

ORIGINAL ARTICLE

Public-Private Partnership and fiscal illusion: A systematic review

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ABSTRACT

Public-Private Partnerships (PPPs) are mostly presented as a means to introduce efficient procurement methods and better value for money to taxpayers. However, the complexity of the PPP mechanism, their lack of transparency, accounting rules and implicit liabilities make it often impossible to perceive the amount of public expenditure involved and the long-run impact on taxpayers, providing room for fiscal illusion, i.e., the illusion that PPPs are much less expensive than traditional public investments. This paper, thanks to a systematic review of the literature on the EU countries experience, tries to unveil the sources of this illusion by looking at the reasons behind the PPPs' choice, their real costs, and the sources of fiscal risks. The literature suggests that PPPs are more costly than public funding, especially when contingent liabilities are not taken into account, and are employed as mechanisms to circumvent budgetary restrictions and to spend off-balance. The paper concludes that the public sector should share more risks with private sectors by reducing the amount of guarantees, and should prevent governments from operating through a sleight of hand that deflects attention away from off-balance financing, by applying a neutral fiscal recording system.

Keywords: PPPs; systematic literature review; off-balance accounting; budget constraints; fiscal risks

1. Introduction

Public-Private Partnerships (PPPs) and Public Finance Initiatives (PFI) are special forms of public procurement and represent a small fraction of public investments, but have emerged, over the past 35 years, as an alternative financing method for new infrastructure projects, especially in those sectors that directly reward the private investors (energy, telecommunications, infrastructure, transports). PPPs were born to improve the internal management of government infrastructure provision in the 1990s (Casady *et al.*, 2019) and have evolved into complex and sophisticated relationships between public and private agents, linking governments to the business sector, but, at the same time, challenging policy-making processes and the governments' steering capacity (Hodge and Greeve, 2009; Dutz *et al.*, 2006).

ARTICLE INFO

Received: Sept 23, 2019

Accepted: Nov 19, 2019

Available online: Dec 05, 2019

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CITATION

Cepparulo A, Eusepi G and Giuriato L (2019). "Public-Private Partnership and fiscal illusion: A systematic review". *Journal of Infrastructure, Policy and Development*; 3(2): 288-309. doi: 10.24294/jipd.v3i2.1157

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The complexity of PPPs comes from their being long-term contracts between a private party and a government agency for executing and operating a project, in which the private party bears significant risks and management responsibilities (World Bank, 2013; Bennett and Iossa, 2006; Iossa and Martimort, 2015). Two types of PPPs can be identified: i) government-funded PPPs, where the government provides predetermined payments for making the asset available or to ensure the supply of the services (payments per volume of services provided or per number of users, i.e. shadow tolls), and; ii) user-funded PPPs (also called concessions), where the private provider recoups its infrastructure investment through charges to final users (Irwin *et al.*, 2018). Up-front capital subsidies to the initial investment are also possible, as well as guarantees on particular risk variables or compensation clauses in case of early rescission of the contract.

The expectations raised by PPPs have been wide-ranging. They include reducing pressure on public finance, fostering competition, providing better value for money to taxpayers, optimising costs throughout the projects' lifetime, shifting the role of governments from the provision to the supervision of infrastructure, encouraging innovation in the public sector (combining public and private expertise), enabling better maintenance and service levels than traditional projects, and increasing efficiency (on-time and on-budget delivery of infrastructure). However, the extent to which PPPs have delivered their promises and the reasons that guide the interest in PPP adoption are highly debated.

The paper tries, in particular, to assess the problem of fiscal illusion that PPP can raise and provides insights into the fiscal reasons behind PPP adoption, their performance in terms of costs and the implicit fiscal risks. Indeed, the complexity of the PPP mechanism, lack of transparency, accounting rules and implicit liabilities make it often impossible to perceive the amount of public expenditure involved and the long-run impact on taxpayers, providing room for fiscal illusion,¹ i.e., the illusion that PPPs are much less expensive than traditional public investments.

We approach the issue by means of a qualitative systematic review of international studies on PPP published in the peer-reviewed scholarly literature. In particular, the systematic review aims at assessing the following research questions:

- Is there evidence of PPPs being a mechanism to circumvent budget restrictions?
- How relevant is the off-balance-sheet motive in PPP's adoption?
- Are PPP-related costs higher than under more traditional types of public infrastructure financing?
- Is there any evidence of PPP-related fiscal risks assessment and, in particular, of contingent liabilities?

The qualitative systematic review covers the Web of Science, KJD, MEDLINE, RSCI, and SCIELO databases, including studies from the social sciences, economics, public administration, accounting, finance, health, engineering, business, and management disciplines. Reports and working documents from international institutions (IMF, World Bank, World Bank Group, European Investment Bank) and summary review articles (Hodge and Greve, 2009; Cui *et al.*, 2018; Bel and

¹ Puviani defines fiscal illusion as the “misrepresentations of money paid or to be paid as taxes or of some use of them” (Puviani, 1903, p. 8).

Fageda, 2007; Bao *et al.*, 2018) are employed as background information.

We focus on the experience of the European Union (EU) countries, where investments in PPPs have grown in absolute value since the 1990s with a severe downturn due to the crisis, when the number and value of PPPs significantly dropped. The European PPP Expertise Centre (EPEC, 2018) estimates that the aggregate value of PPP transactions that reached financial close in the European market totalled EUR14.6 billion in 2018, while their number fell to 39, the lowest since 1997. The PPP market in the EU is concentrated in some countries, namely the UK, France, Spain, Portugal, Germany, Greece, Italy, and the Netherlands. In terms of the covered sectors, PPPs have expanded from the transport sector—that is traditionally the main area of intervention—to public buildings and equipment (schools, hospitals, prisons) and the environment (water/waste treatment, waste management). The EU countries have also been encouraged by EU authorities to develop a more intensive leverage of public funds with private finance through PPPs (e.g., the 2011 EU Commission White Paper on Transport and the 2014-2020 Multi-annual Financial Framework).

