Renegotiations, Discretion and Contract Renewals
An Empirical Analysis of Public-Private Agreements[*]

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Abstract

This paper studies how renegotiations influence ongoing contractual relationships. By using an original dataset of 252 expired public-private contracts in the French car park sector, we explore the link between renegotiations and subsequent contract renewals. We show that renegotiation types, frequencies and scopes influence the probability of renewing a contract when the public authorities have the discretionary power to renew with the same private partner. These findings suggest a positive, negative or neutral influence on contractual surplus depending on the type of renegotiations and contract considered.

Keywords: Renegotiation, Discretion, Contract Renewal, Concession, Public Procurement, Car Parks.

1   Introduction

Whether renegotiation represents either a mutually beneficial move toward greater efficiency or the demonstration of opportunistic behaviour by one of the partners is an important research issue. As stated by Oxley and Silverman [2008], we need

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studies that inform this question by "*explicitly connecting renegotiation to (actual or perceived) performance effects, and unpacking more disaggregated detail about which types of provisions are renegotiated in the presence of which triggering factor*" (p. 231). This statement is particularly relevant for studying the efficiency of public-private partnerships (PPPs). While it is often postulated that PPPs have the potential to achieve efficiency gains, it is also widely accepted that some scope remains to improve PPPs and to avoid failures. For example, several studies have argued that, because PPPs are routinely renegotiated (Engel et al. [2009b]) very shortly after contracts are awarded (Guasch [2004]), such renegotiations generally favour the private party. From this perspective, renegotiations reduce the potential advantages of competitive auctions, which seek to select the most efficient operator. Indeed, the possibility of renegotiating the contract may lead, in a competitive auction, to the selection of the bidder most confident in his/her capacity to force renegotiation, leading the operator to propose a price that is not financially sustainable (so-called *aggressive bidding* or *low-balling* phenomena (Iimi [2013])). Such renegotiations take place under a bilateral dependency framework in which the operator may act in a rent-seeking manner (Guasch et al. [2000]). However, the states of nature change over the life of the contract in ways that are not always anticipated by the contracting parties. Consequently, renegotiations of inherently incomplete contracts can also be considered as "necessary adaptations" and do not necessarily reflect opportunistic behaviour.

Despite the widespread attention paid to this subject by economics scholars, the topic of renegotiations in contractual agreements is still not clear-cut: there is no consensus among economists about how to approach such contractual renegotiations, whether motivated by necessary adaptation or rent-seeking behaviour. Hence, the question of their influence on social surplus remains open. According to Guasch [2004], renegotiations represent a sign of a "*lack of compliance with agreed-upon terms and departure from expected promises*". The consequence of this is that renegotiations reduce the strength of incentives, leading to a loss of overall surplus (Guasch et al. [2006], Gagnepain et al. [2013]). Similarly, the transaction cost economics view states that renegotiations imply losses because of the efforts of parties to evade the contract terms (Williamson [1985], Masten and Saussier [2000], Bajari and Tadelis [2001]) but acknowledges also that it exists an optimal contractual renegotiation rate (Crocker and Reynolds [1993], Masten and Saussier [2000]). According to the incomplete contract theory framework, however, renegotiations lead to enhance welfare by allowing parties to incorporate contingencies revealed *ex post* (Grossman and Hart [1986]). Hence, different views exist and it remains unclear whether renegotiations signal discord between contracting parties

2

or cooperation in order to efficiently adapt to changing environments.

In this paper, we shed some light on this unresolved issue by empirically investigating the link between renegotiations and contract renewals. Because it is nearly impossible to assess how renegotiations influence contractual surplus, we use instead contract renewals as a proxy. The adoption of contract renewals allows us to assess indirectly parties' perceptions about their previous relationships, and ultimately their feelings of cooperative adaptation and contractual surplus creation during renegotiations. If all renegotiations result in a significantly negative outcome, parties are not prone to contract again. In this purpose, we use an original dataset of PPP contracts in the French car park sector which counts 666 PPP. Among these 666 contracts, we focus on the 252 that have expired. We codify each renegotiation and investigate their influence on the probability of renewing the contract with the same partner. In order to do so, we take into account a number of properties of contractual renegotiations (speed of the first renegotiation, frequency of renegotiations, number of renegotiated dimensions) as well as relevant control variables in two different subsamples, namely concession and public procurement contracts that differ on the discretionary power of the public administration to choose a co-contractor. A concern with our empirical strategy is that reverse causality might be a problem: the probability to be renewed might influence the willingness of the contracting parties to renege. We address this concern using an instrumental variables strategy and identify a set of exogenous shifters of renegotiation rates that are uncorrelated with the probability to be renewed.

