Public Private Partnerships as Innovation Adoption: Does the Process Count?

Abstract

We analyze various determinants of PPP adoption in the totality of its process, using exhaustive data on PPPs by local governments in France. In general, our results confirm the relevance of institutional factors (municipality size and its financial situation), mayors' personal characteristics (political ideology, behavior towards political competition and mimetic behavior). However, during the adoption process, we observe a less significant impact of mimetic behavior, and a work of mayors trying to enhance their financial situation before the final decision to implement PPPs. This finding is in line with literature in Public Administration about the benevolent characteristic of public employees.

Keywords: PPP, Local government, Innovation Adoption, Innovation Adoption Process, Political Competition.

Introduction

Public Private Partnerships (hereafter PPPs) are new methods to purchase and deliver public services that have been adopted in recent years by a large number of developed and developing countries. With the bundling mechanism, under which different phases of a public infrastructure project are assigned to a single private consortium (Hart, 2003), PPPs are distinguished from traditional public procurement. Importantly, PPPs can be considered as a type of marketization innovation, which reflects the core New Public Management themes of contracting, externalization, and market pricing of public services (Walker, 2008).[1] Despite the general trend in PPP uptake since the 2000s, the literature on PPPs shows that there is substantial variation in the adoption of PPPs, both between countries (Hammami, Ruhashyankiko, & Yehoue, 2006) and within countries (Albalate, Bel, & Geddes, 2015). In the same vein, to explain this variation this literature has been able to identify factors that are associated with the decision of governments to use PPP as a service provision mechanism. However, the decision and implementation process precursing a PPP has received very little attention.. Given the considerable length of the pre-adoption procedures, which is on average 24 months in France, this neglect is surprising (Saussier & Tran, 2013).

To shed light on this issue, this study focuses on the PPPs adoption process in French municipalities, and addresses two specific research needs. First, organizational innovation is typically studied as a dichotomous adoption versus non-adoption decision (Frambach & Schillewaert, 2002). We argue that innovation adoption is a process over time, and follow Damanpour & Schneider (2006) to define PPPs adoption process with two stages. The first stage corresponds to the start of the preliminary study in which PPPs are compared to the traditional way of public procurement in terms of cost and time efficiency (pre-adoption). The

1 The term PPP is sometimes used to refer to more general modes of private involvement in public service delivery, e.g. concessions. In the present case, we use it to refer to PPPs in the more narrow sense that a private consortium builds and operates a certain public service.

second step is the final decision of implementing the PPP (adoption) or abandoning the idea (de-adoption). It is important to note that this two-stage process closely resembles the empirical reality in France, where governments who consider PPPs first run a preliminary evaluation study before a call for tender is launched and finally a contract is signed with a private partner. Using this approach, we are able to distinguish factors which incite governments to consider PPPs from factors that govern the final decision to use a PPP. Conversely, we are able to evaluate if at the time entering the pre-adoption stage, the final decision of adoption is already taken. The latter would imply that earlier studies considering only factors at the adoption stage are able to produce generalizable results. Second, because factors may change during the protracted evaluation and adoption process, we examine how changes over time impact the final decision of PPPs adoption.

In the following, we first review the related literature in the organizational innovation field and then focus on PPP determinants. In the empirical section, we analyze the data obtained from several sources for the whole universe of PPPs adopted on the municipal level in the 2,600 French municipalities above 3,500 inhabitants. The municipal level constitutes an appropriate setting for the study of innovation because they have experienced fundamental changes since the Decentralization Law in France in 1983. This reform has not only given them more autonomy in terms of budgetary competences but also raised pressure to become more efficient and effective in public service delivery (Boyne, Gould-Williams, Law & Walker, 2005). We focus on government-pay PPPs as we have the whole sample of those projects since their creation in 2004 until 2013, with 342 started the pre-adoption process, 104 reached financial closure to implement, and 34 were abandoned. Using logistic regressions, we find three main results. First, in general, while environmental and organizational characteristics appear to impact PPP adoption, characteristics of the mayor do not have any predictive power. Second, comparing adopted and abandoned PPPs, only the level of political

competition, was found to be different. We discuss several potential explanations why higher political competition might make the adoption of PPPs more likely. Finally, we document two findings related to the change of factors over time. Municipalities who implement PPPs seem to enhance their financial situation during the adoption process before the signature of the PPP contract. We also find that the effect of having other PPPs in the neighborhood becomes less significant between the start-date of the pre-adoption stage and the end-date of the final decision.

Related Literature

PPPs Use as Innovation Adoption

Innovation at the organizational level is generally defined as the development of new ideas or behavior and/or the adoption of those (Amabile, 1988; Walker, 2008; Zaltman, Duncan, & Holbek, 1973). Innovation may be new product, new service, new technology or new practice for the organization. In this paper, we focus on the adoption of innovation, and more specifically, the adoption of PPPs as a new delivery mode of public services.

In the public sector, when a government decides to contract out the delivery of public services, there is a wide range of alternative governance modes: traditional public procurement, public enterprises, concessions, PPPs or even privatization. Among those, PPPs are new kinds of contract that implies new practices in comparison to the traditional public procurement. Indeed, instead of having several contracts with several private companies for the design, construction, then maintenance and operation of a public infrastructure, PPPs are global contract in which a single private consortium is assigned to realize the project from the beginning to the end. The contract amount and duration are therefore much more important than in the case of the traditional public procurement. These characteristics imply a more rigorous work for the public actor in the bidding procedure to select the right candidate.

Moreover, under a PPP, the private consortium is also in charge of financing the infrastructure and receives payments only when the construction is finished. The bundling mechanism and the deferred payment are the two main factors that constitute an implicit incentive for the private actor to respect costs and time targets for the construction phase (see Hart, (2003)). Therefore, the monitoring of the project needs to be focused on outcomes of the operation phase, and bases more on relational aspects.

Innovation Adoption Process applied to PPPs

The adoption of innovation in general is a process over time. Organizational innovation researchers often describe two major phases: the decision to adopt and the implementation process. Our paper focuses on the former phase of adoption, which is also a process in itself. This phase starts with the recognition that a need exists and moves to searching for solutions, then to the initial decision to attempt the adoption of a solution and finally to the actual decision to attempt to proceed with the implementation of the solution (Damanpour & Schneider, 2006; Gallivan, 2001). However, the final decision can also be to revert to a de-adoption of that solution (Frambach & Schillewaert, 2002).