The outline of the paper is as follows: Section 2 presents the problem of fiscal illusion and its importance for PPP projects. Section 3 examines the above research questions. Section 4 presents the methodology employed, while Section 5 displays and comments on the results. Section 6 concludes.

2. PPP and fiscal illusion

Although the idea of fiscal illusion as a practice within the political system has been illustrated across a variety of models, the point of departure for that idea historically was introduced by Puviani (1897; 1903). Puviani showed that governments can create a fiscal illusion by maneuvering both the tax side and the expenditure side. Eighty years later, Musgrave and Musgrave (1988), elaborated the concept of fiscal churning to demonstrate how taxpayers fail to net out due to government's unnecessary duplications of revenues and expenditures that create useless transaction costs. Therefore, they suggested that it is a task of a democratic government to minimise such costs to keep the size of the budget unaffected.

Leaving aside the macroeconomic aspects of fiscal illusion associated with inflation and central banks, we shall focus on two forms of fiscal illusion: the complexity of the tax structure and debt illusion. It was Puviani's contention that the structure of the tax system is itself complex. In his view, the more complex the revenue system, the larger will be the public budget.

In the context of contemporary systems, this proposition is still a troublesome issue. To comprehend the importance attached to this assertion, we need to recur to Downs (1957). Over sixty years ago, he wrote that complexity involves imperfect information due to the high costs to obtain information on the benefits and costs of specific government programs. This line of argument fits well with our understanding of PPPs. PPPs require a good deal of information and hence they are likely to incur higher costs than those envisaged by private enterprises and public procurement as well.

The kind of questions that would arise when dealing with PPPs might be the following: What PPPs are likely to emerge under the kinds of political institutions in Western democracies? How are PPPs likely to give rise to fiscal illusion? What are the likely consequences on the relationship between taxpayers and government?

Such questions are unlikely to be able to be answered in any great detail. A familiar formulation of the problem is that PPP projects should secure maximum efficiency. All this is put as if, in their everyday course, governments were quite divorced from political incentives. But this implausible account represents an abstract desire for a certain uniform idea of efficiency much more than it represents the economic process in action. Under almost any political regime, politicians choose tax arrangements that involve fiscal illusion.

To make an intelligent assessment about government activity, taxpayers need to have a clear sense of just how much they pay in taxes. Yet, tax systems are designed to use tax instruments of which taxpayers are least aware. What changes might there be from the fiscal illusion viewpoint if we move from a pure public economy setting to one characterised by a public-private partnership? *Prima facie*, one might prefigure that the government sees its illusion-creating power reduced because the public enterprise is a part of a private contract and cannot be considered as an intrusion in the private ordering, but rather as an instrument enhancing trust.

Contrary to public procurement, which concentrates on the financing mode, PPPs focus on the whole aspects of the contract so as to guarantee that projects come in on time and on budget. However, in real policies, things do not go so smoothly.

The second type of fiscal illusion revolves around the choice between debt and tax financing. Many believe that private and public investments in infrastructure are beneficial for both macroeconomic and microeconomic reasons because they stimulate the economy and improve productivity. Government borrowing to fund infrastructure projects is supposed to boost economic multipliers more than tax cuts and transfers. Determining if PPPs give rise to a high or low multiplier largely depends on the crowding-out effect that public investments give rise to. However, multipliers do not reach their potential under fiscal illusion conditions.

Politicians are inclined to describe infrastructure in ruinous physical conditions in order to justify their request for more investment funds. However, the political mismanagement of resources affects badly the economic performance because politicians often respond to short-run incentives that conflict with long-run efficiency. In fact, if the infrastructure is in dire conditions, privatisation would be the best solution since market prices weed out or smooth uneconomical behaviours. As already mentioned, governments resort to PPPs to cover up their indebtedness and debt illusion is a by-product of the way public debt is created.

Through a sleight of hand, the PPP contract could be changed by turning a demand-risk scheme into an availability-payment scheme. This is indeed a form of systemic fiscal illusion: governments resort to PPPs to keep costs and liabilities off their budget balance sheet. This points to the difficulties for taxpayers in assessing what they are actually paying, due to the fiscal smoke and mirrors to disguise the real costs of the infrastructure. Needless to say, larger investments are not necessarily inspired by efficiency. To illustrate how all this hits the mark in relation to rent-seeking, consider the investments for doubling the lanes of a turnpike in an uninhabited area.

The debate over the good and bad of PPPs has taken a partisan character.² While opponents claim that the PPP solution pushes up infrastructure costs, advocates of PPPs claim that the involvement of private enterprises ensures a higher quality of the infrastructure. Whatever posture is

² For political economy considerations of infrastructure provision see Henckel and McKibbin (2017)

taken, it is crucial to determine empirically whether PPPs increase or reduce fiscal illusion—in other terms, to determine whether a PPP contract is based on political economy principles or on economic policy programs.

3. The research questions of the review

Our research questions investigate four topics related to the scope for fiscal illusion in PPP, in particular the reasons for their adoption and the costs that have a bearing on current and future government's budgets. The issue is of utmost relevance and has been recognised by national and international institutions (IMF, 2016). In the UK, the Office for Budget Responsibility called the financing and accounting arrangements for PPPs a “fiscal illusion” (H. M. Treasury, 2018).

The first question revolves around PPPs being not only a mechanism to improve public procurement and “modernise” the public sector, but also a measure to circumvent budgetary restrictions and create fiscal space (World Bank, 2013). The large amounts of capital required by infrastructure put a strong pressure on the public finances, if provided under traditional public provision. Instead, by deferring and spreading public sector payments through time and if the funding constraints are not recognised, PPPs create an “affordability illusion, [...] the illusion that a PPP project can take place because the financing is there, but forgetting that the project eventually has to be paid for and the financing paid back” (Yescombe and Farquharson, 2018, p. 100).

By providing services and avoiding upfront costs, which are transferred to the future, PPPs also help politicians please the electorate. They also free revenues to be used for other targets and help governments gain the recognition of good management. PPPs have, indeed, a political potential that provides an incentive for their economic abuse (Välilä, 2005).

