Renegotiations and Renewals of Public Contracts.

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Abstract

This paper examines the impact of renegotiations on contract renewals. Using an original dataset of procurement contracts in the French car park sector, we show that there exists an optimal level of renegotiations that positively impacts the probability of renewing a contract with the same partner. This result holds only when public authorities have discretionary power during the awarding procedure. Such findings suggest that what is usually interpreted as a sign of weakness, i.e. frequent renegotiations, might well be good news indicating that the contracting parties can make contracts adaptable over time.

Keywords: Renegotiation, Contract Renewal, Discretion, Public Procurement.

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1 Introduction

Public procurement contracts represent on average 12% of the EU GDP and nearly 10% of the US GDP (OCDE [2019]). They are routinely renegotiated, (Beuve et al. [2018]) potentially reducing the advantage of competitive auctions (Gagnepain et al. [2013]). This leads many scholars to consider renegotiations as the major flaw of public contracts. As stated by Guasch et al. [2008, p. 421], "*such high rates of contract renegotiation have raised serious questions about the viability of the concession model.*"Public procurement contracts regroup mainly two types of contracts: concession contracts on the one hand, encompassing construction and the provision of the public service, and traditional public procurement contracts on the other hand, including service delivery or construction only, not both. We come back to the differences between the two later on. However, because contractual agreements need to adapt to unforeseen events "*the frequency of contract renegotiation may provide concessions 'relational' quality*" Spiller [2008, p. 12]. Hence, whether renegotiations represent jointly beneficial moves toward greater efficiency or whether they represent opportunistic demands by one of the partners is a crucial issue. To inform this question, Oxley and Silverman [2008, p. 231] suggest that it is necessary "*to explicitly connect renegotiation to (actual or perceived) performance effects, and to unpack more dis-aggregated detail about which types of provisions are renegotiated in the presence of which triggering factor*". Our paper is an attempt to follow this path.

In this paper, we shed light on the renegotiation issue in public procurement contracts by investigating the link between renegotiations and contract renewals. Because it is nearly impossible to assess how renegotiations influence contractual surplus, we instead use contract renewals as a proxy. We believe it allows us to indirectly assess parties' perceptions about their previous relationships, and ultimately their feelings of cooperative adaptation and contractual surplus creation during renegotiations: if renegotiations result in a significantly negative outcome, parties are not prone to con-

tract again. To this end, we use an original database of 252 public contracts in the French car park sector and we look at the impact of different dimensions of contractual renegotiations on the probability of renewing the contract with the same partner.

Our results suggest that there exists an optimal frequency of renegotiations, in which renegotiating *per se* should not be interpreted as a sign of failure of the relationship. In addition, we found that while some renegotiations clearly increase the probability of renewing a contract, others do not. This suggests a positive, negative or neutral influence on contractual surplus depending on the frequency and type of renegotiations.

The remainder of this paper is organized as follows. In the next section we review the related literature and develop hypotheses. Section 3 describes the car park sector and the main contractual arrangements considered herein. Section 4 presents the database and our empirical strategy. The results are presented in Section 5. We conclude with perspectives for future work and public policy implications in Section 6.

2 Related literature and hypotheses

Because they address services of general interest, public contracts and their renegotiations are closely scrutinized. Many examples of renegotiations in public-private agreements are provided by Guasch [2004]. By studying more than 1,000 concession contracts signed in Latin American countries between the mid-1980s and 2000, he found that 55% of transportation contracts and 74% of water and sanitation contracts were renegotiated. Some of them led to some contract terminations. The author's findings also confirmed that renegotiations, at first glance, favor the private party. Indeed, the most common outcomes of renegotiations are delays, tariff increases and a reduction in investment obligations, potentially reflecting the opportunistic behavior displayed by private partners. Those results are confirmed by a more recent study with updated data (Guasch et al. [2017]). In other words, Guasch [2004] suggests that

renegotiations are a consequence of aggressive bids in the context of an *ex ante* lack of commitment from the government. Because the government is unable to commit to nonrenegotiation and because firms learn their types only after bidding, if a firm wins a call for tenders and discovers it is inefficient (*i.e.* it would lead to losses), it will be tempted to ask to renegotiate (Guasch and Straub [2006], Guasch et al. [2008]). Other researchers explore government-led renegotiations as well as renegotiations that enable incumbent governments to circumvent budgetary rules before elections (Engel et al. [2015]). In the end, generalized renegotiations are often described as a perverse outcome of the growing participation of the private sector in public services (Albalate and Bel [2009]; Sarmento and Cruz [2018]). Moreover, regardless of who is at the origin of the renegotiation process, the scant empirical literature on renegotiations mostly considers renegotiations as a negative event and almost never as good news for both contractual parties.

However, public contracts are often complex transactions for which objectives are changing and it is not easy to anticipate future events that may disturb the relationship. Hence, renegotiations might be viewed as necessary adaptations to fill in the contractual blanks (Grossman and Hart [1986]). Nevertheless, if renegotiations are necessary and might be associated with greater surplus, they remain a risky adaptation process that may lead to opportunistic behaviors (Williamson [1985]; Fehr et al. [2011]; Frydlinger et al. [2019]). In other words, contracting parties need a formal agreement to secure their specific investments but this security should not come without any contractual flexibility to adapt to unanticipated events. This trade-off leads to an optimal level of contractual completeness (e.g. Crocker and Reynolds [1993], Saussier [2000]) which translates to an optimal level of contractual renegotiations. Thus, we posit that the design of contracts is affected by the challenge of including the appropriate level of flexibility for renegotiation to occur when needed : too much, and undesirable opportunistic renegotiations are likely to occur; too little, and opportunities for welfare-enhancing renegotiations will be lost.

Very few studies tried to collect information on contractual renegotiations to determinate their consequences on public procurement contract efficiency. Bajari et al. [2014] indirectly pursued this question by looking at how anticipated cost of renegotiations influences the bids proposed by competitors. They found a positive correlation between bid level and the expected difficulty of renegotiating *ex post*, suggesting renegotiations are very costly. Gagnepain et al. [2013] looked at how the renegotiation of transport contracts in France prevents regulators from achieving the full-commitment efficient outcome. However, the authors did not study renegotiations *per se* and considered renegotiation as the parties unwillingness to renew their relationship with the exact same contract. We depart from their approach by studying renegotiations in detail during the contract life.