Following this literature, in our sample of French municipalities we distinguish municipalities who do not consider PPPs as a solution for the realization of a needed public service (non-adoption) with those who enter the preliminary study for PPP. The latter group is then divided in three subgroups according to the status of the project in 2014:

- Pre-adoption: the project is still in procedure and no final decision was reached yet. The outcome of the project is not decided.
- Adoption: the project was awarded to some private partner and the PPP contract is signed. The contract may already have terminated or still be active.
- De-adoption: the project was abandoned or an alternative implementation type like traditional procurement, concession or other government-pay contracts.

Determinants of PPP use

In the following parts of the literature review, we present the factors that may impact the decision of a municipality to adopt PPPs. We start by reviewing general findings in the innovation adoption literature and then develop hypothesis for those factors that are related to the public sector or to PPPs.

Institutional Factors

Innovation adoption researchers often distinguish institutional factors into external and internal factors. External factors are those related to environmental forces, such as population growth and economic health (Kearney, Feldman, & Scavo, 2000; Moon & deLeon, 2001). Internal factors are those related to organizational characteristics, such as size and workforce unionization (Rivera, Streib, & Willoughby, 2000). As we focus on PPPs adoption, we develop hypothesis for the two main factors that have been employed as determinants for PPPs adoption in prior research: the municipality size and its financial situation.

Municipality Size

The size of a municipality, typically measured by the number of inhabitants, is used in virtually all empirical papers trying to explain governance decisions. It is important to note, however, that municipal size is a catch of all variables that proxy several dimensions in which small and large municipalities may be different. For instance, an environmental characteristic, i.e., urban versus rural, is captured by the number of inhabitants in a municipality. Indeed, crowded municipalities typically represent more urban than rural zone. The same logic applies to the size of a municipality's council.

In the innovation literature, there is consensus about the positive impact of both urbanization and the size of the organization on the innovation adoption (Damanpour &

Schneider, 2009). Local governments in urban areas have complex environments that may stimulate innovation (Daft, 2001). They also benefit from a higher contracting capacity and can therefore easier manage and supervise external relations (Hefetz & Warner, 2004). This is also often interpreted such that large municipalities can exploit economies of scale that lead to a more professionalized city management and hence better administrative capacity (Hitt, Hoskisson, & Ireland, 1990).

However, there is also some evidence for the contrary or that the effect may actually change over time. For instance, Bel & Fageda (2009) show that small municipalities are more likely to introduce private participation in public services than the bigger ones. González-Gómez & Guardiola (2009), who analyze the evolving pattern of the population size in Spanish municipalities over a longer time period, concludes that there was a positive impact on the private participation in public services in the 80s but that it turned negative after 1996. The author explains this by increased needs for private finance that particularly large municipalities experienced after the dictatorial regime. After implementing these initial investments, many of the same municipalities switched back to in-house management.

As a result of the potentially countervailing effects of municipal size on the propensity to adopt PPPs, the overall effect is theoretically unclear.

Hypothesis 1: The effect of municipality size on PPPs adoption is unclear.

Financial Situation

Organizations with higher level of resource and good economic health have always been considered as more likely to adopt innovation (Damanpour & Schneider, 2009; Kearney, Feldman, & Scavo, 2000; Rivera, Streib, & Willoughby, 2000). However, as developed by Choudhury (2007), governments that are often constrained in workforce and in fiscal aspects still adopt innovation, but in a more selective manner. This argument fits the trend in PPPs literature that links PPPs adoption with fiscal restrictions. Two main explanations are

possible. Firstly, in a situation of budget constraint, governments may try to choose the best contractual scheme to minimize spending costs (Auriol & Picard, 2013; Engel, Fischer, & Galetovic, 2010; Engel, Fischer, & Galetovic, 2013). The argument behind is that PPPs, as a multi-period contract, is a way to reduce the shadow cost of public funds. A second explanation comes from a potential hold-up behavior of public actors to hide public debts in adopting PPPs. In doing so, budget-constrained public authorities may achieve balanced budget requirements and gain voters' support in the short-term (Milesi-Ferretti, 2004; Von Hagen & Wolff, 2006).

Several empirical evidence on the impact of fiscal restrictions on the choice of PPPs at the local government level are available. Antellini Russo, Giamboni, & Zampino (2010) show a strong correlation between the number of PPPs and the level of local public debt in Italy. Deficit, in contrast, is not statistically related to PPPs adoption. Similarly, Albalate et al., (2015) find positive impact of debt level on the level of private involvement in public projects in the United States. However, tax revenue has a negative impact. The authors argue that states with larger revenues are likely to be less reliant on private investments. Hence, self-financing capacity of local governments, and the income level of local population seem to have the opposite effect as debt.

At this point, empirical research leads to the following assumption:

Hypothesis 2: A better financial situation decreases the likelihood of municipalities to adopt PPPs.

Leader's Characteristics

From the managerial point of view, there is evidence showing that manager characteristics can influence firms' strategic decisions (Boeker, 1997). As innovation adoption is a difficult process that includes setbacks, uncertainty and conflicts (Page, 2005), the organization's leader is supposed to influence this strategy (Bantel & Jackson, 1989; Camelo-Ordaz,

Hernández-Lara, & Valle-Cabrera, 2005; Howell & Higgins, 1990; Scott & Bruce, 1994; West & Anderson, 1996). The leader's characteristics can be distinguished in two categories: demographic characteristics such as age, gender, education, and personal characteristics such as political orientation (Damanpour & Schneider, 2009).

Leader's Demographic Characteristics

In the literature, older managers often accept organizational conditions and routines and are less willing to commit to changing them (Huber, Sutcliffe, Miller, & Glick, 1993). In the same line, while managers who are new to their position are more receptive to changing process, managers with longer tenure are often socialized into accepting the organization as it is and are less likely to adopt new ways of doing things (Hambrick & Mason, 1984).