Related to the first topic, our second question concerns the statistical treatment and recording of PPPs: “PPPs do not materially reduce fiscal constraints for governments. If they appear to do so in the short term, it is likely due to the nature of the cash flow disbursements of the PPP project and the differing accounting standards or novel finance structures hiding the explicit or implicit burden created by a PPP. As a result, PPPs may create outside fiscal burdens over the long run” (Reyes-Tagle and Kyeong, 2018, p. 95). The possibility to record the PPP investments off the government's balance sheet has been pointed out as one of the reasons that have created an unwarranted bias in favour of PPPs (Välilä, 2005) and relaxed the budget constraints in the short term.

The EU accounting rules (ESA 2010; Eurostat, 2016) may contribute to the bias by allowing PPPs to be registered as off-balance-sheet items and the share of PPP-related debt not to be considered for the Stability and Growth Pact compliance. In particular, PPP-related assets are classified off the balance sheet of the government if: (1) the private partner bears the construction risk (e.g., late delivery or additional costs), (2) the private partner bears either availability (volume and quality of output) or demand risk (variability of demand), and (3) the risks are not incurred by the government through other means (e.g., government guarantees or early redemption clauses).³ Therefore, when enough risk is transferred to the private partners, the PPP-related investment does not show on the government balance sheet.

³ If these criteria are not sufficient, supplementary criteria are employed, e.g., the presence of government obligation for maintenance costs, the type of classification of the assets, the clauses for the disposal of PPP assets at the end of the contract, and debt repayment in case of early rescission of the contract.

These rules have been criticised (IMF, 2004) for allowing lax interpretations and exacerbating the affordability illusion, because PPPs can easily be shaped to fulfil the off-balance-sheet conditions (Mühlenkamp, 2014); accordingly, in the EU, most PPPs do not directly impact on public deficits, but may have deep consequences for countries' fiscal sustainability.

The room for interpretation allowed by ESA 2010 stands in contrast with the criteria adopted by the International Public Sector Accounting Standards (IPSAS) that, in most cases, prevent off-balance-sheet reporting. The difference between the two systems is that IPSAS considers the legal ownership of the assets and puts PPPs on the government's balance sheet if the government controls the service provided and the asset at the end of the contract. ESA 2010 stresses, instead, the concept of economic ownership that considers which party bears the risks and rewards from the use of the assets. Issues of classification are, therefore, frequent because governments often take back some of the rewards or the risks of the PPP projects. Besides, when a guarantee is effectively called, there can be a change in the economic ownership of the assets and, in some cases, EU countries have been required by Eurostat to revise their PPP-related registrations with consequences on their public deficits.⁴

We, then, explore the issue of the costs of PPPs that impact on current and future budgets. These include direct fiscal commitments and contingent liabilities, which are our next topics. In the case of direct fiscal commitments, the timing and the amount of the payments are certain. They may include (i) up-front expenditures—up-front capital subsidies to the private party (viability payments) and/or expenditures for works associated to the projects, and (ii) ongoing expenditures—annual fixed subsidies (availability payments) and/or shadow tolls or output-based subsidies (Aslan and Duarte, 2014). These commitments, which are of long-term nature, may have limited implications on the budgets of the government that starts the project, but may reduce the fiscal space of future governments (Aslan and Duarte, 2014) and their capacity to absorb fiscal shocks (Irwin *et al.*, 2018).

The topic of PPP direct costs being higher than under more traditional types of financing public infrastructure has been largely debated. While in traditional public procurement, the construction risks are borne by the government—and hence by the taxpayers—in PPPs, they are priced in the contract and passed on to the private partner. The transfer of the construction risk, in principle, makes construction costs in a PPP higher than in traditional public procurement. Costs can escalate as a result of contract renegotiations and in relation to search and contracting in the negotiation process (Välilä, 2005), monitoring and quality controls,⁵ disputes between the parties, or tax incentives.

In our last research question, we examine the fiscal risks carried by PPPs. These are related to the presence of guarantees and various forms of subsidies to PPP investors, i.e., contingent liabilities, meaning public spending that may be triggered by a future event (Cebotari *et al.*, 2009) that are difficult to evaluate in amounts and timing. According to Mota and Moreira (2015), the way PPP extends over time may affect future generations, due to the increase in mandatory expenses and

⁴ For example, in 2005, Eurostat decided that the transfers made by the Hungarian government to PPP motorways that had turned unprofitable could not be considered off-budget and this increased the country's deficit by 1.5% (Bova *et al.*, 2016).

⁵ Torres and Pina (2001) found evidence of extra costs between 3% and 25% of the contract value for PPPs in the US. According to Välilä (2005), a learning process over time and the establishment of a reputation for the private and public partners may allow a reduction in monitoring costs.

hidden debt. In particular, not only a misjudgement of the costs but also accounting regulations and public support triggered when projects fall below certain financial thresholds, affect fiscal risks and fiscal illusion. Contingent liabilities include (i) guarantees on particular risks variables (e.g., exchange rates, demand), (ii) *force majeure* compensation clauses (e.g., natural disasters), (iii) termination payments guarantees in case of early termination of the contract, and (iv) credit guarantees in case the private partner defaults on the debt (Alsan and Duarte, 2014).

The off-balance accounting treatment of future liabilities implies an underestimation of the state burden that is, instead, presented as cost-neutral. Participative loans, one of the supportive tools of the public sector to the private, have similar effects. The other forms of public support, such as guarantees, commitments, non-refundable subsidies, and grants can pose significant risks if they are not disclosed as contingent liabilities (Stafford *et al.*, 2010).

These guarantees amount to transferring the financial risk to taxpayers and, when called, they may imply large sudden outlays. According to IMF (2012), during the last crisis, PPP-related contingent liabilities had to be reclassified into central government debt and contributed to large unexpected increases in general government debt of some advanced countries. Besides, the fiscal risk and the negative impact on the government budget are increased by the fact that most guarantees are activated at the same time during economic cycle downturns and tend to be correlated among each other.

