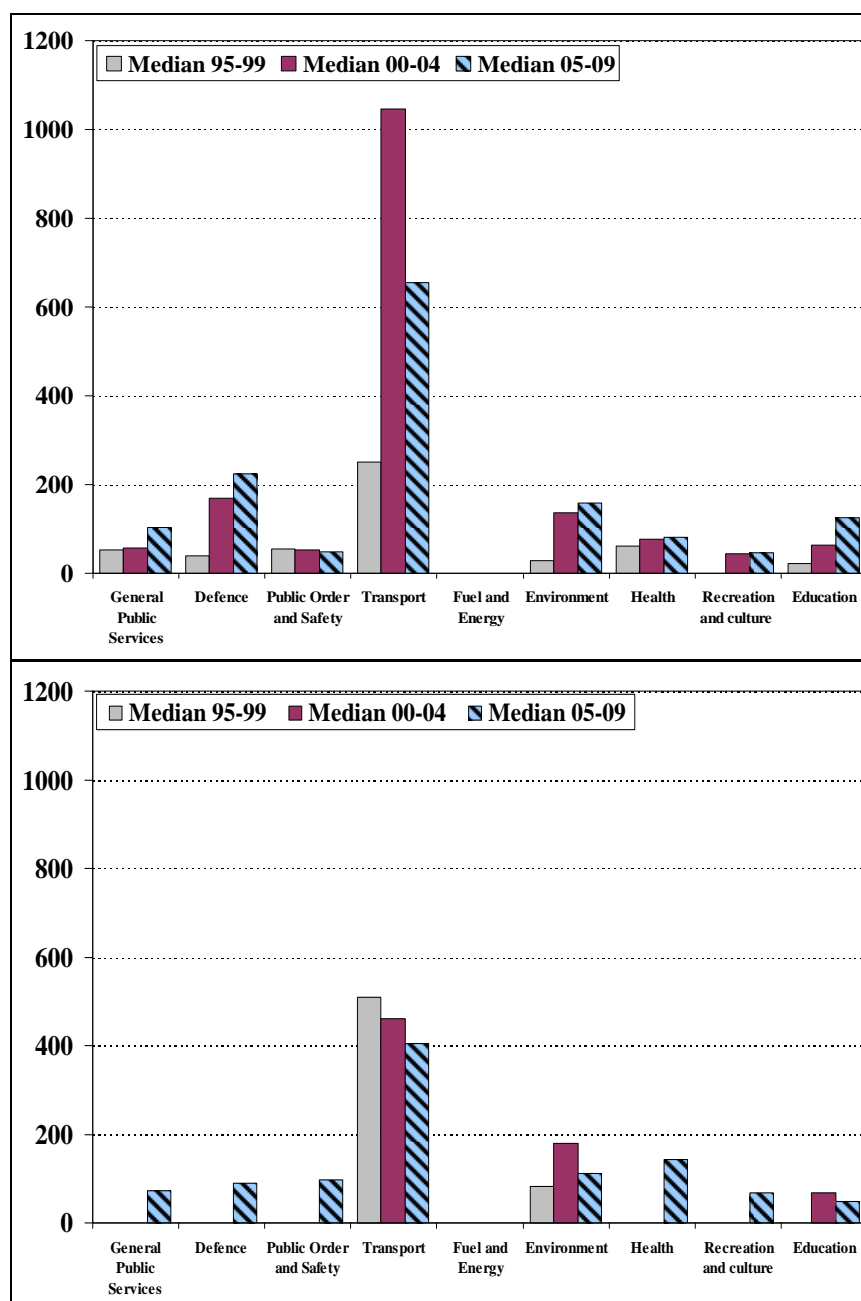


Sources: EIB, HM Treasury, Irish PPP Unit and various commercial databases.

The discussion so far suggests that notable discrepancies exist in the relative number and value of PPPs across sectors. What does this imply for the typical size of PPP projects in different sectors? Figure 5 shows the evolution of median project values of

PPPs in the UK (top panel) and continental Europe (bottom panel) for different sectors and time periods.

Figure 5. Median size of PPP projects in the UK (top panel) and the EU (excluding the UK, bottom panel) in €millions by sector



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

In the UK (top panel), PPP projects in the transport sector are typically by far bigger than in other sectors. The recent decline in the size of transport PPPs may be due to some large PPPs related to the London underground at the beginning of this decade. In most other sectors, with the exception of transport and public order, the typical

project size has increased over time. The guidance by HM Treasury (2006) to favour larger projects (above EUR 30 million)⁸ is one reason for this trend.

In continental Europe (bottom panel), the median size of PPPs is smaller than in the UK for most sectors (the main exception being health). Also outside the UK, transport PPPs tend to be bigger than PPPs in other sectors, though their size decreased in recent years. The figure also highlights that, apart from transport and environment, PPPs in most sectors emerged only recently in continental Europe.

4. Macroeconomic significance of PPPs

So far the focus has been on the evolution of the number and value of PPP projects in the EU across countries and sectors. This says only indirectly something about the macroeconomic significance of PPPs. To better understand their relevance, it is useful to compare the value of PPPs to total government investment because this is the best comparator that is available.