In the same vein, a few studies focusing on the administrative capacity of governments have also considered that a mayor's characteristics such as age, tenure, educational level may be relevant for governance choice decisions (Mintrom, 2003; Thompson & Elling, 2000). However, the effect of these characteristics on the decision of organizational choice is slightly different from the private sector. Indeed, in the public sector, mayors often have longer tenure than in the private sector. Seniority is also more respected in public organizations as more experienced public managers have greater insight into the process of performance improvement. For example, Hefetz & Warner (2004) show that mayors as public managers play an interface role integrating market offer and public production to guarantee efficiency, service quality and citizen satisfaction. The authors introduce variables like leadership and experience of the local politician and conclude that towns with experienced politicians had higher restructuring levels. In addition, for complex services, the experience of the mayor increases the probability of restructuring with mixed public-private solutions. In the same line, Kearney, Feldman, & Scavo (2000) find a positive impact of public manager's age and

tenure on innovation and change adoption. However, Damanpour & Schneider (2009) and Damanpour & Schneider (2006) moderate the effect of age and tenure on this strategy. Indeed, they argue that even if young and short-tenure managers may lack familiarity with their job, they can gain experience and become familiar with critical issues over- time, which may facilitate innovation adoption. Yet, this gain of experience will have a reverse impact when older managers with long tenure accept and identify fully with existing organizational routines and practices.

As data about public managers' tenure is not available, we therefore develop our third hypothesis based on their age:

Hypothesis 3: The effect of a mayor's age on the adoption rate of PPPs is unclear.

Academic studies do not agree about the effect of gender on change adoption (Williams & O'Reilly, 1998). Indeed, in the research and development engineering sector, women often rate themselves lower than men in terms of innovation. In the public sector, female city managers are also found to view themselves as less entrepreneurial than their male colleagues (Fox & Schuhmann, 1999). However, in the same study, they also found that women tend to emphasize community involvement and facilitate communication, which might help innovation adoption in public service organizations. Moreover, gender is also found to have no difference on change and innovation adoption (Sonfield, Lussier, Corman, & McKinney, 2001). For example, Damanpour & Schneider (2006) found that gender does not significantly affect initiation and adoption decisions. Similarly, research in the leadership field also suggests that male and female managers do not differentiate in terms of leadership styles or behaviors, despite possible differences in characteristics and values between them (Bass & Stogdill, 1990; Hooijberg & DiTomaso, 1996).

We therefore assume that there is no effect of gender on PPPs adoption.

Hypothesis 4: Female mayors and male mayors consider PPPs adoption in the same way.

Leader's Personal Characteristics

Even the recent focus of New Public Management on general management function of managers and less on their social and democratic values, political considerations are still found to be public managers' main concern (Chandler & Feuille, 1991). As a consequence, PPPs use as innovation adoption strategy may be influenced by political considerations of the municipality's decision maker.

The first aspect of political considerations is political ideology. Political ideology is a certain ethical set of ideals, principles, doctrines, myths or symbols of public officials and their beliefs about the role and value of the government (Almond, 1956). As innovation research studies show, there are opposing theoretical arguments and mixed empirical results about the impact of political orientation on innovation adoption (Brudney, Hebert, & Wright, 1999; Moon & deLeon, 2001). Damanpour & Schneider (2009) furthermore find that conservative and liberal leanings neither encourage nor discourage innovation adoption.

However, because we consider the specific case of PPPs as innovation adoption, we believe that political ideology of the decision maker matters. Indeed, each government ideology has beliefs about how society should work, and as a consequence, has distinct preferences on both the scope and the delivery method of public services. In general, politics mainly function along the political spectrum between the left wing and the right wing parties. The left wing parties are often more oriented toward government involvement in social and economic affairs, while right wing parties emphasize free market and minimal governmental intervention. As a consequence, generally, scholars agree that a higher involvement of private actors is typically preferred by right wing parties (Albalate et al., 2015; Picazo-Tadeo, González-Gómez, Wanden-Berghe, & Ruiz-Villaverde, 2012; Walls, Macauley, & Anderson,

2005). However, on some occasions, like the studies of Bel & Fageda (2009) and González-Gómez & Guardiola (2009), the ideology is found to have no significant impact on outsourcing decisions.

As PPP is an organizational choice in which the private actors is more involved in the project, both in terms of financial dimensions and managerial dimensions, we argue that:

Hypothesis 5: Left wing parties are less likely to adopt PPPs than right wing parties.

Another aspect of political considerations that politicians pay much attention to is the level of political competition. In our case, political competition should be a strong factor because PPPs have always been criticized among practitioners since their creation as being too costly (House of Commons, 2011; Sueur & Portelli, 2014).

However, there is little empirical evidence regarding PPPs adoption. Extending our research to the literature on privatization, we find for example the study of Bortolotti & Pinotti (2008) which result shows that more political competition and fragmentation delay privatization. They explain this result as an aspect of attrition wars between political parties who try to avoid taking responsibility for unpopular reforms. A similar result is found in the paper of Murillo & Martínez-Gallardo (2007) for Latin America, showing that governments that are politically more restricted are also less likely to implement privatization.

We then develop our second hypothesis about the potential impact of political competition on the decision to adopt PPPs alternatively to traditional public procurement.

Hypothesis 6: Political competition has a negative effect on the adoption of PPPs

Another dimension of the decision maker's personal characteristics that may affect innovation adoption strategy is the behavior called mimetic isomorphism developed by DiMaggio & Powell (1983). In this study, they argue that under conditions of uncertainty,

organizational decision makers will mimic the behavior of other organizations in their environment to gain legitimacy. Lately, Galaskiewicz & Wasserman (1989) empirically find that managers are especially likely to mimic the behavior of organizations to which they have some type of network tie. In the same line, a large number of studies has investigated the resemblance among organizations (Barreto & Baden-Fuller, 2006; Deephouse, 1996) and similarity of behavior within an organizational field (Haveman, 1993).

In the public sector, Villadsen, Hansen, & Mols (2010) also find that contracting out uncertainties lead Danish mayors to use mimetic behavior. Similarly, mayor network centrality is also found to be positively associated with municipal policy isomorphism and expenditure allocation isomorphism (Villadsen, 2011). Closer to our study, a number of empirical research has largely confirmed the relevance of neighboring effect on the organizational choice (see Tavares & Camöes (2007), González-Gómez & Guardiola (2009) for examples in the local government level, and Fink (2011) for the central government level).