Our results can be summarized as follows. In our concession contracts subsample (high level of discretion), our results highlight that there exist an optimal frequency of renegotiations, suggesting that renegotiating *per se* should not be interpreted as a sign of the failure of the relationship. This result is reinforced by the fact that, first, contracts that are not renegotiated at all are less renewed and, second, that the scope of renegotiations (*i.e.* the number of dimensions targeted by renegotiations) also influences the probability of renewal depending on the number of dimensions renegotiated. In addition, our econometric results show that while certain renegotiations clearly increase the probability of renewing a contract, others do not. Hence, our results suggest a positive, negative or neutral influence on contractual surplus depending on renegotiation types, frequencies and scopes considered when the public authorities have a certain amount of discretionary power over renewing with a private partner. Further, we find no evidence of a correlation between renegotiations and the probability of renewal in our public procurement subsample (no discretion).

We believe this paper contributes to the body of knowledge on contracts and renegotiations. Instead of examining the determinants of renegotiations as previous authors have (Guasch et al. [2008]), ours is the first study to focus on their consequences on contract renewal as an indirect measure of how they influence contractual surplus, thereby shedding some light on the consequences of renegotiations, not only on their sources. Second, our paper also contributes to the body of knowledge on contract renewal, which has so far been investigated as an incentive for investment strategies (Affuso and Newbery [2002], Gautier and Yvrande Billon [2013], Iossa and Rey [2013]). Instead, our study aims to bridge the research gap identified by Oxley and Silverman [2008] explicitly connecting renegotiations to performance effects, using contract renewal as a perceived performance measure. The remainder of this paper is organized as follows. The next section reviews the related literature on the issue of renegotiations. Section 3 describes the car parking sector and the main contractual arrangements considered herein. Section 4 presents the dataset and our empirical strategy. The results are presented and discussed in Section 5. We conclude with public policy implications and perspectives for future work in Section 6.

2 Related Literature

2.1 Renegotiations

Empirical studies have long pointed out that contracts are often renegotiated (e.g. Macaulay [1963]; MacNeil [1978]; Goldberg and Erickson [1987]) but consequences on contracts efficiency is still unresolved. At one end of the theoretical spectrum, incentive theory focuses on resolving adverse selection and moral hazard issues efficiently with a principal that must be able to commit not to renegotiate and to accept *ex post* inefficiencies. *Ex post* rent seeking should be tackled through renegotiation-proof contracts (Dewatripont [1989]) in order to avoid renegotiations that are leading to inefficiency (Gagnepain et al. [2013]).

At the other end of the spectrum, incomplete contract theory suggests that renegotiations are not only unavoidable but also beneficial when the private operator needs compensation to fund investments that were noncontractible *ex ante* and that become verifiable *ex post* (Grossman and Hart [1986]; Hart [1995]). Renegoti-

ations are then viewed as necessary adaptations to "fill in the contractual blanks".[1] Between these two views lies the perspective of transaction cost economics, which has long recognized that contracts are inefficient governance structures that must adapt to the complexity of the environment as well as the bounded rationality of economic actors. Renegotiations are thus viewed as necessary because of contracts' maladaptations, even though they remain a risky adaptation process that should recognize potential opportunistic behaviour (Crocker and Masten [1991], Crocker and Reynolds [1993], Saussier [2000]).

One means of circumventing the opportunistic behaviour associated with renegotiations is provided by repeated interactions. As underlined by relational contract theory, reputational concerns enhance cooperative behaviour throughout the duration of the relationship. Indeed, the fact that contracting parties interact repeatedly can "enforce" informal agreements, thereby reducing opportunistic behaviour because of the potential loss of future business (Baker et al. [2002], Gil and Marion [2009]). The relational view thus suggests that renegotiation might not be problematic as long as parties expect their contracts to be renewed if they respect the *spirit* of the contract (MacNeil [1978]) and that contracting parties renew their relationships as long as they are satisfied with their previous relationships.