There are some important caveats in order. First, a comparison of stock (PPP projects) and flow variables (government investment) is, obviously, a comparison of apples with oranges. Furthermore, the capital expenditure of those PPPs that are recorded on the governments' balance sheets is also included in the government investment figures; consequently, without such inclusion, the government investment figures shown would be smaller and hence the relative size of PPPs bigger.

We can however make our capital value data better comparable to investment flows by spreading the value of each PPP project over five years (the year of the financial close and the 4 subsequent years). As in Blanc-Brude (2007), we consider the 5 years period to roughly represent the duration of a typical major works contract.⁹

Figure 6 shows the estimated aggregate value of PPP investment flows and government investment by country, both expressed in percent of GDP. To capture

⁸ The initiative aimed at bundling individual projects to achieve a minimum size of 30 million euro in order to minimize fixed transaction costs (by project).

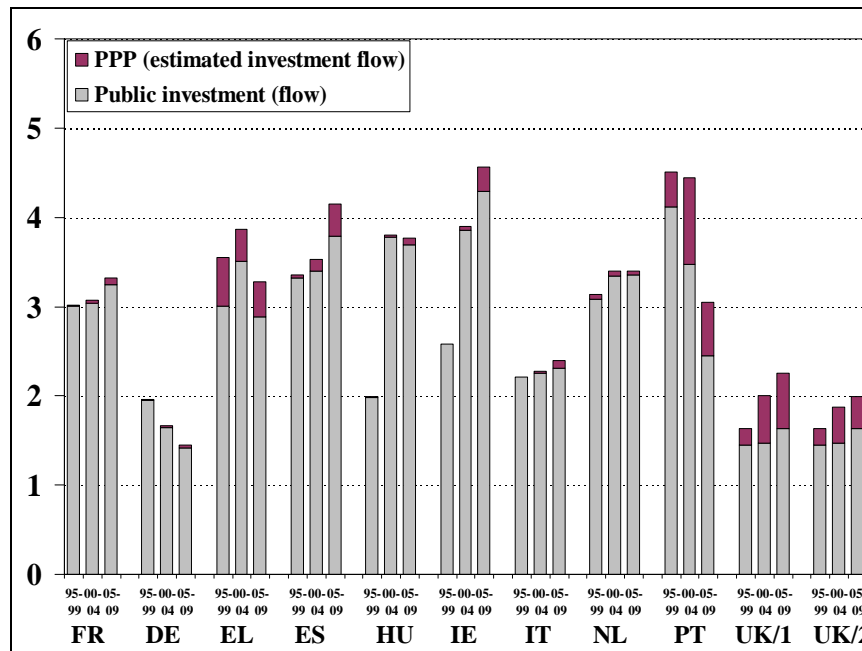
⁹ The 5 year period is suggested by EIB project experts, though the actual investment period may vary considerably across sectors.

changes over time, five year averages are presented (1995-99, 2000-04 and 2005-09, respectively).

Only for the UK actual PPP investment flow numbers are publicly available. To see the difference between our own estimates of PPP investment flows (UK/1) and the numbers published by HMT (UK/2), we present both numbers. There are two reasons why PPP investment flows published by HMT differ from our own data. First our definition of PPPs does not exactly correspond to the definition of PPPs by HMT. Second, our way of estimating investment flows through spreading the value of projects of five years is imprecise. Though our own data (UK/1) point towards a slightly higher macroeconomic significance than the HMT data (UK/2) do, our estimates seem to be reasonable.

In all countries PPP investment flows represent less than one percent of GDP. Figure 6 suggests that PPPs are of macroeconomic significance only in Greece, Portugal, the UK and, to some extent, Spain and Ireland. Greece is in fact characterised by a small number of large PPP projects. The countries with the largest increase of PPPs relative to GDP over the past five years are Ireland, Spain, the UK and, in relative terms, France, Germany and Italy.

Figure 6. Government investment and PPPs (averages 1995-1999, 2000-2004 and 2005-2009, in percent of GDP)



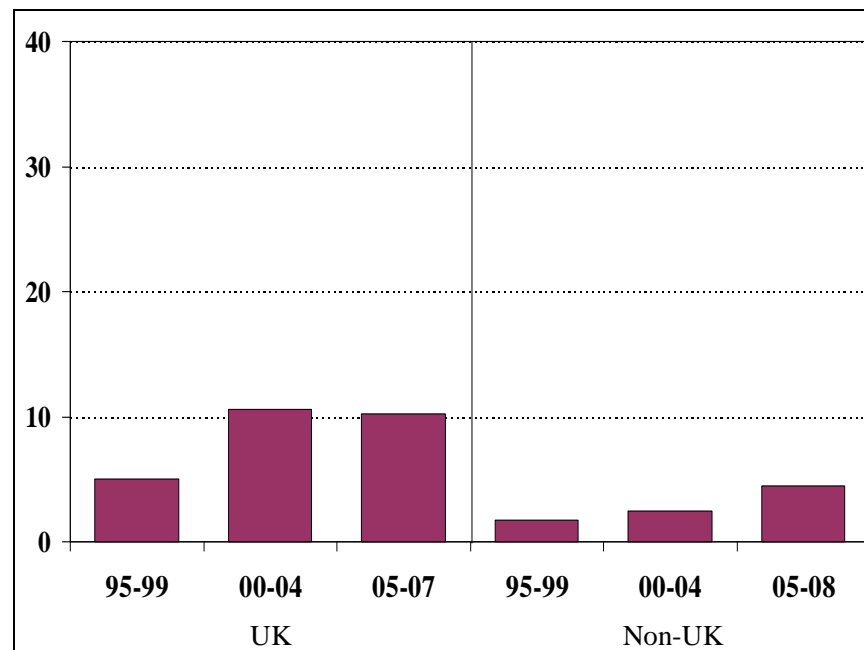
Sources: EIB, HM Treasury, Irish PPP Unit, Eurostat and various commercial databases.