Consequently, we expect the proximity of existing PPPs in the same area to also affect the local decision to adopt PPPs:

Hypothesis 7: The effect of existing PPP in the same department should increase the propensity to adopt PPPs.

Institutional context of PPPs in France

With a long tradition in using private capital in public services, the French legal system features a wide range of PPP which can be classified into two main categories: users-pay contracts and government-pay contracts (see Mission d'appui aux partenariats public-privé (2013)). The Contrat de partenariat, the one most used among the government-pay contracts, is one of the main drivers of the current PPP trend in France (PPP Expertise Centre Report,

2012). This form of PPP entails the bundling mechanism (in the sense of Hart (2003)) and is the equivalence of the Private Finance Initiative created in 1992 in the UK.

In order to adopt a PPP, public authorities are required to follow three steps. The first one is the *évaluation préalable* (hereafter "assessment study" or "preliminary assessment"). In this step, the public authority carries out an analysis (typically through a consultancy agency) to compare the PPP organizational form with alternative solutions regarding the global cost of a project, performance aspects and risk sharing matters. In these preliminary assessments, the most used alternative solution is the traditional public procurement. The assessment of central government projects is then to be verified by the *Mission d'appui aux partenariats public-privé* (hereafter MaPPP). This organization is the French PPP taskforce sieged in the Ministry of Economies and Finance. Since its creation in 2004, the MaPPP department has produced an appraisal reports to 163 local PPP projects. The second step is the procurement phase where the competitive dialogue is the most used awarding procedure. This step takes on average 15 months until the last step, where the preferred bidder is selected and the contract is signed (PPP Expertise Centre Report, 2012).

Since 2004, of a total of 591 projects starting a preliminary assessment, 432 are at the local level, 342 of which are municipalities. Among them, 104 projects reached financial closure (hereafter PPP implemented) and 34 were abandoned (hereafter PPP abandoned). The difference to 342 projects in total is due to projects which have not yet reached a conclusion.

Figure 1 about here

Figure 1 describes the trend of PPP at the French municipal level since 2005. The number of PPP studies has grown considerably since their introduction until 2010, then has slowed down in the following years. Regarding the PPPs implemented, while the peak in

terms of number of contracts was in 2011, the aggregate capital value (i.e. the value of the projects' capital investment) is decreasing already since 2010. Although we observe a slow recovery in 2013, the reduced number of assessment studies suggests that the number of PPP will not rebound to pre-2011 heights in the near future. The number of abandoned PPPs increased until 2009 and remained fairly stable afterwards.

Figure 2 about here

As shown in Figure 2, French municipalities use PPP mostly for urban equipment 38% (e.g. street-lighting), sport/culture facilities 25% (e.g. stadium, swimming-pool), buildings 22% (e.g. schools), followed by waste to energy 10%, transport 4% and information and communication technology (ICT) 1%.

Methods

Data Sources

To analyze the choice of PPP in France, we compile several datasets from different sources. It is worth mentioning that political data is only available for municipalities using the proportional voting system, i.e. municipalities with more than 3,500 inhabitants. As a consequence, our study includes only the 2,600 French municipalities with more than 3,500 inhabitants (instead of the whole 36,000 municipalities).

First, we have included PPP contracts data collected in collaboration with the MaPPP department. This dataset contains the main project characteristics such as the concerned public entity, the year of signature, the type of project, as well as its capital value. To capture political dimensions, we use a dataset from the Center of Socio- Political data of the Paris Institute of Political Studies (Sciences Po). This dataset contains the main information about

the municipal elections of 2008 such as the vote count per political party or voter turnout. We complement this by adding information on the personal characteristics of the mayor such as age and sex from the National Repertory of Politicians, which is a branch of the Ministry of the Interior. We then compile financial data collected for virtually all French municipalities from the website of the Ministry of Economy and Finances for the period between 2004 and 2012. This database records general budget information such as investment, expenses, but also the revenue structure including deficit and public debt. Finally, we add further municipal information beyond the public budget such as population and average income. This information comes from the French National Institute of Statistics and Economic Studies (INSEE).

Variables Description and Measures

Dependant variable

We construct the dependent variable indicating if a municipality started a PPP and whether it was implemented or abandoned until 2013.

Explanatory variables

Institutional Factors

The municipality size is measures by population of municipalities. This data is based on the 2010 Census and does not vary over time. To capture the potential nonlinear impact of population, we recode the population data into a set of dummy variables corresponding to the size classifications according to INSEE. As municipalities below 3,500 habitants are excluded from our sample as the electoral data is not available for smaller municipalities, the population groups are cut along the following thresholds: 5000 10000 20000 50000 100000, yielding 6 group dummies labeled *pop1* to *pop6*. *pop1* is chosen to be the excluded base category and therefore the other coefficients are interpreted as contrasts to it.

To measure the financial situation of municipalities, we use three measures: *debt capita*, *deficit capita*, *self finance*. The two former correspond to thousand euro per capita municipal debt and deficit. The latter variable is the share of own tax revenues in total current expenditure. We expect that a high level of debt and deficit will affect positively PPP adoption, while a high level of self-financing capacity will affect negatively this organizational choice. We also include *income med* which is the annual median income per household weighted by the number of household members to proxy for the need of infrastructures in the each municipality.

Leaders' Characteristics

The mayor's demographic characteristics are proxied by gender and age. Mayors' gender is taken into account through the binary indicators *female*, which equals one if a mayor is female and zero otherwise. The age of a mayor is incorporated through the variable *age*.

Regard mayor's personal characteristics, their political ideology is measured by the mayor's political party. The indicator for left wing governments is a dummy variable that is one whenever a declared left wing party is the strongest party. As stated by Picazo-Tadeo et al. (2012), popular parties (right-center and left-center) are not significantly different as they have many commonalities in their political approach, we comprise the following parties in our left variable: *Liste d'extrême gauche* (LEXG), *Liste présentée par le Front de gauche* (LCOP), *Liste présentée par le PCF hors de l'alliance du Front de gauche* (LCOM), *Liste du parti socialiste* (LSOC), *Liste présentée par Europe Ecologie Les Verts* (LVEC), *Liste divers gauche* (LDVG), *Liste d'Union de la gauche* (LUG).