Nonetheless, previous works provide few insights into how renegotiations influence contractual surplus, notably the specific question of the influence of the scope and types of renegotiation.

2.2 Renegotiations in PPP Contracts

Because they deal with services of general interest, PPP contracts and their renegotiations are scrutinized especially closely. Many examples of renegotiations in PPP agreements are provided by Guasch [2004]. By studying more than 1000 concession contracts signed in Latin American countries between the mid-1980s and 2000, he found that 78% of transportation contracts and 92% of water and

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[1]However, recent developments in incomplete contract theory put forward the behavioural assumption that incomplete contracts provide reference points for entitlements in *ex post* trade. Hart and Moore [2008] and Fehr et al. [2010]) do not assume anymore that trade becomes fully contractible *ex post*. They rather suppose that trading parties always have the possibility of performing perfunctorily (*i.e.* displaying shading behaviour) instead of consummately if they feel disgruntled at not receiving what they thought they were entitled to. This assumption implies that flexible contracts are likely to displease one party or the other and introduce a cost of renegotiation (shading behaviour).

sanitation contracts were renegotiated (see Table 1. The author's findings also confirmed that renegotiations occur shortly after the award (on average, 2.2 years after) and often, at first glance, favour the private party. Indeed, the most common outcomes of renegotiations are delays, tariff increases and a reduction in investment obligations, potentially reflecting the opportunistic behaviour displayed by private partners. 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 not to renegotiate and because firms only learn their types 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 (Guasch et al. [2007]) as well as renegotiations that enable incumbent governments to circumvent budgetary rules before elections (Engel et al. [2009a]). Nevertheless, whoever is at the origin of the renegotiation process, the scant empirical literature on renegotiations has underlined contrasting outcomes: Renegotiations are most frequently viewed as a game in which there is a winner and a loser (Estache [2006]) and less often as a win-win scenario for the two parties (De Brux [2010]). As pointed out by several empirical studies, renegotiation is the rule not the exception (See table 1). But few studies tried to collect information on contractual renegotiations to determinate their consequences

Insert Table 1 here

The only two econometric studies that have collected data to assess the influence of renegotiations are Bajari et al. [2006] and Gagnepain et al. [2013]. The first one looks at how anticipated cost of renegotiations influences the bids proposed by competitors. The authors found a positive correlation between bids level and the expected difficulty of renegotiating *ex post*. We depart from their approach because we examine how renegotiations influence the willingness of contracting parties to renew their relationship and we do not explore consequences at the bidding stage. The second one looks at how the renegotiation of transport contracts in France prevents regulators from achieving the full commitment efficient outcome. However, the authors do not studies renegotiations *per se*. What they call renegotiation is the fact that contractual parties decide not to renew their relationship. We depart from their approach by studying in details renegotiations during contracts life.

Our study, to our knowledge, is the first to analyze renegotiations in details and to study the consequences on the willingness of the contracting parties to continue their cooperation. In order to do so, we collected information from the French car park sector that is an ideal candidate for our study because of the structure of the market and the kinds of public private partnerships that are signed (i.e. with or without large discretion for the public authority).

3   Institutional Details about the French Car Park Sector

3.1   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 a 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 PPP arrangements. Public authorities in France have extensive experience relevant to PPP contracts in the car park sector: 73% of car parks are organized via outsourced management compared with 27% 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 bigger companies) and, more recently, between national and foreign operators (Baffray and Gattet [2009]). Consequently, when public authorities decide to use a PPP arrangement for the provision of car parks, they must select from among a number of national and international companies[2] as well as local firms. In addition to this fierce competition, a municipality may always decide to return to in-house provision when the contract ends. Car park management is a standardized service and contracting parties are not locked in through bilateral dependency at the contract renewal given that there is no human asset specificity needed to provide the services. Such an argument is best represented by the relatively low level of renewal rate in this sector (45% for concession and 78% for public procurement)

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[2]Vinci Park, Q-Park, Epolia, Efia, Interparking, Parking de France, UrbisPark, AutoCité and SAGS are the most frequent bidders in France.

compared with other sectors such as urban public transport ($\simeq 90\%$ in France (Amaral et al. [2008])) or water sector ($\simeq 90\%$ in France (Guérin-Schneider and Lorrain [2003])). The public authorities must also choose between concession and public procurement contracts when they decide to outsource, as discussed next.