Contingent liabilities may encourage private investors, who otherwise would be much more cautious, to undertake investments of uncertain profitability. This may also lead to poorly designed projects with higher costs than necessary or the use of PPPs when different modes of financing would be preferable (Budina *et al.*, 2007). Lewis and Mody (1997) underline that government's balance sheets rarely reflect these risks, whose contingent nature exposes governments to the "possibility of sudden and substantial obligations over a short period of time, which could lead to severe fiscal problems."

To avoid the quick accumulation of risk exposure, PPP contingent liabilities should be carefully and regularly monitored and/or governments should adopt mitigation methods such as exposure limits, e.g., ceilings for the stock of PPP-related contingent liabilities or a maximum annual payment amount for PPPs.

4. Methodology

The paper offers a systematic assessment of documented performance of PPPs in the peer-reviewed scholarly literature. We focus on empirical studies on infrastructure PPPs, i.e., long-term cooperative institutional agreements between a public entity and a private partner for financing, building and operating a public infrastructure service, without sector restrictions.

Systematic reviews on PPP topics have been performed to provide insights on a number of research questions. They highly differ in the methodology employed, the examined topics, and the type of PPP considered. Some studies perform only one round of search on one/two databases and consider only one discipline (Wang *et al.*, 2018; Torchia *et al.*, 2015), some perform a review on manually collected documents (van den Hurk, 2018), while others conduct a structured search on articles from different databases and different disciplines (Neto *et al.*, 2016; Cui *et al.*, 2018; Petersen, 2019). Table A1 in the Appendix offers a summary.

The systematic review was performed along the following three steps. We first identified a list of keywords related to PPPs' costs and fiscal risks to employ in the systematic search. We proceeded starting with a list of keywords found in Vällilä (2005) and applied it in rounds of searches in Web of Science. We thus enlarged the original list of relevant terms and ended up including 50 keywords.

The list of keywords was, then, employed in systematic searches in Web of Knowledge, KJD, MEDLINE, RSCI, and SCIELO. We considered only research articles in peer-reviewed journals, written in English from 1990 to 2019 and referring to EU28 countries. The search string employed is:

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TS=(("Public private partnership*" OR PPPs OR "Private finance initiative*" OR PFI* OR "Public private alliance*") AND ("cost*" OR "hidden cost*" OR "contingent liability*" OR "implicit liability*" OR transparency OR accountability OR "fiscal legacy*" OR "public scrutiny" OR scrutiny OR "off balance sheet" OR "budgetary constraints" OR "fiscal commitment*" OR "accounting rule*" OR "accounting practice*" OR "accounting standard*" OR "fiscal deficit*" OR "information disclosure" OR "fiscal implication*" OR guarantee* OR democracy OR "accounting bias" OR "fiscal incentive*" OR "fiscal cost*" OR "bail* out" OR "political cost*" OR "cash basis account*" OR "public debt" OR "underestimat*" OR "risk allocation" OR "fiscal implication*" OR "fiscal risk" OR "law suit*" OR "future cost* to government*" OR "Explicit cost*" OR "Implicit contingent liability*" OR "Direct cost*" OR "Indirect cost*" OR "fiscal impact*" OR "fiscal burden" OR "transaction cost*" OR "financing cost*" OR "deferred cost*" OR "additional cost*" OR "unexpected cost*" OR "whole-life cost*" OR "cost overruns" OR "negative impacts" OR "fiscal burden" OR "transparency" OR "risk*")) AND (CU=(United Kingdom OR Ireland OR Spain OR Portugal OR Slovenia OR Sweden OR France OR Italy OR Belgium OR Denmark OR Austria OR Bulgaria OR Poland OR Germany OR Malta OR Cyprus OR Hungary OR Romania OR Latvia OR Lithuania OR Luxembourg OR Estonia OR Czech Republic OR Netherlands OR Slovakia OR Finland OR Greece)) AND (SU=(Life Sciences & Biomedicine OR Physical Sciences OR Social Sciences OR Technology)).
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The number of articles found was 151. We removed editorials and book reviews and then examined the title and abstracts of the articles to exclude studies that were not congruent with our research topics (type of PPPs, geographical coverage, time period). We ended up with 21 articles. In order to be sure to have considered all the existing literature on the topics under analysis, we considered also their references and, after having selected those more pertinent, searched also for their references and so on in subsequent rounds. We stopped looking into the references only when the articles popping up were those already selected. We ended up with a database of 194 articles, studying theoretically and empirically the topics under scrutiny. **Figure 1** summarises the steps of the review procedure.

We then performed qualitative research using the software NVivo. In particular, we performed text searches, based on keywords referring to the four research questions, which fed the building of framework matrices that gather the authors dealing with specific topics. The full text versions of those authors were then scrutinised and we ended up with 20 articles quantitatively answering to the first two research questions, 30 articles answering to the third, and 7 to the fourth.

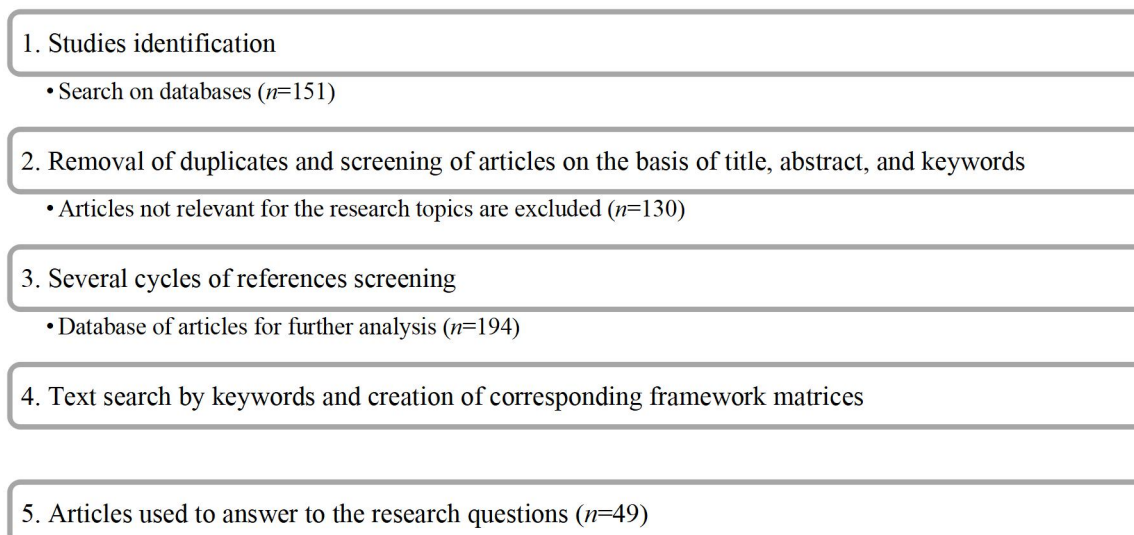


Figure 1. Summary of the systematic review process.