Two indicators measure the level of political competition. First, *winmargin* is the difference between the first and the second strongest party divided by the total number of votes. Second, *numpart* is the number of political parties in the first round of the elections.

The mimetic behavior of mayors is considered by a variable representing the existing number of PPP in the same department *PPP prox*. To avoid endogeneity issue, we exclude the PPP implemented by the same municipality.

Summary statistics of all variables, conditional on whether municipalities have started a PPP or not, are exhibited in Tableau 1.

Tableau 1 about here

Empirical Strategy

The basic choice model that we estimate in this paper is given by the following specification:

$$P(PPPit = 1|X) = F(\beta 0 + \beta kXi,t-1)$$

where $P(PPPit = 1|X)$ is the conditional probability that municipality *i* starts a PPP. As the discussion below will make clear, we have several possible dates to consider that mark the decision for a PPP. To account for the idea that current decisions will be largely based on realized budgets and municipal characteristics, the covariates X enter the regression lagged by one period. While the variables in X are assumed to have a linear additive impact on the latent variable *PPP*, the response probability is actually a nonlinear function of the covariates. While it matters little for the empirical results, we stick with a logistic specification that is typical for this type of analysis. To account for the fact that some municipalities have several PPP, we cluster standard errors at the municipal level.

To identify the effect of the various covariates on the PPP choice, we mainly rely on cross-sectional variation. This is motivated not only by the fact that a number of covariates vary little or not at all over time but also because our control group, i.e. those municipalities which did not undertake a PPP, is very large. As a consequence, each treated municipality

(that starts a PPP) typically has several if not dozens comparable control municipalities. To capture potential serial correlation within municipalities, we use clustered standard errors. To further account for the panel like data structure, we also run a random effects logit model and show that the results are robust to collapsing the municipalities to a single observation, which corresponds roughly to a between effects estimator.

Taking into account the PPP adoption process, as a first step, we distinguish all municipalities who start an evaluation study and those who do not, i.e. the whole remaining population of French municipalities. In addition to pooling all the municipalities who start a study, we also run separate estimations for the different subgroups: Pre-adoption, Adoption and De-adoption. Our sample is presented in Tableau 2.

Tableau 2 about here

We then compare municipalities who implement a PPP (Adoption) and those who abandon (De-adoption) directly. Hence we change the dependent variable to be one if the municipality would finally implement the PPP and zero for those who abandon. For a clean comparison between these two groups, we keep only the municipality-year cells in which the municipality decided to start the study. The associated regressions should therefore indicate if certain covariates can explain why only a subgroup of municipalities who started a study implement a PPP. As the municipalities who start a PPP are already a particular subgroup of the French municipalities, the coefficient estimates do no longer have the interpretation of an average treatment effect as they are evaluated based on a selected subsample. For this reason, as a robustness test we also run a Heckman selection model where in the first stage we model the decision to enter into a PPP evaluation study.

In the last part of the empirical section we move from the decision to start a study on PPP to the actual decision on whether to implement or abandon a project. Hence the dependent variable is one in the year when the municipality implements a PPP or took the final decision to abandon it. We then compare these estimations with the previous results to evaluate whether systematic over time changes in the covariates since the start of the study can explain why some municipalities abandon PPP. This boils down to cross-equation coefficient tests where we compare the coefficients at the decision to start a study with those at the decision to implement or abandon.

Results

Overall Results

Tableau 3 exhibits the baseline results. In these tables, the dependent variable is one at the date a municipality starts a PPP evaluation study and zero otherwise. In the first column, we compare municipalities who started a preliminary assessment for PPP with the whole remaining municipalities of France (Non-adoption). Column 2, 3, 4 correspond to the comparison of Non-adoption versus De-adoption, Pre-adoption and Adoption, respectively. Results from the first column show that municipalities deciding to start the preliminary study appear to be different from the group Non-adoption in a number of respects. The overall results of columns two to four for the different subgroups tend to be rather similar and therefore it does not appear that the previous results were exclusively driven by one of the subcategories Pre-adoption, Adoption or De-adoption. Focusing on the statistically significant results, this is true for the coefficients on political ideology (*left*), debt per capita (*debt cap*), deficit per capita (*deficit cap*) but also the municipality size dummies (*popx2, 3, 4, 5, 6*).

Tableau 3 about here

Institutional Factors

As discussed previously and shown in Tableau 3, results of institutional factors do not differ in terms of coefficient among the subgroups.

Regards the municipal size, the coefficients on the population category dummies are found to be substantive and statistically significant predictors of PPP choice. As the coefficients show, the probability of considering a PPP increases with the size of a municipality, but not linearly. Increases in population have the strongest effect in the lower brackets from 5000 to 10000 and 10000 to 20000, while the coefficients exhibit a lower elasticity to population for very large cities. A logarithmic relationship appears reasonable. This finding casts some doubt as to whether PPP can be simply regarded as a delegation or contracting out decision, where previous research has typically found that larger cities will carry out more projects on their own.

On the financial side, we find that debt and deficit are significantly related to the choice of PPP, while the fiscal autonomy of a municipality as measured by its self financing capacity and the income level have no effect. The results on debt and deficit are as expected and would suggest that municipalities with higher fiscal constraints will consider PPP more frequently. Our Hypothesis 2 is validated.

Leader's Characteristics

Regards, the demographic characteristics of the mayor do not appear to have any impact on PPPs adoption. It is also true for the three subgroups. Our third and fourth hypotheses are therefore validated. In line with previous studies, we conclude that age and gender of public managers have little predictive power as to which municipalities may consider to adopt innovation.

Mayor's personal characteristics, however, have a strong impact on PPPs adoption. Political ideology, measured by *left*, appears to have a negative and significant coefficient. Therefore, we validate our hypothesis 5 stating that left wing governments are less likely to envisage PPP than center or right governments. This result is expected and in line with the literature. As mentioned above, the coefficients of *left* are not different for the subgroups. We therefore conclude that the effect of political ideology on PPP choice is general and is not driven by one of the subgroup.