To assess how renegotiations influence contractual surplus, we use another strategy by looking at contract renewals. We posit that if renegotiations result in a significantly negative outcome, parties are not prone to contract again. This means that the renewal can be used as a proxy of the mutual beneficial adaptation of contracts. It will be our strategy to indirectly assess parties' perceptions about their contractual relationships, and ultimately their feelings of cooperative adaptation and contractual surplus creation during renegotiations. Such an assumption is consistent with previous literature on contract renewals that posit threat of nonrenewal as a disciplinary device for better performances. For instance, Dalen et al. [2006] theoretically shows that by threatening not to renew the contract when it finds that the quality provided has been unsatisfactory in the past, the government may give the firms stronger incentive to provide quality. Similarly, Iossa and Rey [2014] build a model where contract renewal creates an implicit incentive to provide good performance even when performance and investment are nonverifiable. Using renewal as a proxy for parties' perceptions about their contractual relationships is also in line with the relational contract theory that states that one means of circumventing opportunistic behaviors is provided by repeated interactions. Indeed, reputation concerns enhance cooperative behavior throughout the

duration of the relationship: the fact that contracting parties interact repeatedly can enforce informal agreements, thereby reducing opportunistic behavior because of the potential loss of future business in the case of punishment, i.e. nonrenewal (Coviello et al. [2018], Desrieux et al. [2013]). However, informal agreements are less (even not) possible to rely on in the case of public contracts where every modification is supposed to be translated through formal amendments. This is the reason why we can consider, as Spiller [2008] does, that public contract renegotiations may provide a kind of relational dimension to the contractual relationship. Consistent with those different strands of recent literature, we formulate the following testable propositions:

Proposition 1. Nonrenegotiated contracts are less likely to be renewed than renegotiated contracts.

Proposition 2. Very frequently renegotiated contracts are less likely to be renewed than less frequently renegotiated contracts.

The corollary of those two propositions is that, for a given transaction, in order to maximize surplus (i.e. higher probability of contract renewal), there exists an optimal frequency of contractual renegotiations. However, this proposition stands as long as public authorities have discretion over the choice of their partner, i.e., when they have the possibility to make contract renewal dependent on what happens during the contract execution. From this perspective, Coviello et al. [2018] analyze the causal effect of increasing buyers' discretion on procurement outcomes in a large database for public works in Italy. They found that discretion increases the probability that the same firm wins repeatedly, but it does not deteriorate (and may improve) the procurement outcomes they observed. Their qualitative result about buyers' discretion that leads to repeated contracts with the same firms without always deteriorating contractual surplus is consistent with the idea that repeated interactions permit renegotiating contracts without overly opportunistic behaviors. This leads us to the last following proposition:

Proposition 3. The link between renegotiations and renewal is conditional upon the level of discretion of the public authority at the awarding stage.

3 Institutional framework

3.1 The French car parks: a competitive sector

In many European countries, the public authorities are responsible for the provision of most on-street and off-street car parks. The positive externalities and social benefits (environmental concerns, intermodality, urban development, etc.) derived from the high quality of construction and efficient management of car parks are the reasons why they are under the remit of local authorities. However, although the public authorities must retain the ownership, control and monitoring of car parks, they can outsource the provision of such infrastructure and services through public-private arrangements. To manage 1.3 million parking slots (50% underground and 50% off-street), public authorities in France have extensive experience relevant to public procurement contracts in the car park sector: 72% of car parks are organized via public procurement contracts compared with 28% provided in-house through public provision. The French car park sector is also characterized by a growing level of competitive pressure between French firms (local operators as well as larger companies) and, more recently, between national and foreign operators (ANFA [2019]).Indigo, Effia, Q-Park, Urbis Park, Lyon Parc Auto, Saemes, Interparking and Spie Batignolles are the most frequent bidders in France. In addition to this fierce competition, a municipality may always decide to return to in-house provision when the contract ends. This ability is because car park management is a standardized service and contracting parties are not locked in through bilateral dependency at the contract renewal. In the recent past years, several scholars aimed at measuring the level or perceived specificity of local public services. In other words, they ask public managers to rank services according to the difficulty

to replace contractors due to specificity and/or lack of competition. In all those rankings, operation of parking lots and garages appears among the less specific ([Brown and Potoski, 2003; Levin and Tadelis, 2010; Beuve and Le Squeren, 2016]). Such an argument is also perfectly represented by the relatively low level of renewal rate in the car park sector (45% in our data) compared with other sectors such as urban public transport ($\simeq$ 90% in France (Amaral et al. [2009])) or water sector ($\simeq$ 90% in France (Guérin-Schneider and Lorrain [2003])) where asset specificity is clearly higher.

3.2 Types of procurement contracts

Our dataset of car park contracts is characterized by the existence of two different types of contracts that mainly differs along the duration and the discretion given to the public authority during the tendering process, namely *Concession* and *Service* contracts.

Concession contracts are long-term contracts in which private operators build (or deeply renovate) the infrastructure, deliver the service and keep the fees paid by users. Consequently, *Concession* contracts are subject to political, economic, social and technical changes that may occur during their execution. Such changes may be exogenous to the contract (technological developments, economic shocks, changes in legislation or legal interpretation) or may directly result from internal drivers (evolving business requirements) or contract maladaptations (inappropriate initial contractual design). Even if the selection procedure for concession contracts is rather formal, there is room for discretionary power of the public authority that allows taking bid quality, quality of renegotiations and bidder's previous experience into account. More precisely, the procedure starts with an open prequalification stage (based on firms experience and financial robustness) which enables private firms to become candidates. Second, the public authority writes the call for tenders, which specifies the objectives to be reached by the operator and selection criteria. Typical selection criteria include the acceptabil-

ity of user prices, the rent the private operator is willing to pay to the public authority to use the public ground, the technical quality of the bid (as the call for tenders is output-oriented, bidders must explain their means to reach the specified goals) and the general quality of the bid. Finally, for shortlists of two or three bidders, the third and final step is a direct negotiation (called a *competitive dialogue*) between the public authority and each of the remaining bidders before they submit their best and final offers.