Note: UK/1 shows our own estimates of PPP investment flows in the UK consistent with the numbers reported for all other countries. UK/2 refers to PPP investment flow data published by HMT.

To gauge the significance of PPPs at a sectoral level, we next compare it to total investment for three key sectors—namely transport, education, and health.

Starting with the transportation sector, Figure 7 depicts estimated investment flows of transportation PPPs relative to total investment in transport, storage and communication for 1995-99, 2000-04 and 2005-07 (non UK 2005-08). Once more PPP investment flows are estimated by spreading the capital value of PPPs over five years (see also Figure 6). As in Blanc-Brude et al. (2007) the inclusion of storage and communication in the denominator is problematic as this tends to underestimate the importance of PPPs in the transport sector.

Figure 7. Estimated PPP investment flows in transport relative to total investment in transport, storage and communication (in percent)



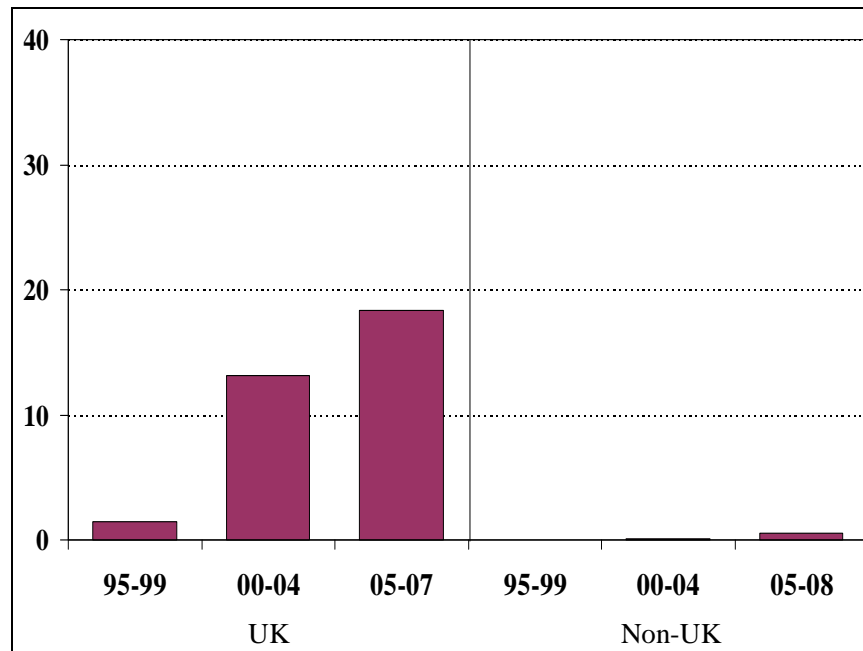
Sources: Sources: EIB, Irish PPP Unit, various commercial databases, Eurostat, EU-Klems (for UK sectoral investment 2005-2007).

Note: BG and RO are not included in the Non-UK sample. Sectoral investment data for GR and EE only go back to 2000.

Figure 7 suggests that in the UK PPPs represent about 10% of total investment in the transport sector. In contrast, transport PPPs in continental Europe play a smaller role but caught up and reached about 5% in 2005-08.

A similar comparison for the education sector is shown in Figure 8. The numbers in this figure are more precise than the ones for transport, as the denominator (total economy investment in education) is directly comparable with the nominator (estimated investment flows of PPPs in education). Again, PPPs are of significance in the UK, with their relative importance increasing from about 1% in the period 1995-99 to almost 20% in the period 2005-09. PPPs in education have emerged in continental Europe only recently, and their relevance remains small.

Figure 8. Estimated PPP investment flows in education relative to total investment in education (in percent)