On the political competition dimensions, it appears in Column 1 that municipalities where the governing party has a higher win-margin are less likely to consider PPP (-0.945). This result does not fit our hypothesis 6. Indeed, as *winmargin* is actually an indicator of political competition, it would suggest that more contested political markets are more likely to lead governments to choose PPPs. As we control for the number of parties in a municipality, which turns out insignificant and very close to zero, win-margin is rather an indicator of the strength of the governing party than of the fragmentation of the opposition. In Columns 2, 3 and 4, it appears that the negative impact of *winmargin* on the decision to launch a PPP evaluation study is driven by those municipalities who finally implement a PPP (Adoption). Both municipalities who have abandoned (De-adoption) and those that have not taken a decision yet (Pre-adoption) exhibit an insignificant difference in terms of win-margin to municipalities who have never considered a PPP.

Mayors' mimetic behavior, measured by *ppp-prox,* largely confirm that mayor's mimetic behavior has a significant impact on PPP choice. The decision to commence a PPP evaluation is strongly affected by the number of PPP already implemented in the same departement. We therefore validate our Hypothesis 7. This result reflects network effects in that local governments consider other regionally close municipalities when they decide on PPP.

However, there appears to be substantial heterogeneity within the groups regarding the effect of *PPP-prox*. For the PPP evaluations where the outcome is still unclear (Pre-adoption), the number of PPPs in the same department seems to be much less important than for the two other groups. Arguably, this may be due to the fact that not finished PPPs are rather current and hence the presence of PPP in the same area may be less crucial in an already developed PPP environment than it was in the early years of PPP in France.

Adoption versus. De-adoption

As we are particularly interested in potential factors that may determine why among those municipalities that commence a PPP assessment some implement a PPP (Adoption) while others abandon their plans (De-adoption), we now compare these two groups direclty. In a first step, we are interested in differences between these municipalities that exist already at the time when they decide to carry out an evaluation study. The associated results are shown in Tableau 5. Importantly, we no longer compare the two groups to the (large) benchmark group of municipalities that never considered a PPP. Here we compare exclusively municipalities who implement a PPP later on to those who abandon the project, both at the start of the evaluation study. As a result, the number of observations reduces drastically to 96, with 71 implemented and 25 abandoned PPP.

Tableau 5 about here

At the first glance, the results support the findings from the previous table in that those municipalities who consider a PPP are largely comparable with respect to a wide range of covariates. Hence, the largely insignificant coefficients of Tableau 5 suggest that by the time municipalities enter into evaluation studies, it does not appear predetermined who will finally use PPP to implement an infrastructure project. That is, except for the intensity of political

competition in terms of win-margin. At the point of entering a study, municipalities who have a higher win- margin are more likely to abandon the plans to implement a project through PPP. Collectively with the previous results regarding the win-margin, it appears that municipalities who have a higher win-margin appear to enter a more open PPP process where the conclusion is less predetermined. In contrast, those who enter PPP with a lower win-margin are more likely to go through with it.

As a robustness test, column two of Tableau 5 contains a specification where we control for the fact that municipalities who enter into a PPP study are already different from the average population. To this end we run a Heckman selection model where in the first stage we run an additional model to explain the choice of doing a PPP evaluation and add the generalized residual (the inverse mills ratio) as a regressor to the model where we estimate the probability that a PPP is implemented. The results are very similar to those in column one and the insignificant regressor suggests that the selection bias is not relevant in the current application.

Effect of the Adoption Process Duration

Apart from differences that exist already by the time of starting the PPP study, the last part of the empirical section considers the possibility that changes after the start of the study may lead municipalities to abandon projects. To analyze this possibility, we basically replicate Tableau 3 and test whether the results change if we consider the end of the PPP process, i.e. the date of contract signature or decision to abandon. As we still want to control for overall changes in the overall French population, we compare the decision to implement or abandon to the municipalities who never envisaged a PPP. To ease comparison with the results when we use the start of the PPP study, Tableau 6 exhibits the estimates for both decision dates.

Tableau 6 about here

A visual comparison of the results for those who implemented, in column one and two, and for those municipalities who abandoned, column three and four, suggests that it does not matter much if we look at municipalities at the date of the PPP study or at the end of the process. The differences to the control group, those municipalities who never intended to use a PPP, remain very stable over the PPP process. Cross-equation tests on the individual coefficients also reveal that there is no statistical difference in coefficients for abandoned PPPs, if evaluated at the start of the study or at the date when the PPP is abandoned. For municipalities that eventually implement a PPP, there are significant differences for ppp_prox (at the 1% level) and self finance (at the 10% level). Thus, the existence of other PPPs in the department is less significant later on in the PPP process while municipalities who implement a PPP seem to strengthen their self-financing capacity over the course of the PPP phase. If we consider PPP a possibility for outside finance, the latter result somewhat suggests that these governments seek additional funding through both increasing tax revenues but also private credit.

Discussion

In the present study, we aim at investigating the determinants of PPPs for the totality of the adoption process. Our results show that mayors' personal characteristics have important impact on the use of PPPs as innovative organizational form. These characteristics are political ideology, behavior towards political competition, as well as mimetic behavior. We also find that internal factors such as municipality size and its financial situation are important indicators about PPPs adoption.

Regards the change of these impacts over the adoption process, we remark two points. First, municipalities seem to enhance their financial situation during the procedure before going through the implementation of PPPs. Second, the mimetic behavior becomes less significant when the final decision of implementing is involved. These findings show that, while the neighboring effect is important to have legitimacy at the beginning, public managers try to improve important dimensions such as the financial situation before taking the decision to innovate.

We find another interesting result regarding the political competition. Indeed, we find that the political contestability impacts positively the choice of PPP. It is important to stress that on a first glance, this result is not quite in line with the literature in privatization (Bortolotti & Pinotti, 2008; Murillo & Martínez-Gallardo, 2007). However, regarding the PPP literature, we are not the firsts finding this contradiction. Based on the PPI database from the Worldbank including over 1,000 PPP worldwide, Hammami et al. [2006] found a similar result. They suggested that the number of opposite parties, i.e. political competition, has a positive impact on the amount of investment in PPP in the country. While our results for the number of parties itself is not significant, our second indicator of political competition, winmargin, suggests a similar relationship. Several alternative explanations for this finding are available. First, the level of political competition may not a↵ect PPP choice in the same way as the latter is di↵erent from privatization regarding several aspects, e.g. restructuring and adverse employment e↵ects. Second, public managers under budget constraints and pressured by the opposite parties might choose to use PPP for debt hiding motivation, while o↵ering new public infrastructure to voters. Similarly, they may be unable to reverse their initial decision to adopt a PPP in order to avoid criticisms from opposite parties considering

the long time and the high cost spent on the PPP procedure. And finally, in a highly contestable political environment, governments might be forced to consider PPP in order to tap existing e28efficiency potential, e.g. through cost economies due to the bundling mechanism in PPP.