Service contracts are short-term contracts where the public authority obtains the revenues and pays a fixed price to the private operator for managing car parks and collecting users fees. Since the tasks untrusted to the operator are simpler and easier to defineThe operator is in charge of only a few tasks. Moreover, a specification booklet has been published by the state administration in collaboration with representatives of private operators and the association of local councilors that proposes a contract framework that the public authorities are free to use., the award procedure for *Service* contracts is stricter. It only includes one stage and features standard criteria (the price asked by the operator to manage car parks is generally the unique one). Thus, public authorities have few or no discretionary power. As *Service* contracts are less complex and more complete than *Concession* contracts, one might expect renegotiations to be less likely to occur. Moreover, irrespective of the frequency of renegotiations, the public authority should hold no sway over the probability of contract renewal, because it must base its decision to award a contract on the bidding price only (*i.e.*, it has no discretionary power). Indeed, previous experience must not be taken into account in the decision to renew a contract, as illustrated by a statement from the Administrative Court of Paris. In 2009, a public authority in charge of public procurement contracts in the field of social housing was sanctioned for disqualifying a candidate because of a bad previous experience. The court forced the public authority to reorganize the call for tenders and re-evaluate the candidacy of each operator, including the complainant.Administrative order n°0907878, Administrative Court of Paris, June

2009.

4 Empirical Strategy

4.1 Data

In the French car parking sector, data are neither centralized nor collated because of the lack of a regulatory authority. Therefore, in order to generate the dataset used in this study, we examined all the expired contracts signed between the French market leader and 136 different public authorities over a 45-year period (1963 - 2008). To explore whether the sequence of renegotiations influenced contract renewals, we considered a contract to have been renegotiated when a revision that was not envisioned in the original contract occurred. Given those inclusion criteria, we examined 252 expired contracts and their respective 782 renegotiations.

4.2 Dependent Variable

Our dependent variable $Renewed_i$ takes the value of 1 if the expired contract was renewed with the same private partner at the contract renewal time and 0 otherwise. The renewal rates found in our dataset were 45% and 78% for *Concession* and *Service* contracts, respectively (summary statistics are provided in Table 1). In practice, there are several possible reasons why a contract is not renewed: (i) the public authority selects another operator, (ii) the public authority returns to public provision or (iii) the private operator chooses not to rebid for the contract. While a general explanation is that the parties are unwilling to contract again because of dissatisfaction in their previous relationship, in practice, the information collected from our interviews with the head of the legal department of the car park company confirms that, in accordance with a high level of competition in this sector, the private operator is always

a candidate to his own succession.As stated before, studies found that renegotiations often led to more favorable contract terms for the private operators, suggesting that if renegotiations came from opportunistic behaviors, they are coming from the private party Guasch [2004]. That would explain why in our data, the private company always bids in order to be renewed. However, it is also possible that the private company always bids but at a higher price when she considers being victim of opportunistic behaviors from the public authority in a previous contract, reducing her probability to be selected again. Thus, scenario (iii) is dismissed and suggests that the renewal decision is the sole responsibility of the public authority. Consequently, the choice of the partner's renewal could be dictated by bilateral dependency and/or the absence of other competitors. As discussed before, because we focus on a sector characterized by a standardized service and a high level of competition, we assume that going back to public provision is not very complicated and that the likelihood of better offers is distributed equally among our observations. This makes us confident in our strategy to use contract renewal as a proxy of satisfying contractual surplus at the end of the contract.

Insert Table 1 here

4.3 Renegotiation Variables

The first way to characterize renegotiations is to distinguish between contracts that have been renegotiated and those that have not. Thus, we use a dummy variable No_Reneg_i that takes the value of 1 if the contract i was not renegotiated at all during its run and 0 otherwise. In our dataset, more than 73% of *Concession* contracts were renegotiated compared to only 33% in the *Service* sample. This difference is because public procurement contracts generally involve simpler unbundled tasks that give rise to shorter contract durations than with *Concession* contracts. This observation is in line with the findings of Guasch et al. [2008], who pointed out that contract uncertainty

explains the probability of renegotiation.

However, examining the occurrence of renegotiations is a crude measure because it ignores information on the frequency and types of renegotiations. To circumvent this limitation, we capture the frequency of renegotiations with the variable $Reneg\_Ratio_i$. This represents the number of annual renegotiations in each contract i. The use of the ratio between the number of renegotiations and the contract duration seems to be the most relevant measure because renegotiating four times over a two-year contract is not the same as for a 20-year contract. We also include a squared term of our variable $Reneg\_Ratio_i$ in our regression in order to identify the potential nonlinear effect stated by our hypothesis 1 and 2. This inclusion rests on the TCE argument that contracts are governance mechanisms that should be rigid enough to reflect real commitment from contracting parties and flexible enough to permit adaptation as the environment evolves. We thus look for an "optimal" rate of renegotiations in our data.

Finally, in order to disentangle the effect of the frequency of renegotiations by renegotiation types, we describe the contractual dimensions with which they are concerned. Then, we extract the frequency of renegotiations according to these dimensions. Hence, the variable $Reneg\_Tariffs_i$ represents the average number of annual renegotiations on the tariffs charged to service users for each contract i. Renegotiations on tariffs can take the form of an increase in tariffs and/or the implementation of specific tariffs for regular users. The variable $Reneg\_Investment_i$ stands for the average number of annual renegotiations on additional investment unforeseen in the original contract for each contract i. This additional investment requirement may come from the public authority or from miscalculated spending by the private operator. In the former case, the compliance of the operator might lead to a higher probability of contract renewal, while, in the latter case, miscalculated spending by the operator might require increasing tariffs or revising the financial provision (thus it is also coded as *Reneg_Tariffs* and/or *Reneg_Finan_Eq*), which can make the public authority reluctant to contract again with the same operator. The variable $Reneg\_Quality_i$ represents the average

number of annual renegotiations in each contract i that improve service quality. This process of improvement might be (but not necessarily) accompanied by additional investment ($RenegInvestment_i$ here), such as when a new lift is constructed in order to facilitate disabled access or when free bike rentals are provided to promote green cities. The variable $Reneg\_Finan\_Eq_i$ stands for the average number of annual renegotiations in each contract i that concern changes to its financial conditions. Such changes might result from an error of anticipation, an *ex post* shock or an additional investment that cannot be offset by a tariff increase. In concession contracts, these renegotiations lead to a decrease in the rent paid by private operators to the public authority for the use of the public ground or assets. In public procurement contracts, these renegotiations lead to an increase in payment for the private operator. Finally, the variable $Reneg\_Duration_i$ represents the average number of annual renegotiations in each contract i that relate to an extension to the contract duration. Most of the renegotiations on contract duration that we observed were concerned with short extensions (less than one year), typically because the public authority needed more time to organize a new call for tenders. Even if we do not have specific testable propositions here, we expect more conflicting renegotiated dimensions, such as tariff or financial condition renegotiations, to decrease the probability of renewing a contract. By contrast, quality-related renegotiations are less conflicting, usually involving the public authority accepting or refusing the implementation of higher quality levels. Hence, they are supposed to be less contentious and therefore more likely to increase the probability of renewal.