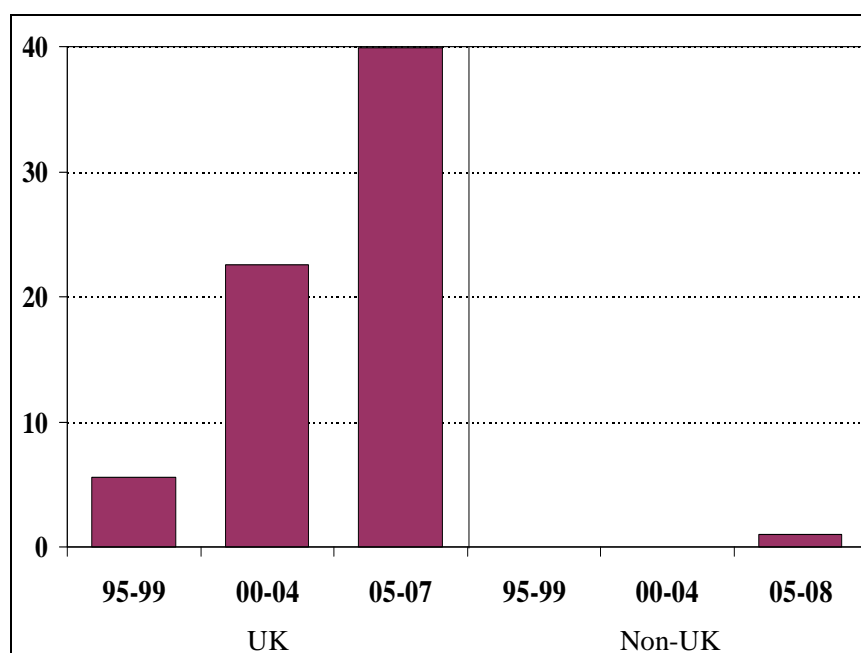


Sources: Sources: EIB, Irish PPP Unit, various commercial databases, Eurostat, EU-Klems (for UK sectoral investment 2005-2007).

Note: BG and RO are not included in the Non-UK sample. Sectoral investment data for GR and EE only go back to 2000.

Figure 9 shows that in the health sector PPPs are also a significant source of investment in the UK. Starting from about 5% during the period 1990-94, PPPs represented almost 40% of total investment in health in the period 2005-07. With only about 1% of total sector investment, PPPs in health are so far of limited significance outside the UK.

Figure 9. Estimated PPP investment flows in health and social work relative to total investment in health and social work (in percent)



Sources: Sources: EIB, Irish PPP Unit, various commercial databases, Eurostat, EU-Klems (for UK sectoral investment 2005-2007).

Note: BG and RO are not included in the Non-UK sample. Sectoral investment data for GR and EE only go back until 2000.

5. PPPs and the recent financial crisis

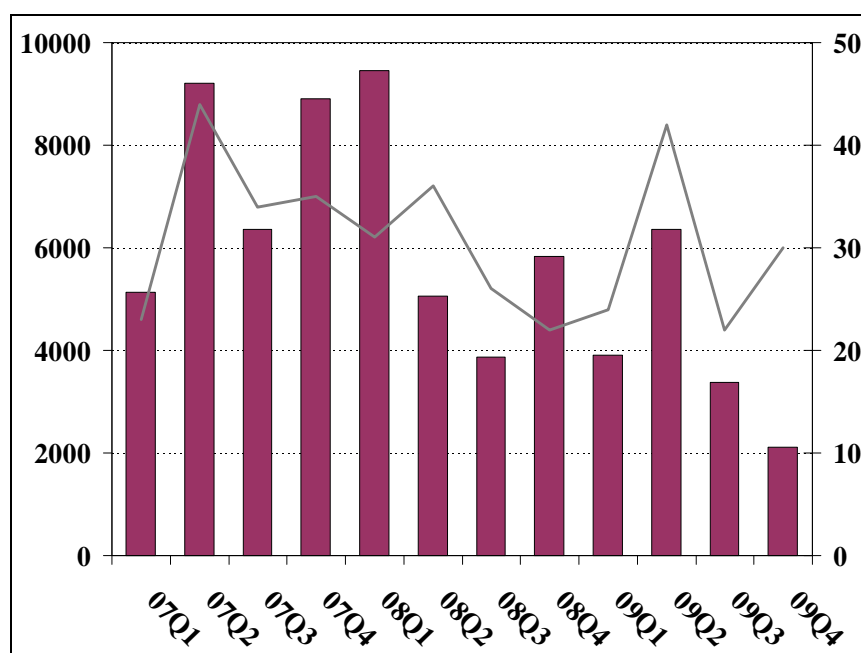
This section takes a closer look at the evolution of PPPs during the financial crisis that began in 2007. The purpose of this section - as throughout the paper - is to provide a descriptive assessment of the evolution of PPPs in Europe rather than explaining why these changes happened.

Table 1 showed that PPPs in Europe increased substantially before 2008 but since then declined considerably. The notable decline in the number and value of deals in 2008 and 2009 implied a return to levels observed well before their peak in 2006/07. Indeed, the number of PPPs in 2008 and 2009 was similar to the one observed in 2004. The decline in the value of deals during the financial crisis was stronger; while sustained in 2008, the value of PPP projects closed in 2009 was close to 2000 levels.¹⁰

¹⁰ Note that the 2008 total figure may be distorted – as will be the sectoral distribution graph – by the major £2.6 billion UK defence Strategic Air Tanker deal (FSTA), which alone accounts for over 15% of the 2008 figure. The closest comparable project in 2009 is the £ 1.3 billion M25 Road PPP.

To get a more detailed picture of the evolution of PPPs during the financial crisis, Figure 10 shows the number and value of PPPs on a quarterly basis for the EU.