Conclusion

Our study has several implications. These findings corroborate the traditional view in Public Administration literature about public employees' benevolent. Indeed, the fact that mimetic behavior becomes less influential at the end of the process of adoption of PPPs, as well as the financial situation is enhanced before the final decision to adopt innovation, support the idea that public managers' motivations are to serve the public interest, to effect social change, to shape the policy that affects society (e.g., Frederickson & Hart (1985); Perry & Porter (1982); Perry & Wise (1990)).

The PPP literature is still in its infancy. As a consequence, the first extension would be to include a larger sample of municipalities using PPP in other countries in order to validate our results. Moreover, even if we conclude that a high level of political competition drives the use of PPP, we cannot conclude that under this context, public managers use PPP for its potential performance. Even if the study of Saussier & Tran (2013) reported a high level of satisfaction about PPP's performance, it would be more useful to have a comparison of performance between PPP and the traditional public procurements.

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Appendix

Figure 1. PPP trend in French municipalities from 2005 to 2013

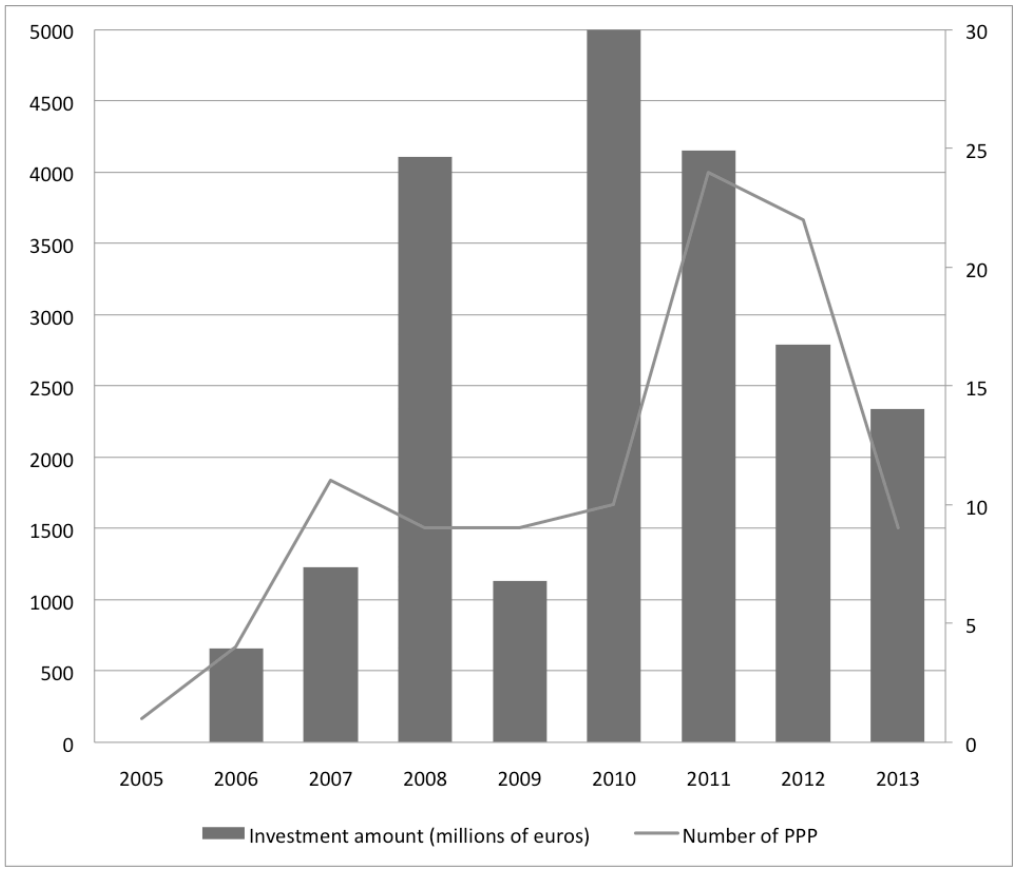

Figure 2. PPP share by sector

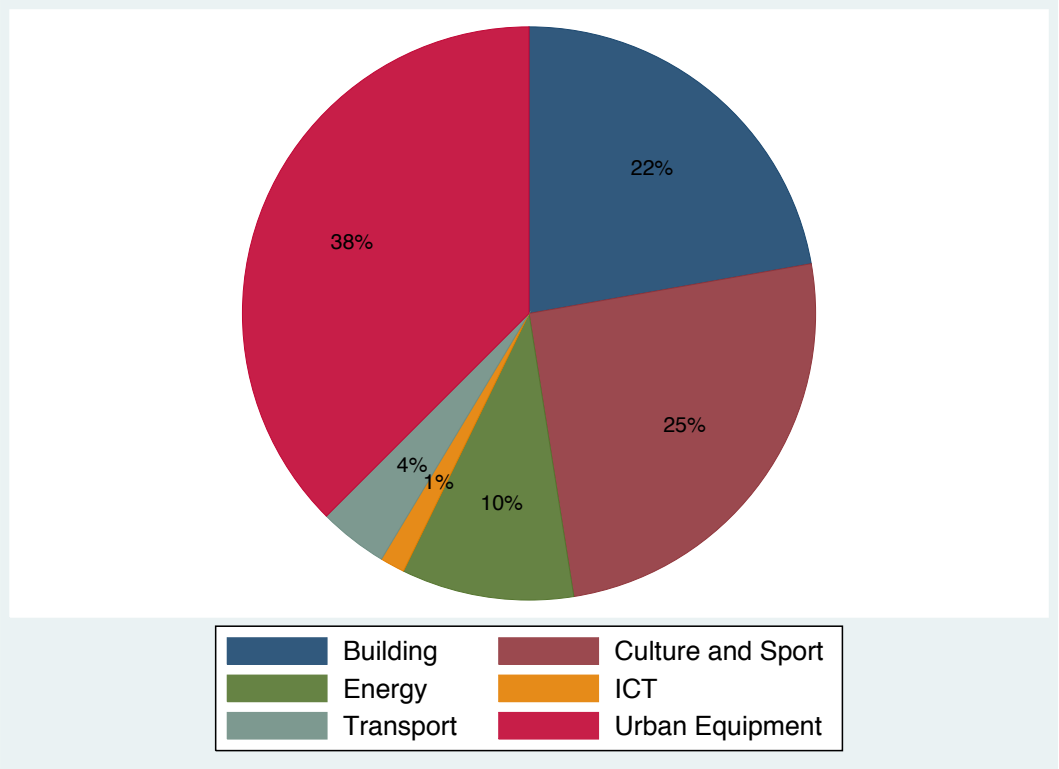

Tableau 1. Summary statistics: Means and standard deviations

	Non-adoption	Pre-adoption	Adoption	De-adoption
Pop	11281	153629	54062	180332
	9915	1.03e+08	1.65e+07	8.50e+08
Debt_cap	0.86	1.35	1.32	1.07
	0.00	0.00	0.00	0.00
Deficit_cap	0.15	0.13	0.13	0.13
	0.00	0.00	0.00	0.00
Self_finance	0.39	0.38	0.41	0.37
	0.00	0.00	0.00	0.00
Income_med	19316	18120	18999	19428
	819	13028	29138	79711
female	0.09	0.11	0.10	0.00
	0.00	0.00	0.00	0.00
age	61.54	59.84	60.94	61.36
	0.00	0.07	0.12	0.46
left	0.49	0.43	0.36	0.27
	0.00	0.00	0.00	0.00
winmargin	0.43	0.20	0.21	0.21
	0.00	0.00	0.00	0.00
numparties	2.63	4.20	3.69	4.51
	0.00	0.00	0.00	0.02
Ppp_prox	0.49	0.66	0.71	0.52
	0.00	0.00	0.00	0.00

Tableau 2. Dataset Subgroups: Municipalities with more than 3,500 inhabitants

Group	Name	Number of observations
1	Non-adoption	2347
2	Pre-adoption	152
3	Adoption	80
4	De-adoption	25

Tableau 3. PPP adoption at start date: Baseline

	1 vs 234	1 vs 2 Pre-adoption	1 vs 3 Adoption	1 vs 4 De-adoption