4.3.1 Control variables

Previous experience As emphasized previously, the discretionary power of the public authorities allows them to take into account previous experience in the case of *Concession* contracts. We include the variable $Past\_Experiences_i$, which stands for the number of other expired contracts the private operator had with the municipality in

the past.We have data over 45 years, between 1963 and 2008. Thus, we can control for past experiences between contracting partners since car parks emerged in France. On average, the private operator had more than two previous contracts with each municipality. Nevertheless, more than 30% of the expired contracts were first contracts.

Future business and reputational concerns Future business perspectives allow contracting parties to deter opportunism and encourage cooperative behavior (e.g. Poppo and Zenger [2002], Ryall and Sampson [2009]). Thus, we also take the influence of future business and reputational concerns into account by including two variables. The first, $Multi\_Contract_i$, stands for the number of other ongoing car parking contracts the cocontractors share at the expiration date of each contract i. This variable enables us to capture ongoing businesses in which the parties are already engaged and measures the severity of the punishment applied by the local authority to an opportunistic partner by not renewing a number of contracts instead of only one (Desrieux et al. [2013]). In our data, the private operator and municipalities share on average 1.6 contracts in addition to the studied contract. Nevertheless, we also observe that they share only one contract in 43% of cases. The second variable, $Same\_Area_i$, stands for the number of other contracts the operator has with other public authorities in the same region when contract i is re-awarded. This geographical reputation effect can be effective in a wider area than only the city concerned and is relatively more likely to benefit the operator. Indeed, the private operator tends to refine its reputation and to act in a way that satisfies the authority in order to stand a greater chance of contracting with the same authority or with other regional partners. In general, both for *Concession* and *Service* contracts, the private operator has almost five other ongoing contracts in the same region. We therefore expect these two variables to have a positive influence on the probability of renewing a contract.

Political and ideological dimensions A number of authors have already pointed out the role of political and ideological dimensions in the decision to privatize public services (*e.g* Bel and Fageda [2007], Picazo-Tadeo et al. [2010] and Beuve and Le Squeren [2016]). By using data in the same sector and in the same country, Le Squeren and Moore [2015] show that municipal elections differently impact on public-private and private-private contracts. More precisely, their results indicate that public-private contracts are statistically more renegotiated in pre-election periods, suggesting the existence of a political bias. Given this potential influence of political issues on contract renewal, we also introduce $Change\_Of\_Mayor_i$, which is a dummy variable that accounts for a change of mayor in the two years preceding the end of the contract. More than a change of ideology, it allows capturing the impact of a potential breach in the dialogue between the operator and municipality that may be negatively correlated with the likelihood of contract renewal. In our data, a change of mayor in the two year preceding the re-auctioning of the contract occurred 20 times for *Concession* contracts (21.8%) and 17 times for public procurement contracts (10.7%). As previous literature showed that public services outsourcing is less likely to occur in left wing municipalities, we also take into account this effect by introducing the variable $Left\_Wing_i$, which is equal to one when the mayor belongs to a left wing party (socialists, ecologists and extreme left) at the date of contract expiry.

Size and competition The level of competitive pressure might influence the probability of contract renewal. However, the dearth of centralized data on the number of candidates and their respective bids in each call for tenders means we must approximate the degree of potential competition. We overcome this problem by controlling for our estimates with $Population_i$, which stands for the number of inhabitants on the expiry date. As illustrated by Coletto-Labatte [2008] in his study of competition in the car parking sector in France, the number of present operators is an increasing function

of city size. Large cities attract private operators because of the greater potential in terms of the increased number of car parks. Thus, the risk of the incumbent facing fierce competition can be assumed to be higher in larger municipalities than in smaller ones. Consequently, even though an imperfect measure, $Population_i$ can capture the level of competitive pressure.

Other variables As we investigate the influence of the frequency of renegotiation, we must therefore control our estimations using a variable that stands for contract duration ($Duration_i$). In this way, we can interpret the marginal effect of $Reneg\_Ratio_i$. The coefficient of this latter variable captures the influence of the frequency of renegotiations and cannot be imputed to contract duration. Furthermore, we also control for the operator's tasks by including the variable *Build*, which is a dummy variable that takes the value of 1 if the private operator also built the car park and 0 otherwise. Because no construction element is included in *Service* contracts, this variable only influences the outcomes for *Concession* contracts. In our data, the operator had to build as well as operate the car park in 16 of the 94 expired contracts studied herein. Since the estimation results may be driven by unobserved characteristics of the sector, which may evolve over such a long period (45 years), we control for potential biases by introducing year fixed effects corresponding to the year in which the contract was signed ($Year_i$). Finally, we also take into account the fact that contract renewal might be influenced by unlawful practices, i.e. the public authorities can be concerned with corruption to maintain the incumbent. We address this possibility through the variable *Corruption* that corresponds to the number of corruption cases that implicate the mayor or a member of the city council between 1980 and 2010.Data are obtained through Transparency International France, www.visualiserlacorruption.fr

4.4 Estimations

Our goal is to explore how frequency and types of renegotiations may influence cooperative adaptations over the contractual relationship and thus the likelihood of contract renewal. Hence, our problem reduces to a probit estimation of the following model:

$$Renewed_{it} = 1[Renewed^*_{it} = a.RENEG_{it} + b.CONTROLS_{it} + e_i > 0]$$

where $Renewed_{it}$ is the binary variable that indicates whether contract i is renewed at time t; $Renewed^*_{it}$ is our latent variable we do not observe, namely the satisfaction of the public authority at contract renewal times; $RENEG_{it}$ is a vector of variables that groups the different characteristics of renegotiations (*No_Reneg, Reneg_Ratio* and the variables associated with the different renegotiated dimensions); $CONTROLS_{it}$ is a vector of control variables that may also influence contract renewal (*Past_Experiences, Multi_Contract, Same_Area, Change_Of_Mayor, Left_Wing, Population, Duration, Year, Corruption*) and e_i is the error term. Therefore, our main interest is in coefficient a that captures the influence of the different renegotiation characteristics.