5. Results

This section summarises the results of the systematic review. The selection of the articles was the result of the text search by relevant keywords and the building up of framework matrixes, collecting by authors the pieces of text referring to the topic under analysis. Through this filtering method, we analysed those articles with more quantitative contents.

- *Is there evidence of PPPs being a mechanism to circumvent budget restriction?*
- *How relevant is the off-balance-sheet motive in PPP adoption?*

In our systematic review, 20 studies address these first two topics. The key features of the studies that investigate the empirical evidence concerning the budgetary reasons for PPP adoption are presented in **Table 1**.

The great majority of the screened studies find a relationship between the choice of PPPs and the government's budgetary constraints (Broadbent and Laughlin, 2002; Spackman, 2002; Benito *et al.*, 2008; Cruz and Marques, 2011; Fernandes *et al.*, 2015; Reeves, 2015; Bergere, 2016; van den Hurk, 2018) and some of them also provide for econometric evidence, which is collected for PPPs involving local governments (Antellini Russo and Zampino, 2012; De Marco *et al.*, 2012; Buso *et al.*, 2016). One study considers that the same strategy of avoiding excessive public borrowing and the consequent credit rationing has guided UK PFI refinancing deals (Toms *et al.*, 2011). In contrast, one study finds a negative relationship between the budget deficit and the value of PPPs and justifies it on the basis of the loss of credibility of high-debt governments (Mota and Moreira, 2015). One concludes that PPPs are not significantly related to budgetary results (Mazzola *et al.*, 2019). Overall, the findings suggest that PPPs are employed as mechanisms to circumvent budgetary restrictions that fuel an "availability illusion".

The off-balance-sheet financing, in some countries, is found to be relevant for the PPP choice (Spackman, 2002; Benito *et al.*, 2008; Reeves, 2015; Bergere, 2016). In particular, in some cases (Fernandes *et al.*, 2015; van den Hurk, 2018), it shapes the characteristics of the PPP policy (e.g., bundling the procurement of projects in uncommon sectors); determines distortions, delays, and cancellation of some public investment decisions (Reeves *et al.*, 2015); or gives rise to intense

debate and disagreement between the government—in search for flexibility—and the accounting standards body—aiming at the integrity of the accounting principles (Broadbent and Laughlin, 2002; Stafford *et al.*, 2010; Hodge and Mellett, 2012). The bias introduced by the accounting criteria was particularly relevant before the crisis, which brought to an end the “unlimited credit” that PPP had allowed (Cruz and Marques, 2011). One econometric study (Buso *et al.*, 2016) concludes that debt hiding is relevant, but not sufficient to explain the PPP choice. For some specific sectors and countries, instead, the choice of PPPs, risk transfer, and specific financial instruments (e.g., cheap loans to the private partners or Special Purpose Vehicles) seem to be tied more to the possibility of off-balance-sheet registration than to the project’s merit or value for money (Acerete *et al.*, 2010; Akbiyikli *et al.*, 2011).

Table 1. The budgetary reasons for PPP adoption

Study	Period of analysis, geographical/sectorial coverage	Methodology	Empirical evidence on <ul style="list-style-type: none"> – Circumvention of budgetary restrictions – Off-balance-sheet motive
Broadbent and Laughlin (2002)	United Kingdom	Written submissions to Accounting Standards Board	<ul style="list-style-type: none"> – Explicit use of PFI to control public expenditures – Analysis of the changing accounting requirements for PFI and the government’s lobbying to prevent on-balance sheet accounting of PFI transactions
Spackman (2002)	United Kingdom	Analysis of official documents and accounts	<ul style="list-style-type: none"> – PPPs help evade formal constraints on spending – Off-balance-sheet motive relevant for government policy of PFI
Benito <i>et al.</i> (2008)	Spain	Analysis of official documents and accounts	<ul style="list-style-type: none"> – PPP used to defer payment and control deficits and debt – Lack of clear accounting standards on how to report PPP allowed for creative accounting with the aim of meeting the EU fiscal rules
Khadaroo (2008)	Northern Ireland	Case studies (n=3) and interviews	<ul style="list-style-type: none"> – Not examined – Inadequate attention to PFI implications on future generations of users and taxpayers
Acerete <i>et al.</i> (2010)	Spain and England Roads	Analysis of annual reports and accounts	<ul style="list-style-type: none"> – Not examined – Use of financial mechanisms that can be registered off the balance sheet (cheap loans to private partners)
Stafford <i>et al.</i> (2010)	Spain (1995-2007) and United Kingdom (1997-2004) Roads	Financial reporting of concessions (n=33, Spain) and projects (n=8, UK)	<ul style="list-style-type: none"> – Not examined – Business environment influences the development of accounting policy
Akbiyikli <i>et al.</i> (2011)	United Kingdom Roads	Analysis of annual reports and accounts	<ul style="list-style-type: none"> – Not examined – Use of financial mechanisms that can be registered off the balance sheet (SPV)

Table 1 (continued).