Popx2	0.734**	0.671	0.575	
Popx3	1.504***	1.842***	1.070*	-0.406
Popx4	2.267***	2.369***	2.298***	1.719***
Popx5	3.127***	3.575***	2.937***	2.962***
Popx6	3.758***	4.319***	4.324***	4.942***
Debt_cap	0.437***	0.490***	0.534***	0.389**
Deficit_cap	-0.703*	-0.616	-0.812***	-0.388
Self_finance	0.661	0.371	1.988	-0.784
Income_med	-0.000	-0.000	-0.000	0.000
Female	-0.033	0.025	-0.073	
Age	-0.011	-0.016*	-0.005	-0.018
Left	-0.381***	-0.370**	-0.670**	-0.756
Winmargin	-0.945**	-0.554	-2.057***	-0.153
Numparties	0.000	0.018	-0.099	0.154
Ppp_prox	0.171**	0.506	0.582***	0.412**
N	23427	22482	19408	19351
*** p<0.10, ** p<0.05, *** p< 0.01**				

Tableau 4. PPP adoption at start date: RE and BE

	Randon Effect	Between Effect
Popx2	0.734**	0.738*
Popx3	1.504***	1.509***
Popx4	2.267***	2.302***
Popx5	3.127***	3.672***
Popx6	3.758***	5.622***
Debt_cap	0.437***	0.824***
Deficit_cap	-0.703*	-1.269
Self_finance	0.661	0.988
Income_med	-0.000	-0.000
female	-0.033	-0.099
age	-0.011	-0.012
left	-0.381***	-0.783***
winmargin	-0.945**	-1.181**
numparties	0.000	-0.001
Ppp_prox	0.171*	0.558***
N	23427	2604
*** p<0.10, ** p<0.05, *** p< 0.01**		

Tableau 5. PPP adoption at start date: De-adoption vs. Adoption

	De-adoption vs. Adoption	De-adoption vs. Adoption Heckmann
Popx3	1.046	1.564
Popx4	0.397	1.369
Popx5	-1.232	0.253
Popx6	-1.964	-0.107
Debt_cap	0.637	0.881
Deficit_cap	1.790	1.395
Self_finance	0.103	0.398
Income_med	0.000	0.000
age	0.028	0.020
left	0.592	0.340
winmargin	-3.823**	-4.285**
numparties	-0.035	-0.036
Ppp_prox	0.464	0.527
N	96	96
*** p<0.10, ** p<0.05, *** p< 0.01**		

Tableau 6. PPP process: start date vs. end date

	Non-adoption vs Adoption start date	Non-adoption vs Adoption end date	Non-adoption vs De-adoption start date	Non-adoption vs De-adoption end date
Popx2	0.575	0.628		
Popx3	1.070*	1.085*	-0.406	-0.414
Popx4	2.298***	2.334***	1.719***	1.680***
Popx5	2.937***	2.875***	2.962***	2.950***
Popx6	4.324***	4.146***	4.942***	4.851***
Debt_cap	0.534***	0.503***	0.389**	0.354**
Deficit_cap	-0.812***	-0.819	-0.388	-0.521
Self_finance	1.988	3.087***	-0.784	-0.371
Income_med	-0.000	-0.000	0.000	0.000
female	-0.073	-0.118		
age	-0.005	-0.001	-0.018	-0.016
left	-0.670**	-0.682**	-0.756	-1.027**
winmargin	-2.057***	-1.931**	-0.153	-0.399
numparties	-0.099	-0.049	0.154	0.167
Ppp_prox	0.582***	0.277***	0.412**	0.258**
*** p<0.10, ** p<0.05, *** p< 0.01**				