5 Results

5.1 The influence of renegotiations

Table 2 provides the results of our probit estimates for *Concession* contracts. Models 1 to 4 successively incorporate each of the characteristics of renegotiations. Estimations of Model 2 suggest that nonrenegotiating a contract is negatively and significantly correlated with the decision to renew it, providing support for our hypothesis 1. This first result contrasts with previous studies that describe renegotiations as a negative event in the lifetime of a contract. It also provides a strong argument in favor of using the

subsequent estimations that distinguish renegotiations by their frequency and types. Model 2 shows that *Reneg_Ratio* is significantly and positively correlated with the probability of renewing the contract with the same operator. Moreover, the squared term of this variable $Reneg\_Ratio^2$ is significantly and negatively correlated with the dependent variable. This nonlinear effect of *Reneg_Ratio* suggests the existence of an optimal frequency of renegotiations, providing support to our hypothesis 2. Here again, this result is at odds with the findings of a large number of works presented in the contract economics literature, which consider renegotiations to be detrimental to the ongoing relationship between parties. This finding reinforces the fact that contracts are governance mechanisms that should be rigid enough to reflect real commitment from contracting parties but flexible enough to permit adaptation as the environment evolves. Figure 1 gives an illustration of the optimal level of renegotiation frequency we obtain for *Concession* contracts through Model 3, *i.e.* 0.7 renegotiations per year (or one renegotiation every one year and a half) which is twice the mean of our variable *Reneg_Ratio*. It suggests that many contracts in our sample are not sufficiently renegotiated to allow higher likelihood of renewal (we can also recall that 27% of *Concession* contracts are not renegotiated at all). Table 2 also highlights that switching from *Reneg_Ratio* (Model 1) to *Reneg_Ratio* (Model 2) and then to adding $Reneg\_Ratio^2$ (Model 3) increases the quality of the estimations. Indeed, pseudo R^2 slightly increases from one model to another. As expected, the type of renegotiation is also playing a role (Model 4). First, the coefficient associated with the variable *Reneg_Quality* is positive and significant. As renegotiations improve the service quality offered to users : they make the public authorities more prone to contract again with the same operator. In contrast, the coefficients associated with the variables *Reneg_Finan_Eq* and *Reneg_Tariffs* are negative and significant. As previously emphasized, renegotiations typically occur from an error of anticipation, an *ex post* shock or the requirement for an additional investment that cannot be funded by a tariff increase. Furthermore, renegotiations lead to a decrease in the rent private operators pay to the public authority for using the public ground or asset in order to maintain the financial conditions of

the contractual arrangements. For this reason, they seem to make the public authorities less prone to contract again with the same operator. Miscalculated spending by the operator requiring a tariff increase or funding revision might mean that the public authority would be reluctant to contract again with the same operator.

Insert Table 2 here

Other interesting results come from our controls. Our variables on future business and reputational concerns are consistent with expectations : *Multi_Contract* and *Same_Area* have a positive and significant influence on the probability of contract renewal. As previously stated, this finding can be analyzed through the lens of relational contracting. It is legitimate to assume that a higher number of other ongoing contracts with the same as well as with neighboring municipalities makes the threat of ending relationships more detrimental and leads to a greater chance of cooperation and compliance with the public authorities. By contrast, and in a political approach, we find that a change of mayor during the last year of the contract reduces the probability of its renewal, as illustrated by the negative and significant coefficient associated with the variable *Change_Of_Mayor*. A potential interpretation is that the new mayor strategically uses nonrenewal as a way to appear differentiated from the incumbent and or make its opposition visible. However, we do not observe any effect of our ideological variable *Left_Wing*. This absence of the result is consistent with previous literature that shows that the impact of ideology is particularly visible at the original make-or-buy decision but less relevant during subsequent renewals. Finally, we can also observe that the variable corruption is never significant. Notwithstanding the limitations of this measure (which is conditional on cases being detected and prosecuted, which does not necessarily reflect endemic corruption), it clearly indicates that corruption is of minor concern to our setting. This is particularly because we analyze contracts between different public authorities and the largest car park company in France and, unless the whole sector

is captured by this operator, the reputation spillovers of corruption charges can easily be assumed to overweight the plausible gains from unlawful practices. Moreover, the ability of corporations to buy favors through donations to political candidates or parties is forbidden in France.Financing is not allowed in any form whether direct (e.g., by donating money or properties) or indirect (e.g., by rendering services, providing products below regular market fees or prices), or granting favors or advantages to political candidates, parties, groups, their financial representatives, or associations. Parties are funded exclusively through the central budget. See: Library of Congress, *Campaign Finance, France*, http://www.loc.gov/law/help/campaign-finance/france.php

5.2 Renegotiations and discretion

As previously discussed, the fact that the level of discretionary power at the awarding stage of the procedure is relatively high in the case of *Concession* contracts permits us to study how renegotiations influence the willingness of public authorities to renew their contracts. As seen in Subsection 3, while there is room for negotiation and the consideration of previous experience in *Concession* procedures, *Service* procedures are much more rigid. As a consequence, and according to our hypothesis 3, our results should not stand in the case of *Services* contracts where the level of discretionary power is much lower. As seen in Models 5 to 8 provided in Table 2, the results on the frequency and types of renegotiation found for *Concession* contracts largely disappear for *Service* contracts. Only the variables *Reneg_Investment* and *Reneg_Finan_Eq* are significant and negatively correlated with the probability of renewal in Model 8. Such a finding might be explained by the fact that *Service* contracts are simpler and shorter than *Concession* contracts and, in such case, renegotiations are viewed as unjustified and are not forgotten. Indeed, as the tasks for the private operator are less complex and generally well defined, bidders are predominantly selected based on the payment they asked to manage the service. Consequently, proposing a low price can be an

operational strategy for winning the contract, based on its confidence in renegotiating the contract terms *ex post*. However, it is easy for the public authority to detect such an aggressive bidding strategy, which may explain its unwillingness to contract with the same partner when the financial equilibrium of the contract had to be renegotiated during the contract lifetime. This result thus seems to indicate that discretionary power and relational dimension are not completely absent from *Service* procedures. Even if public authorities in France are not allowed to use their discretionary power, at the risk of being pursued, our results suggest that they occasionally do so. However, and in accordance with our third hypothesis, compared to *Concession* contracts, such elements are clearly pushed to the background.