Figure 10. Evolution of PPPs by value (bars, in € millions left-hand axis) and number (line, right-hand axis) of deals, quarterly breakdown



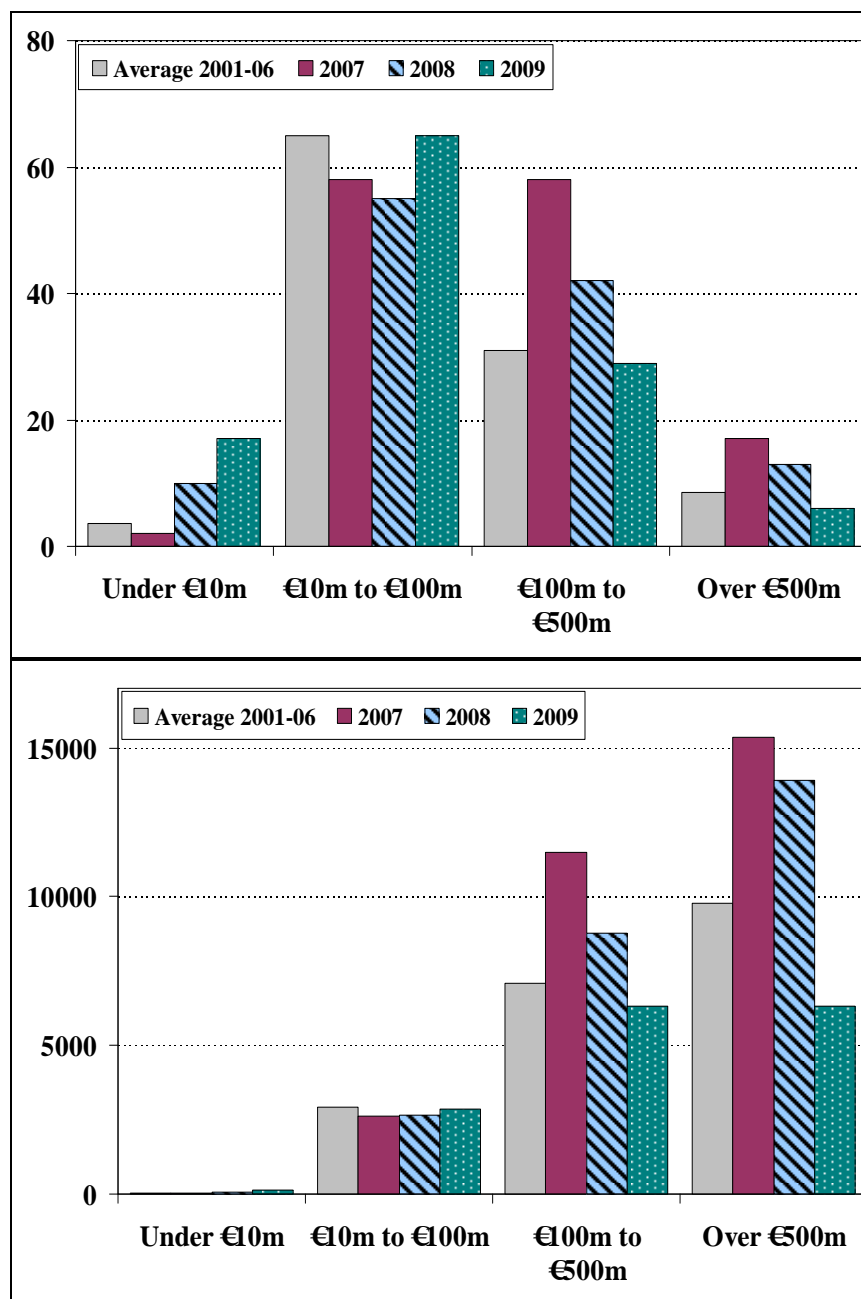
Sources: EIB, EPEC, various commercial databases.

The value of PPPs reaching financial close has gradually declined since the first quarter of 2008, reaching its lowest point in the last quarter of 2009 (a total value of EUR 2 billion). On average, the value of PPPs in 2009 was 50% below where it stood in 2007.

PPPs by size

A divergence in the evolution of the number and value of deals suggests a change in the average size of PPP deals. To see this, Figure 11 shows the evolution of PPPs by size.

Figure 11. Number (top panel) and value (bottom panel, in € millions) by size of PPPs.