Cruz and Marques (2011)	Portugal	Case studies	<ul style="list-style-type: none"> – Use of the PPP model as a financing scheme in presence of budgetary constraints – Off-balance-sheet accounting allowed govt to perform infrastructure investments without immediate impact on public finance
Toms <i>et al.</i> (2011)	United Kingdom	Case study	<ul style="list-style-type: none"> – PPP refinancing as a credit-rationing avoidance strategy – Balance sheet treatment was relevant in refinancing operation
Antellini Russo and Zampino (2012)	2003-07 PPP tenders in Italian municipalities aggregated at provincial level	Regression model (OLS)	<ul style="list-style-type: none"> – Strong relationship between the number of PPP procedures and budgetary results – Not examined
De Marco <i>et al.</i> (2012)	1999-2009 Italy Hospitals	Linear regression model	<ul style="list-style-type: none"> – Level of borrowing of the local healthcare-granting agency affects the level of public funding in BOT hospitals – Not examined
Hodges and Mellett (2012)	United Kingdom	Written submissions to Accounting Standards Board, reports in specialised press and interviews	<ul style="list-style-type: none"> – Not examined – Analysis of the changing accounting requirements for PPP and the problems encountered
Fernandes <i>et al.</i> (2015)	1999-2002 Portugal	Case study	<ul style="list-style-type: none"> – PPP chosen to avoid breaching the EU rules – PPP projects are designed to fit into the accounting rules
Mota and Moreira (2015)	2000-11 17 European countries	Panel Corrected Standard Errors model	<ul style="list-style-type: none"> – Negative relationship between budget deficit and value of PPP – Not examined
Reeves (2015)	2008-12 Ireland	Analysis based on public documents	<ul style="list-style-type: none"> – PPPs justified on the basis of fiscal constraints – Relevance of the off-balance-sheet motive
Reeves <i>et al.</i> (2015)	Ireland	PPP projects (n=59)	<ul style="list-style-type: none"> – Not examined – Off-balance-sheet accounting has a distorting effect on some public investment decisions
Bergere (2016)	2004-14 France All sectors	Analysis of official documents, projects, interviews	<ul style="list-style-type: none"> – PPP used by local government to circumvent budget requirements – Off-balance-sheet motive relevant until 2010 new accounting rules
Buso <i>et al.</i> (2016)	2004-13 French municipalities	Regression model (Cox proportional-hazards model)	<ul style="list-style-type: none"> – Budget constraints positively influence PPP use – Debt hiding is relevant, but not sufficient to explain PPP choice. No evidence of creative accounting in PPP adoption.

Table 1 (continued).

van den Hurk (2018)	2003-15 Flanders Several services	Analysis of official documents, projects, interviews (n= about 130)	<ul style="list-style-type: none"> – Relevance of limited budget resources – Off-balance-sheet financing is main driver of PPP projects and explains the peculiarity of PPP policy
Mazzola <i>et al.</i> (2019)	2003-07 PPP tenders in Italian municipalities	Tobit model	<ul style="list-style-type: none"> – No significant relation between an index of fiscal pressure and the realisation of successful PPP initiatives – Not examined

• ***Are PPP-related costs higher than under more traditional types of public infrastructure financing?***

Although the use of private finance is associated with a very positive role in infrastructure, the literature on the operational performance is less rich because of the lack of data and transparency on the projects (Shaoul *et al.*, 2006; Acerete *et al.*, 2010; 2019). According to our systematic review, 30 articles assess PPPs costs and are summarised in **Table 2**. A variety in terms of sectors and countries is covered. In terms of the adopted methodology, most of the articles refer to financial analysis based on the documents of the private partner. The comparison with other procurement methods is mainly based on cash costs and public funding at different conditions (for example, at 4.5% interest sovereign rate, or at the yield of a 30-year bond). Not surprisingly, most of the papers relate to countries with a long experience in PPPs: United Kingdom, Ireland and Spain.

The majority of the articles (24), covering six sectors (transport, health, water services, information technology (IT), school building, defence) and six countries (Spain, France, Ireland, Portugal, Sweden, United Kingdom), confute the theoretical idea of lower costs accompanying PPPs. The range of these higher costs is also quite large: from 8%-13%, observed by Reeves and Ryan (2007), up to 60% and 71%, found by Shaoul *et al.* (2008). According to the literature, the reasons behind the extra costs can be several. They might be due to the higher costs of private debt or to the existence of financing charges (i.e., professional fees, fees for preparing the bids, consultancy fees, costs for legal, technical and financial advice). Still, they might be related to the increase of the asset bases (Gaffney *et al.*, 1999), or to the increase of the charges if the trusts are locked into a monopoly supplier (Shaoul *et al.*, 2008), or to the characteristics of the payment mechanism such as in the shadow toll (Shaoul *et al.*, 2006). Besides, as observed by Pollock *et al.* (2002), most of the differences between PFI costs and other alternatives of procurement are explained by the risk transfer, which is also really high, being around 50% of the total capital cost in certain cases.

Only three articles, instead, confirm the theoretical expectations in terms of financial performance. At least in one case (Parker and Hartley, 2003), the authors are not sure if the savings of the costs will be realised given the uncertainties of long-term contracting. Finally, like in Petersen (2019), three articles present mixed findings.

Table 2. PPP performance in terms of costs

	Authors	Countries	Sectors
Higher costs	Gaffney <i>et al.</i> (1999)	United Kingdom	Health
	Froud and Shaoul (2001)	United Kingdom	Health
	Edwards and Shaoul (2003)	United Kingdom	IT
	Pollock <i>et al.</i> (2002)	United Kingdom	Health
	Shaoul (2005)	United Kingdom	Health
	Ismail and Pendlebury (2006)	United Kingdom	School
	Shaoul <i>et al.</i> (2006)	United Kingdom	Transport
	Reeves and Ryan (2007)	United Kingdom	School
	Shaoul <i>et al.</i> (2008)	United Kingdom	Health (7 out of 12 cases)
	Pollock and Price (2008)	United Kingdom	Health
	Blanc-Brude <i>et al.</i> (2009)	EU countries	Transport
	Acerete <i>et al.</i> (2009)	Spain	Transport
	Acerete <i>et al.</i> (2010)	Spain, United Kingdom	Transport
	Shaoul <i>et al.</i> (2010)	United Kingdom	Transport
	Shaoul <i>et al.</i> (2012)	United Kingdom	Transport
	Acerete <i>et al.</i> (2011)	Spain	Health
	Toms <i>et al.</i> (2011)	United Kingdom	Health
	Demirag <i>et al.</i> (2012)	United Kingdom	School
	Cabrera <i>et al.</i> (2015)	Spain	Transport
	Fernandes <i>et al.</i> (2015)	Portugal	Transport
Reeves (2015)	Ireland	Mix of services	
Porcher (2017)	France	Water	
Smith and Thomasson (2018)	Sweden	Transport	
Acerete <i>et al.</i> (2019)	Spain, United Kingdom	Transport	
Lower costs	Parker and Hartley (2003)	United Kingdom	Defence
	Akbiyikli <i>et al.</i> (2011)	United Kingdom	Transport
	Shaoul <i>et al.</i> (2008)	United Kingdom	Health (2 out of 12 cases)
Mixed results	Bain (2010)	United Kingdom	Transport
	Khadaroo (2008)	United Kingdom	School
	Reeves (2013)	Ireland	Mix of services