5.3 Endogeneity issues

So far, we argue that certain features of renegotiations influence the probability of the municipality renewing with the same operator. Despite the fact that renewal comes after what happens during contract execution (renegotiations), it is impossible to ignore the existence of potential reverse causality. Indeed, it is not necessarily renewal *per se* that impacts what happens before (including renegotiations) but rather the expectations of both parties regarding the likelihood of renewal. As a consequence, one could easily argue that the decision of the municipality to renew the operator's contract actually drives renegotiations. To address those issues, we implement an instrumental variable (IV) estimation procedure in the previous Models 2, 3 and 4 concerning *Concession* contracts. To instrument our renegotiations variables, we need variables that may initially motivate renegotiations during the contract lifetime but not the renewal decision of the public authority. As emphasized by previous literature, renegotiations are more likely to occur if the needs evolve during the contract lifetime and also during economic booms and busts (e.g. Guasch [2004]). We thus create two variables that aim to capture such determinants through the variables *Var_Of_Population* and

Var_Of_GDP. The first corresponds to the variance of inhabitants and can be related to the number of renegotiations if the contract needs to be adapt to an evolving environment (increasing size of car parks, adapting tariffs to the car parks occupancy, etc.). The second stands for the variance in Regional GDP during the contract lifetime and is expected to be positively correlated with the frequency of renegotiations. The results provided in Table 3 indicate that our instruments are exogenous (see Hansen-J-Statistics) and relevant (see F-Statistics) to explain the occurrence and the frequency of contractual renegotiations. In other words, contracts are more likely to be renewed when they face a changing economic environment. Concerning the results of second stage, the results of Models 9, 10 and 11 are perfectly consistent with our previous finding about the existence of an optimal level of renegotiation frequency, and we obtain the same estimation of one renegotiation every one year and a half (see Model 11 in Figure 1). Such stability of results after using a two-stage least square estimations make us confident about the robustness of our findings.

6 Conclusion

In this paper we have provided new insights into the issue of renegotiations, which have generally previously been analyzed through the lens of opportunism. By using an original dataset of 252 expired contracts in the French car parking sector, we examined how renegotiations influence the continuation of contractual relationships. Our results suggest that there may exist, for each specific contract and relationship, an optimal level of renegotiations. On the one hand, a high frequency of renegotiations may lead to higher transaction costs (and to potential opportunism), negatively influencing contract renewal. On the other hand, if renegotiations are aimed at adapting contractual terms to their environments, thereby increasing efficiency, the net effect might be positive. This is precisely what we observe with our empirical findings.

One limitation of our study is that, if we know that the private operator is always a candidate to his own succession, we do not know how many operators participate in the call for tenders. As a consequence, we cannot exclude the possibility that renewal is dictated by the insufficiency or even the absence of competition. However, as previously highlighted, the car parking sector in France seems to be a relevant setting in which to examine how renegotiations influence the turn of a relationship because it is a mature and competitive market characterized by a standardized service and the existence of a real alternative for public authorities at the time of contract re-awarding. As a matter of fact, we observe that 78% of expired *Service* and 45% of *Concession* contracts had been renewed. These rates of contract renewal confirm that public authorities have credible alternatives when contracts end, i.e., there are no difficulties in replacing contractors (due to lack of competition) or to go back to public provision (due to specificity). Moreover, in their study about public transport in the Netherlands in which Mouwen and Ommeren [2016] examine to what extent (multiple) contract renewals and introduction of competitive tendering for long-term public transport contracts affect ridership, operational costs and subsidies in governed concession areas, the authors show that when renewing long-term contracts, operational costs and subsidies are reduced but find that the effect of competitive tendering is completely absent. Such a finding suggests that the threat of competitive tendering is sufficient in a market where the majority of concessions is competitively tendered (as in our setting). Nevertheless, future studies should investigate more precisely the interplay between competition, renewal and renegotiations in order to better disentangle the influence of the competitive environment on the relationship between contract execution and renewal.

Another promising way to improve an understanding of renegotiation influence on contractual relationships would be to take *ex ante* contractual design into account. Despite that we aim to tackle the issue of endogenous renegotiations, more should be done to better understand the links between *ex ante* contract design, *ex post* renegotiations

(see, e.g., Bartling and Schmidt [2015] and Fehr et al. [2011]) and subsequent renewal. For instance, several empirical papers show that the trade-off between flexible or rigid contractual terms is of primary concern for *ex post* renegotiations (see e.g. Albalate and Bel [2009], Athias and Saussier [2018]). Other studies suggested that the more contracts are repeated, the more formal they are (Ryall and Sampson [2009]). Future research might aim to investigate how *ex ante* contract design is framed in order to ease or conversely to avoid contractual renegotiations, additionally depending on the level of trust that may exist between parties. In the same vein, it would be worthwhile to investigate more precisely the impact of the level of discretionary power. In this paper, we capture this level by the different types of award systems associated with our *Concession* and *Service* contracts but we cannot completely control the other differences that exist between those types of contracts. *Concession* have a different nature than *Service* contracts, so it is legitimate to expect that these contracts relate to different risks, rewards and obligations that could also be correlated with the likelihood of renegotiation and with the likelihood of renewal. Future studies may investigate the use of different procedures for identical types of contracts and/or find different ways to capture the discretionary power of public authorities.

Finally, it goes without saying that our results are country- and sector-specific. As underlined previously, the French car park sector is a mature and competitive market characterized by a standardized service. Our empirical analysis allows us to highlight the existence of an optimal level of renegotiations in a setting with quite low uncertainty and low complexity. It would be insightful to investigate the issue of the interplay between contract renegotiations and renewals in more uncertain environments and more complex contracts.

Ultimately, in addition to providing empirical results for the theoretically open debate about the renegotiation process, public policy implications can also be derived from our findings. Indeed, our results no longer held when we investigated more rigidly enforced public procurement procedures. This result highlights the importance of the role of the

discretionary power of the public authorities. Our findings are perfectly in line with the recent changes introduced by the European Union in its legal framework for public contracts. Indeed, the New European Directives regarding procurement contracts and concessions (approved in 2014) give public authorities greater flexibility to negotiate with companies at both the selection stage and the execution stage (renegotiation). As emphasized by Saussier and Tirole [2015] and Coviello et al. [2018], such higher freedom could potentially be beneficial, provided that this freedom is part of a broader move toward greater transparency, effective competition and the development of specific expertise. According to their vision, our results are a positive echo to the potential benefits of the relevant use of discretionary power by public authorities.