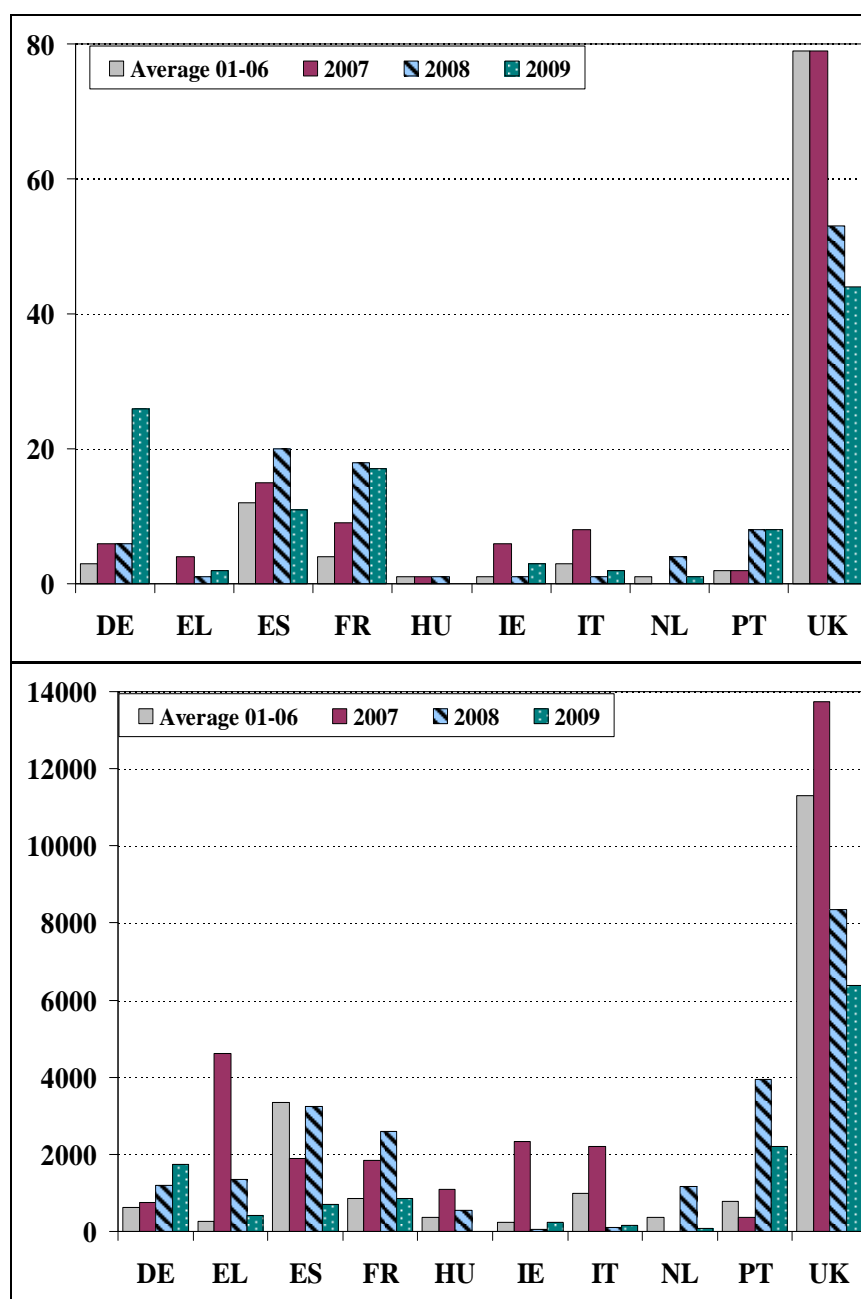
Sources: EIB, HM Treasury, Irish PPP Unit, various commercial databases.

While more than half of the projects remain in the EUR 10 million to 100 million range, there has been a tendency towards smaller deals in 2009. The average size of a PPP project dropped to EUR 91 million in 2009, from EUR 210 million in 2008 and EUR 217 million in 2007. Having said this, Figure 11 also shows that 2009 sizes are similar to the one in 2001-06. The move towards smaller deals in 2008/09 reversed thus the tendency towards larger deals in the years preceding the crisis.

PPPs by country

The evolution of PPPs in aggregate terms may hide important variation across countries. To elaborate more on this issue, Figure 12 shows the number and value of closed PPP deals across countries in recent years.

Figure 12. Evolution of number (top panel) and value (bottom panel, in € millions) of closed PPP deals by country



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

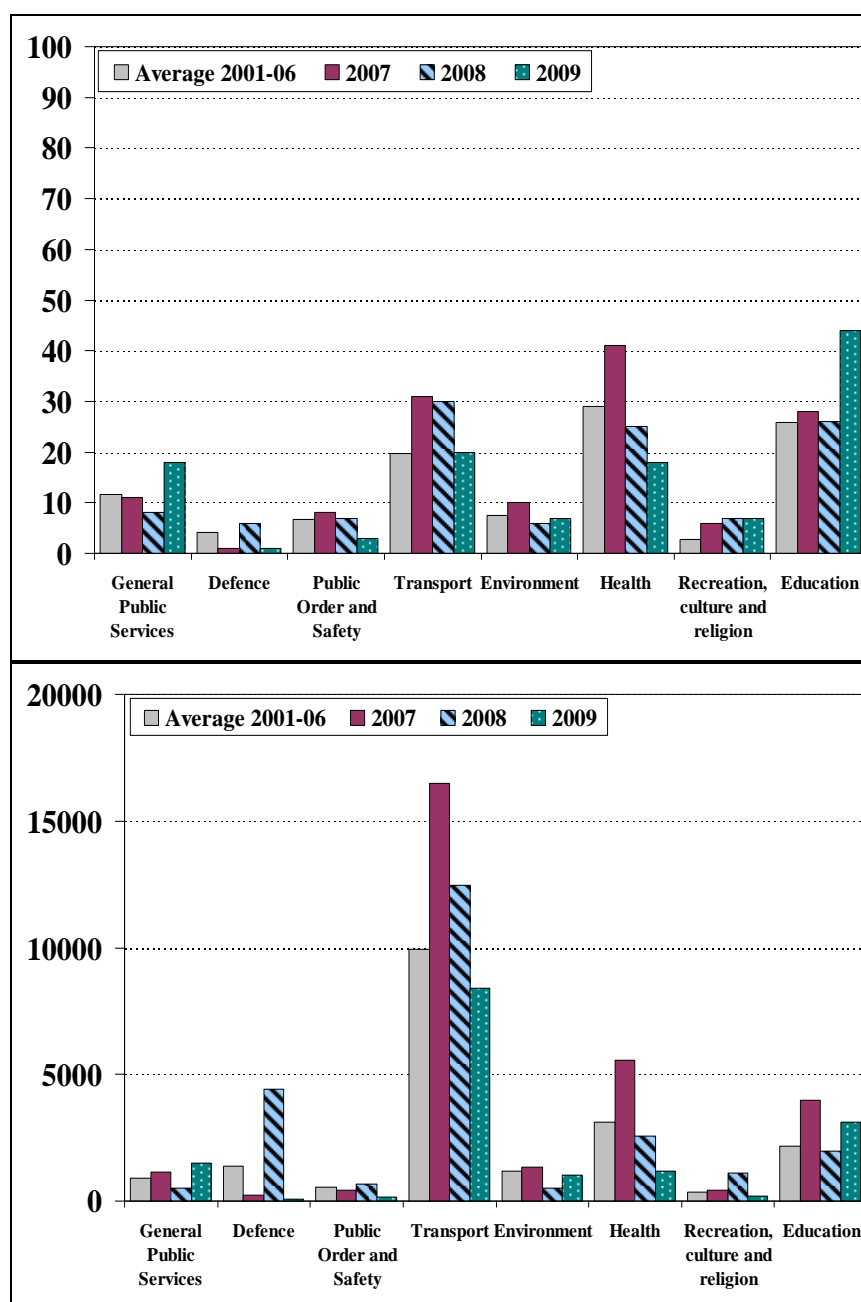
As discussed in Section 2, the PPP market continued to diversify across countries during the financial crisis. The number of PPPs in the UK almost halved, as did its value. Also in Spain, the second largest PPP market in Europe, the value of PPPs declined in recent years. At the same time, there is a number of emerging PPP markets that gained momentum. In Germany, France and Portugal the number of deals increased notably in recent years. In Germany and Portugal, PPPs also increased in value terms.