- ***Is there any evidence of PPP-related fiscal risks assessment and, in particular, of contingent liabilities?***

The detailed screen of the articles shows that evidence on fiscal risks is far scarcer in comparison to evidence on accounting and budgetary topics.

According to the systematic review, only seven articles include an assessment of contingent liabilities and they are all related to the transport sector. Their key features are summarised in **Table 3**. The analysed literature identifies the sources of fiscal risks in the guarantees provided by the public sector to take certain risks (i.e., foreign exchange rate risk, demand risk, regulatory and political risks), as well as in certain payment mechanisms (shadow tolls). In the first case, the fiscal

risk is related to the uncertainty with respect to the size of the future burden as well as to the lack of transparency around the use of such tools. Indeed, they represent financial claims against the public authority which may materialise during the lifetime of the project. As quantified by Acerete *et al.* (2010), these could amount to enormous costs. In the case of five Spanish concessions for toll roads, the exchange insurance payments between 1995 and 2003 corresponded to more than 80% of the total investment in new construction and improvements. As these authors emphasised, “[T]he old roads mortgaged the future: they came at the expense of future road funding” (p. 24). In order to assure the long-term success of the PPP, the public sector bears risks, which, according to Carbonara *et al.* (2015), should instead be shared (*force majeure* and regulatory/political risks).

Table 3. PPP-related fiscal risks

Authors	Contingent Liabilities	Countries	Sectors
Moles and Williams (1995)	Safety net	United Kingdom	Transport
Shaoul <i>et al.</i> (2006)	Shadow tolls	United Kingdom	Transport
Acerete <i>et al.</i> (2009)	Exchange rate insurance Capital grants Compensation payments Participative loans	Spain	Transport
Acerete <i>et al.</i> (2010)	Exchange rate insurance Capital grants Compensation payments Participative loans	United Kingdom, Spain	Transport
Carbonara <i>et al.</i> (2015)	Force majeure and regulatory/political risks	Greece, the Netherlands, United Kingdom, Belgium	Transport
Liyanage <i>et al.</i> (2015)	Guarantees	United Kingdom, Spain, Portugal, and Greece	Transport
Fernandes <i>et al.</i> (2015)	Contingent liabilities	Portugal	Transport

The shadow tolls may also represent a cause of fiscal risk given that unpredicted extra costs for the public sector come directly with the payment mechanism, being related to the volume of traffic, which is difficult to forecast. When the volume is below the forecast, the risk falls upon the private partner, while if it turns higher than the forecast, it falls on the public sector, as it happened in the cases observed by Shaoul *et al.* (2006) where on average the volume of traffic appear 9% higher than expected.

One article, instead, although not reporting any quantification of the liabilities, refers to the existence of guarantees in the analysed case (Liyanage *et al.*, 2015). A survey-based article flags how nine European countries out of the 12 surveyed have accounting mechanisms that formally register the contingent liabilities generated by PPP projects (Burger and Hawkesworth, 2011).

About this topic, most of the studies concentrate on the methods to price governmental guarantees (Chiara and Kokkaew, 2013).

6. Discussion and conclusions

PPPs should develop based on their own merit. However, the off-balance-sheet accounting treatment, lack of information and scrutiny of fiscal risks, and direct and contingent liabilities create the conditions for a PPP bias that portrays them as more efficient or attractive than more traditional alternatives. In absence of pre-existing conditions—such as strong public finances or a long tradition of public delivery of services (e.g., Petersen, 2010, for Denmark)—the bias in favour of PPPs must be countered by means of context-specific measures that address the fiscal illusion in its manifold expressions.

This systematic review differs from previous exercises, because it avoids focusing on sets of different characteristics of PPPs (e.g., value of money, management, regulation, risk-sharing, or PPP performance), and chooses, instead, the single, however multi-faced and diffused issue of fiscal illusion in PPPs, tracing it along the different folds of the mechanism and its governance. The relevance of fiscal illusion is examined in the largest possible set of peer-reviewed scholarly articles, in a long time span and without sector or methodology restrictions. The review encompasses the topics of the budgetary reasons for PPP adoption, the opportunistic use of accounting standards, and the costs that have a bearing on current and future governments' budgets. The evidence we collected for the European Union countries can be applied to PPP developments in other countries, as the core problems related to fiscal illusion are intrinsic to the PPP mechanism.

The studies that provide evidence of the research topics in the systematic review confirm, as Maskin and Tirole (2008) claim, that governments' attempts to shift liabilities off the public sector's balance sheet is an important issue that still lacks analytic analysis. Indeed, the literature agrees on suggesting that PPPs are employed as mechanisms to circumvent budgetary restrictions, thereby fuelling an "availability illusion". However, it almost always lacks systemic evaluations. The systematic review has found that only for French and Italian municipal PPPs that there have been attempts to provide econometric evidence.