7 Tables and Figures

Table 1: Descriptive Statistics

	Concession Contracts				Services Contracts			
	mean	st. dev.	min	max	mean	st. dev.	min	max
Dependent variable								
Renewed	0,46	0,50	0	1	0,79	0,41	0	1
Renegotiations variables								
No_Reneg	0,27	0,45	0	1	0,73	0,45	0	1
Reneg_Ratio	0,35	0,33	0	1,33	0,25	0,38	0	1,26
Reneg_Tariffs	0,03	0,07	0	0,29	0,01	0,04	0	0,4
Reneg_Investment	0,07	0,17	0	1	0,03	0,12	0	1
Reneg_Quality	0,04	0,08	0	0,4	0,03	0,11	0	1
Reneg_Financial_Eq	0,01	0,04	0	0,22	0,01	0,09	0	1
Reneg_Duration	0,14	0,23	0	1,33	0,08	0,37	0	4
Controls								
Past_Experiences	2,04	2,27	0	11	2,55	3,13	0	14
Multi_Contract	1,67	1,92	0	10	1,63	2,37	0	10
Same_Area	4,82	5,41	0	19	4,97	5,31	0	19
Change_of_Mayor	0,21	0,41	0	1	0,10	0,30	0	1
Left_Wing	0,40	0,49	0	1	0,43	0,50	0	1
Year	2 004,28	2,42	1996	2008	2 005,25	2,03	1999	2008
Population	98 867,23	124 207,10	3 481	859 543	52 639,09	53 364,50	525	291 504
Construction	0,17	0,38	0	1	0	0	0	0
Contract_Duration	15,23	10,81	5	40	2,42	2,23	0,8	13
Corruption	0,24	0,50	0	2	0,23	0,62	0	3
Instruments								
Var_of_PIB	1,30	0,55	0	3,03	0,62	0,57	0	2,21
Var_of_Population	0,06	0,19	-0,16	1,72	0,06	0,09	-0,16	0,30

Table 2: Probit analysis of contract renewal - *Concession* and *Service* samples - Marginal Effects

Dependent variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
				Renewed				
	Sample : *Concession* contracts				Sample : *Services* contracts			
Renegotiations								
No_Reneg	-0.137*				0.002			
	(0.063)				(0.114)			
Reneg_Ratio		0.336***				0.108		
		(0.102)				(0.124)		
Reneg_Ratio			0.832***				-0.026	
			(0.231)				(0.094)	
Reneg_Ratio^2			-0.579**				0.015	
			(0.192)				(0.022)	
Reneg_Tariffs				-1.635**				0.500
				(0.635)				(0.381)
Reneg_Investment				-0.569+				-0.413*
				(0.342)				(0.203)
Reneg_Quality				4.602***				-0.142
				(1.349)				(0.152)
Reneg_Financial_Eq				-5.101**				-0.823***
				(1.564)				(0.110)
Reneg_Duration				0.148				-0.008
				(0.130)				(0.021)
Controls								
Past_Experiences	-0.039	-0.044	-0.044+	-0.014	-0.005	-0.010	-0.005	-0.005
	(0.026)	(0.028)	(0.026)	(0.032)	(0.012)	(0.013)	(0.011)	(0.013)
Multi_Contract	0.280***	0.318***	0.249**	0.302***	-0.077	-0.058	-0.087	-0.086
	(0.074)	(0.071)	(0.086)	(0.068)	(0.067)	(0.082)	(0.064)	(0.089)
Same_Area	0.037***	0.040***	0.038***	0.048**	0.007	0.006	0.008	0.010+
	(0.010)	(0.009)	(0.010)	(0.015)	(0.005)	(0.004)	(0.005)	(0.005)
Change_of_Mayor	-0.269***	-0.259**	-0.232*	-0.241**	-0.199	-0.205	-0.212	-0.203
	(0.078)	(0.090)	(0.103)	(0.090)	(0.149)	(0.140)	(0.138)	(0.126)
Left_Wing	0.065	0.069	0.043	-0.056	0.025	0.006	0.026	0.012
	(0.160)	(0.148)	(0.165)	(0.171)	(0.050)	(0.048)	(0.052)	(0.056)
Population	0.934	1.245+	1.074	0.448	-0.997	-0.813	-0.939	-1.172
	(0.635)	(0.750)	(0.703)	(0.570)	(0.739)	(0.810)	(0.727)	(0.839)
Year	0.029	0.037	0.031	0.019	0.022	0.020	0.024	0.008
	(0.033)	(0.035)	(0.035)	(0.038)	(0.017)	(0.019)	(0.018)	(0.025)
Construction	-0.179	-0.176	-0.168	-0.195	-	-	-	-
	(0.227)	(0.237)	(0.224)	(0.217)	-	-	-	-
Contract_Duration	0.002	0.003	0.004	0.004	-0.020	-0.024+	-0.018	-0.028*
	(0.008)	(0.010)	(0.008)	(0.006)	(0.013)	(0.014)	(0.013)	(0.013)
Corruption	-0.119	-0.115	-0.118	-0.132	0.061	0.055	0.063	0.070
	(0.108)	(0.101)	(0.107)	(0.141)	(0.070)	(0.073)	(0.070)	(0.084)
Pseudo r^2	0.14	0.16	0.18	0.25	0.05	0.05	0.05	0.09
N	94	94	94	94	158	158	158	138