Overall, the diversification of PPPs across countries continued during the financial crisis: While mature PPP markets such as the UK and Spain have slowed down, emerging PPP markets such as Germany, Portugal and, to some extent, France have gained momentum. The UK share is diminishing, as the PPP concept is taking root in these countries. Indeed, during the period 2001-2006, PPP transactions reaching financial close in the UK represented 75% of the EU total value on average. In contrast, the UK accounted for 30% of all European PPPs in 2008 and 2009. The 44 projects reaching financial close in 2009 in the UK represented the lowest number since 1997, and just over half of the 85 a year on average between 2004 and 2007.

PPPs by sector

Figure 13 shows that there have also been substantial differences in the evolution of individual sectors in the recent financial crisis.

Figure 13. Number (top panel) and value (bottom panel, in € millions) of PPPs projects by sector and year



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

To start with the most important sector, PPPs in transport infrastructure soared in 2007-08, but in 2009 returned to similar figures as seen in 2001-06. Transport remains the largest sector by value, however it now only accounts for 22% of the total number of PPPs in Europe. While its share by value remains slightly above 50%, the relative importance of the transport sector in PPPs is diminishing. Indeed, previous results from Blanc-Brude (2007) suggested that this number was close to 80% over the period 1990-2006. Education is the second largest sector, with 27% by number and

14% by value over the period 2007-09. Health accounts for another 22% by number of deals and 12% by value.

Road tolls and risk allocation between public and private partners

The value and number of PPP deals is only one, quantitative, aspect of PPPs. The allocation of risk between the private and public sector is another important feature to be considered as it affects the underlying incentive structure of PPP contracts.

Unfortunately, little data on risk allocation between the public and private sector is available. However, looking at the most common toll types that are used as payment mechanisms in road PPPs allows some insights in how risk allocation evolved during the financial crisis. In particular, traffic risk depends primarily on the performance of the economy, changes in behaviour of users when new transport facilities are offered and the competition from other means of transport. We consider three toll types:

- **Real toll** (i.e., toll roads) arrangements, with the private partner fully exposed to demand (traffic) risk.
- **Shadow toll** arrangements, under which the private partner is reimbursed based on traffic usage – however payments are made by the public sector procuring agency.
- **Availability** payments made on the basis of the availability of the transport system; the demand risk is typically born by the public sector.
- A combination of the above (“**mixed**”).

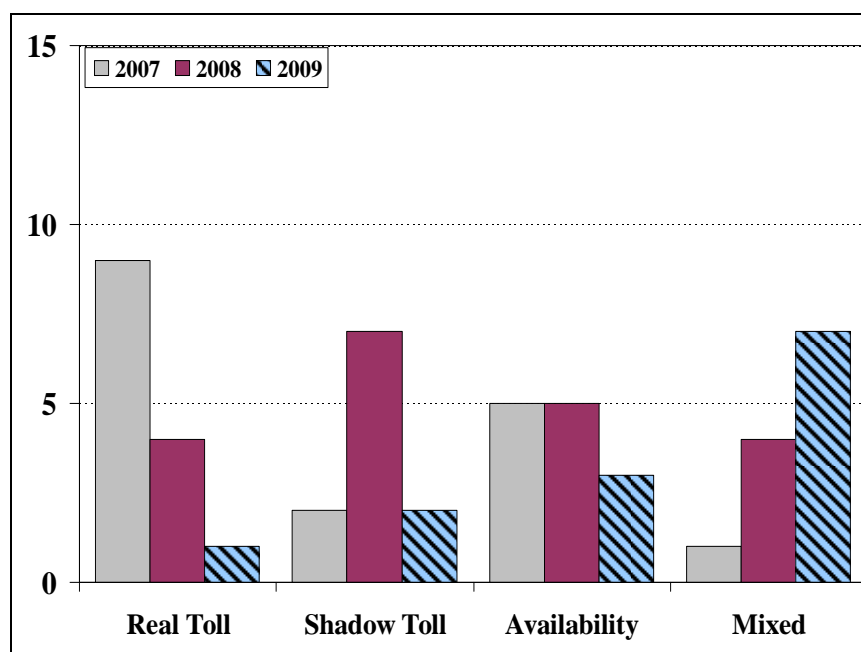
Note that a change in payment structures does not necessarily equate to a change in risk allocation between the public authority and the private partner. The level of exposure of the private partner to traffic risk under a shadow tolling arrangement can vary extensively, as it depends on the particular conditions of the arrangement. For instance the concessionaire’s marginal revenue may decrease as traffic volumes increase to avoid government over-spending.