The review confirms that the budgetary reasons for PPP adoption largely benefit from accounting standards that allow for asset registration off the government's balance sheet. It is, therefore, necessary to create a neutral fiscal recording system that does not favour the choice of PPPs over alternative mechanisms and does not bias the adoption of related financial instruments. Indeed, as Engel *et al.* (2013) demonstrate, PPPs' impact on the government intertemporal budget is similar to that of public provision and PPPs should be recorded accordingly. On-balance-sheet recording, at least in internal documentation—as in France—could be a first important step. However, the "turbulent history" of PFI accounting in the UK is a perfect illustration of the hidden lobbying pressures directed at the processes of accounting and the different interests at play. It, also, illustrates the fragility of principles and standard "in the presence of a powerful actor with an alternative view" (Hodge and Mellett, 2012, p. 235) and the need of debates and transparency in this issue that has not only a technical, but also highly political, profile. Finally, the UK example illustrates how democratic maturity improves good governance practices and constrains fiscal illusion.

PPPs allow for concentrating the benefits of investment projects in a restricted group, while

diffusing costs among numerous taxpayers, thereby impeding resistance—a classic example of Puviani's fiscal illusion. However, the exact amount of these costs is difficult to assess, given that they are diffused, stretching from the negotiation process to the building and operating stages. The wrong perception of PPP costs may, therefore, be both a consequence of intentional misrepresentation and of the difficulties of producing a correct assessment. The topic of the costs associated with PPPs has attracted the largest number of articles in our systematic review, showing the relevance of the issue and the importance to confute untested claims, such as that of lower costs accompanying PPPs. However, we deem that the topic is still unexplored, and much is to be done in this direction.

PPPs' large scope and long duration often favour over-optimistic scenarios regarding future demand or the use of the infrastructure, and insufficiently effective contracts with private concessionaires, while governments often guarantee above-average income streams to attract private investors, and opaque contingent liabilities may produce major cost increases. Appropriate budgetary surveillance is needed to prevent current governments from imposing excessive financial burdens to future governments and to control that PPP-related expenditures and debts are sustainable and justified from a budgetary and economic perspective. However, and not unexpectedly given the complexity of the issue, the fiscal risk topic is largely unexplored in the literature and this is an important research gap that should be filled by future analyses.

Finally, the importance of institutional measures and optimal benchmarks should not be overestimated as, even in presence of mechanisms to “evaluate and monitor fiscal risks arising from PPP programs, few countries are correctly identifying, managing, mitigating, and reporting these potential risks in the budget cycle. While some countries have a formal mandate to analyse overall fiscal risks associated with PPPs, many do not carry through with this mandate due to a lack of institutional capacity or budget allocated to monitoring and evaluating these risks” (Reyes-Tagle and Kyeong, 2018, p. 96). Fiscal illusion is, indeed, also matter of public scrutiny, democratic maturity, and accurate economic assessments of all the complex processes and the differing interests at play.

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Appendix

Table A1. Systematic literature reviews of PPPs

Study	Disciplines	Database	Time span, countries, and sectors	Type and number of screened studies	Topics examined
Ke <i>et al.</i> (2009)	BMA, Decision Sciences, EEF, Energy, ENG, Environmental Sciences, Social Sciences	Scopus	1998-2008 n.r. n.r.	Articles from seven selected journals (n=170)	Coverage of PPP topics Contributions to PPP publications Change of theme/focus/interest in PPP publications during the period
Andon (2012)	Accounting, PA, MA	Online search of scholarly accounting journals, ABI/INFORM Global, EBSCO Business Source Premier, Emerald, JSTOR, Science Direct	n.r.-2010 n.r. n.r.	Articles (n=97)	Nature of and rationale for PPPs Decision making for PPPs Ex post evaluation of PPPs Merit and worth of PPPs Regulation and guidance
Torchia <i>et al.</i> (2015)	H	WS, EBSCO Host	1990-2011	Articles (n=46)	Topics covered in PPP for healthcare Main contributions to the debate Gaps still need to be addressed
Roehrich <i>et al.</i> (2014)	AF, Strategic Management, Operations Management, E, H	WS	1990-2011 n.r. n.r.	Articles	The policy of PPP PPP outcomes The practice of PPP
Osei-Kyei and Chan (2015)	BMA, Decision Sciences, EEF, Energy, ENG, Environmental Sciences, Social Sciences	Scopus	1990-2013 n.r. n.r.	Articles published in 9 selected journals (n=27)	Critical success factors
Chen <i>et al.</i> (2016)	n.s.	Library of Center for Transportation Public-Private Partnership Policy at George Mason University	2002-14 n.r. n.r.	Empirical studies (n=95)	Performance Contract Risk Value for money Institutional factors
Neto <i>et al.</i> (2016)		WS	1990-2014	Articles (n=575)	Research topics covering the majority of PPP themes

Table A1(continued).

Cui <i>et al.</i> (2018)	n.r.	WS, ASCE Library, Emerald, Elsevier-Science Direct, Taylor & Francis	1990-2016 n.r. n.r.	Articles (n=754)	Financial package and PPP application Economic viability and VfM Risk management and success factor Procurement and contract management Performance management Governance and regulation
van den Hurk (2018)	n.s.	Manual collection	2003-15 Flanders Several services	Official documents, projects, interviews (n= about 130)	Consequences of the off-balance-sheet motive on PPP policy
Wang <i>et al.</i> (2018)	PA	WS	n.r.	Articles (n=186)	PPP concept Risk-sharing Drivers of PPP adoption PPP performance
Xiong <i>et al.</i> (2018)	n.s.	WS	1985-2016 27 countries Case-based studies on several sectors	Articles (n=52)	Results on PPP governance How different governance issues affect each other How governance issues affect project success or failure
Petersen (2019)	PA, E, AF, MA, H, ENG	WS, Scopus and manual search	1985-2017 Advanced countries Several sectors	Articles (n=21)	Comparison of PPP and conventional public procurement w.r.t.: Costs to users and taxpayers Quality of infrastructure facilities VfM

Notes:

Disciplines: BMA = Business, management, and accounting; EEF = Economics, econometrics, and finance; PA = Public administration; E = Economics; AF = Accounting and finance; MA = Management; H = Health; ENG = Engineering

Databases: WS = Web of Science; ASCE = American Society of Civil Engineers

n.s. = not specified

n.r. = not relevant