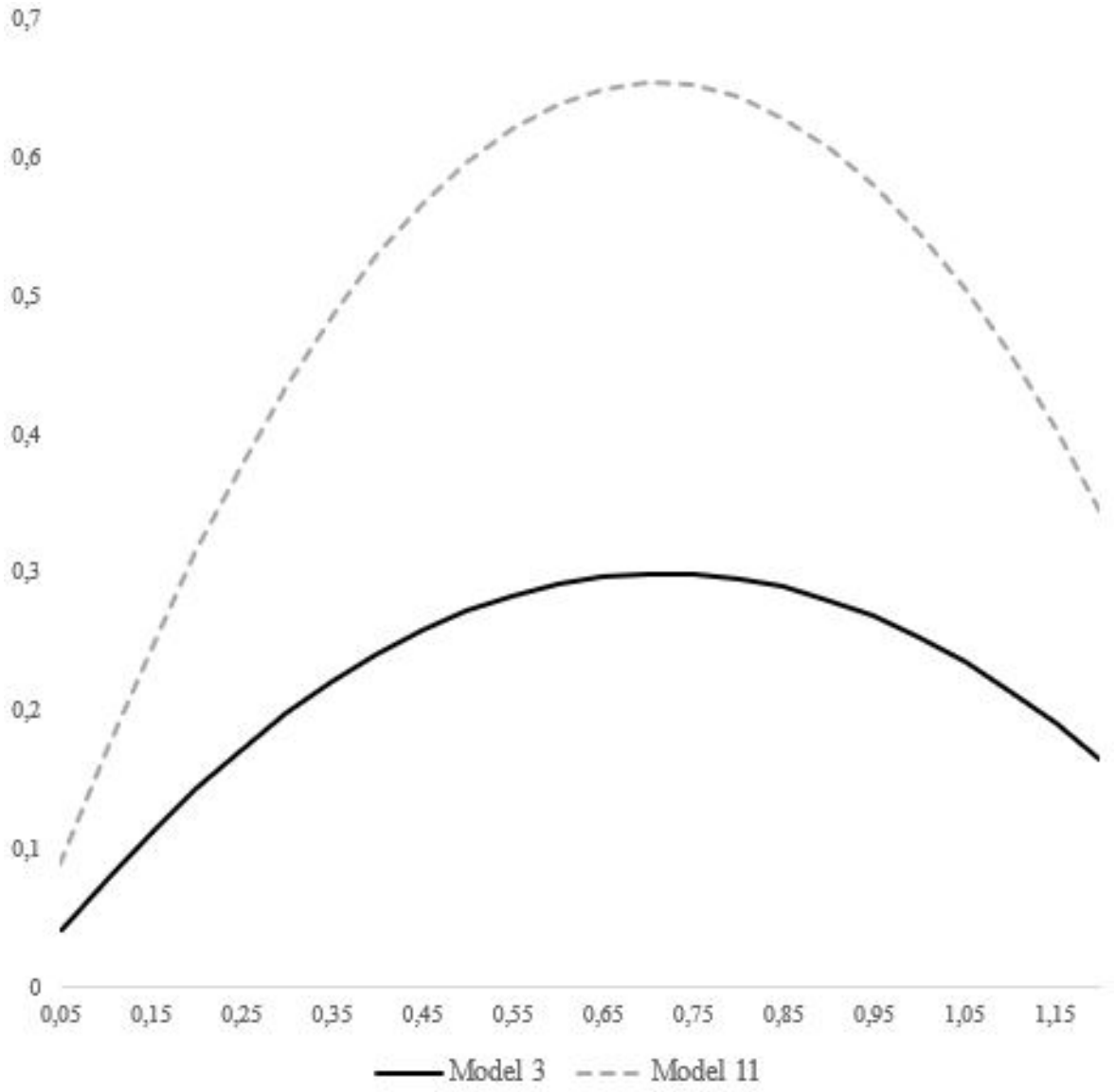
Heteroskedasticity-robust standard errors are clustered at the department level and reported in parenthesis. Significance : *** p < 0.01, ** p < 0.05, * p < 0.1, + p < 0.15

Table 3: *Concession* contract renewal - Renegotiation variables instrumented - Marginal Effects

	Model 9		Model 10		Model 11		
Dependent variable	*No_Reneg*	*Renewed*	*Reneg_Ratio*	*Renewed*	*Reneg_Ratio*	*Reneg_Ratio*^{2}	*Renewed*
	1^{st} stage	2^{nd} stage	1^{st} stage	2^{nd} stage	1^{st} stage		2^{nd} stage
Instruments							
Var_of_PIB	-0.205*		2.100**		1.925**	16.133*	
	(0.093)		(0.633)		(0.535)	(6.156)	
Var_of_Population	-0.135		-0.316		-0.327	-12.648	
	(0.109)		(1.426)		(1.405)	(16.694)	
Renegotiations							
No_Reneg		-0.843*					
		(0.390)					
Reneg_Ratio				0.092**			
				(0.034)			
Reneg_Ratio							1.835**
							(0.564)
Reneg_Ratio ^{2}							-1.290**
							(0.394)
Controls							
Past_Experiences	0.018	-0.019	-0.184	-0.016	-0.187	-3.639	-0.034
	(0.021)	(0.030)	(0.243)	(0.035)	(0.249)	(2.905)	(0.023)
Multi_Contract	-0.179**	0.135	0.833	0.195**	0.813	13.004	0.115**
	(0.060)	(0.112)	(0.867)	(0.065)	(0.861)	(9.821)	(0.055)
Same_Area	0.013+	0.044***	-0.142+	0.041***	-0.147*	-1.226	0.042***
	(0.007)	(0.010)	(0.072)	(0.008)	(0.067)	(0.866)	(0.011)
Change_of_Mayor	-0.017	-0.313***	-0.909+	-0.220**	-0.868+	-10.095+	-0.196**
	(0.078)	(0.067)	(0.437)	(0.077)	(0.462)	(5.188)	(0.071)
Left_Wing	0.221**	0.201	-1.365+	0.133	-1.328+	-7.985	0.052
	(0.073)	(0.175)	(0.674)	(0.130)	(0.658)	(7.771)	(0.181)
Population	0.075	0.847**	-2.914	1.101**	-2.972	-19.346	0.784**
	(0.401)	(0.311)	(2.625)	(0.408)	(2.637)	(27.543)	(0.266)
Year	-0.026	0.021	0.059	0.040	0.022	0.020	0.024
	(0.018)	(0.031)	(0.126)	(0.025)	(0.017)	(0.019)	(0.018)
Construction	-0.036	-0.216	-0.235	-0.167	-0.225	-4.158	-0.096
	(0.198)	(0.238)	(1.134)	(0.187)	(1.151)	(9.483)	(0.202)
Contract_Duration	0.013+	0.008	0.004	-0.003	0.011	0.021	0.004
	(0.007)	(0.011)	(0.048)	(0.007)	(0.042)	(0.407)	(0.011)
Corruption	-0.006	-0.159	0.315	-0.177	0.386	6.419	-0.081
	(0.081)	(0.114)	(0.536)	(0.121)	(0.549)	(7.366)	(0.111)
First Stage Statistics							
F-Stat	11.44		13.05		3.38		
p-value	0.040		0.011		0.042		
Kleinbergen-Paap-Stat	15.302		15.817		6.380		
p-value	0.063		0.049		0.072		
Hansen-J-Stat	0.749		0.366		0.165		
p-value	0.687		0.833		0.901		
Pseudo r^2	0.17	0.17	0.21	0.29	0.21	0.19	0.31
N	94	94	94	94	94	94	94

Heteroskedasticity-robust standard errors are clustered at the department level and reported in parenthesis. Significance : *** p < 0.01, ** p < 0.05, * p < 0.1, + p < 0.15

Figure 1: Optimal level of Renegotiations



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