“Mixed” tolls include a number of constellations whose payment structures may vary considerably in terms of risk allocation between the public authority and the private

partner.¹¹ In particular, minimum revenue guarantees, minimum traffic guarantees or other government support mechanisms (i.e., cash subsidies, up-front payments) may heavily affect the risk allocation between the public and private sector and therefore the incentive structure of a PPP contract.

Figure 14 considers all EU road projects (including bridges and tunnels) between 2007 and 2009, for which we could collect information on the toll type in use. Overall, the sample includes 50 deals.

Figure 14. Number of deals by payment mechanism for PPP roads, bridges and tunnels in the EU.



Sources: EPEC research, various commercial databases and internet sources.

Figure 14 shows that while real tolling systems nearly disappeared in 2008-09; they have been replaced to some extent by mixed mechanisms. Shadow toll and availability based constructions also fell.

¹¹ The following examples highlight the variety of contracts that fall under the mixed category. The German A-Model of PPP roads borrows from the real toll approach, with revenues flowing to the project company from tolls collected from lorries. However, most highway projects would also include up-front grants or discounts on toll revenues. In Portugal, the initial toll roads were structured as real or shadow tolls, under which the private partner took most of the demand risk. This changed in 2009 when Portugal implemented a revenue model featuring a combination of availability payments and service charges, with the proportions of each differing depending on the projected traffic levels on each road. In the period 1990-2006, a large majority of roads in Spain had a real toll payment structure. However the government decided not to transfer demand risk to the private sector in its latest (2009-10) infrastructure program for roads. As such, concessionaires will be repaid via availability payments

Thus, there was a tendency towards more complex, “mixed” payment mechanisms in road PPPs in Europe in the course of the recent financial crisis. As explained above, one should be careful in drawing conclusions from this graph about the risk allocation between the public and private sector, as individual contracts under the “mixed” category may vary considerably in the allocation of risk between public and private partners.

6. Conclusions

The primary purpose of this paper is to fill an information void on PPPs by offering an updated description of European PPPs from a macroeconomic and sectoral perspective. It does not aim to provide any normative assessment of PPPs as a procurement method.

Between 1990 and 2009 more than 1300 PPP contracts were signed in the EU, representing a capital value of more than EUR 250 billion. This includes roughly 350 new projects with a value of almost EUR 70 billion having reached financial close since the beginning of 2007.

Since 2006, the PPP market in Europe has continued to diversify both across countries and sectors. The UK remains the largest PPP market in Europe, though its share in the total of EU-PPPs continues to shrink. At the same time, PPPs have become more important in other European countries. Until now, PPPs in the UK continue to diversify across sector, with health and education PPPs gaining ground. Outside the UK, similar tendencies can be observed, though transport remains the dominant sector.

During the financial crisis, the PPP market in Europe contracted in most countries and sectors. As there was a tendency towards smaller projects, the total value of PPPs declined more than the number of deals: The value of EU PPP transactions stood at EUR 15.8 billion in 2009; a decrease by almost 50% compared to 2007. However, in many respects the reduction in PPPs observed in 2009 can be interpreted as a reversal of an extraordinary spike in the years preceding the crisis.

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Irish PPP Unit: <http://www.ppp.gov.ie/>

EIB internal project database

Annex 1: Data aggregation methodology

The PPP data presented in this paper includes both the number of projects and the total amount of capital raised by the project company at closure. Variations in the data can often be found depending on the source used. Based on the data sources listed above, the following rules were used to aggregate the data:

- **Project count:** For the period 1990-2007 different lists of projects available from commercial databases, public sources and EIB files were sorted by financial close and cross checked project by project. When significant discrepancies were found further research was done for individual projects (through EIB investment officers and EPEC). For 2008 and 2009, EPEC, in coordination with national authorities, compiled a consistent list of PPP projects, which is comparable across countries.

Note: In the UK, the list of projects published by HMT features less projects than previous versions because the data has been 'restructured'. We chose to use all known UK projects that are in line with our definition of PPPs as outlined in the introduction.

- **Project investment:** Investment is defined as sum of debt and equity at financial close. In the case of PPPs closed between 1990 and 2007, the main data source was Projectware. PPP values for 2008 and 2009 have been drawn by EPEC from publicly available sources, in coordination with national authorities.