3.2 Concession and Public Procurement Contracts

Concession and public procurement contracts mainly differ in terms of the discretion that is given to the public authority in order to choose its private partner. A relevant way to highlight this difference is to describe the way in which these two types of contractual arrangements are awarded. We start with the award of concession contracts. The first phase is a prequalification stage that enables private firms to become candidates. The opening is publicly advertised and anyone can apply. Then, candidates prequalify based on their experience and financial robustness. Second, the public authority must write the call for tenders, which specifies the objectives to be reached by the operator and selection criteria. Typical selection criteria include the acceptability 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. Thus, although the selection procedure for concession contracts seems to be rather formal, the public authority has the discretionary power to take into account a bidder's previous experience, bid quality and quality of negotiation in addition to financial criteria. When previous experience is a possible selection criterion, however, it is safe to assume that contracts are more likely to be renewed if the previous collaboration was successful.

In addition to discretionary power, another main characteristic of concession contracts is that the private operator bears the demand risk and thus it is remunerated with user fees. These contracts are also generally long-term, allowing private operators to invest in building or renovating the infrastructure as well as sufficient time to pay off the debt. The direct consequence is that long-run contracts are subject to the political, economic, social and technical changes that may occur during the execution of the contract. 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). Such changes may then involve adaptations to the service.[3]

Compared with concession contracts, the award procedure for public procurement contracts is stricter. It only includes one stage and features standard criteria (price is generally the unique one) and well defined tasks are delegated to the private operator. Thus, although the neutrality of the public authorities in such procedures cannot be proven, they do have less discretionary power than in concession contracts. In the French car parking sector, public procurement contracts mainly control the provision of the service rather than the construction of the infrastructure, while their duration is shorter than concession contracts. As they are short-term, less complex and more complete[4], 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 price alone (*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 recent 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.[5]

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[3]In addition, French legislation takes account of this need for renegotiations through the "mutability principle". The first judicial decision in 1910 concerned urban public transport but the principle was then generalized to all public services.

[4]The 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 councillors that proposes a contract framework that the public authorities are free to use.

[5]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 the contracts signed by the French market leader (42% market share among private operators; 30.6% total market share) between 1963 and 2008. Overall, we assessed 666 contracts with 135 public authorities.

We considered a contract to have been renegotiated when a revision that was not envisioned in the original contract occurred.[6] For instance, changes to tariffs, contract duration, investment levels or financial conditions were coded as contract renegotiations. Among the 666 investigated contracts, we paid particular attention to expired contracts in order to explore whether the sequence of renegotiations influenced their renewal. Given this inclusion criterion, we examined 252 (expired) contracts and their respective 782 renegotiations (we still used the other 414 contracts to construct the control variables). Among these 252 expired contracts, 131 (52%) were never renegotiated, implying that contractual amendments are somewhat typical. Further, we observed that 78% of expired public procurement contracts had been renewed compared with only 45% of concession contracts. These rates of contract renewal confirmed, as previously argued, that the public authorities have credible alternatives when contracts end. Table 2 highlights some stylized facts concerning the potential link between renegotiations and renewals for each type of contractual agreement.

Insert Table 2 here

Student *t*-tests confirmed the difference in the mean number of renegotiations between concession and public procurement contracts. We found that expired contracts that are renewed between the same partners were those that were previously the most renegotiated. However, the results of the Student *t*-tests did not allow us to conclude that the mean number of renegotiations between renewed and non-renewed contracts was statistically different for either contract type. This finding reinforced our view that the relationship between renegotiations and contract renewals requires refinement.

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[6]We use the words amendment and renegotiation interchangeably.

To summarize, 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, frequent renegotiations and the possibility of contract renewals.

4.2 Used Variables

Given the characteristics of the car parking sector and extent of our original dataset, we proposed a number of variables to explain how different aspects and characteristics of renegotiations influence the likelihood of contract renewal (summary statistics are provided in Table 3). In what follows, we formulate propositions on the expected signs when possible. We note that there is no single approach to the renegotiation of PPP agreements. Consequently, we do not test a specific model, but rather provide empirical results on the direct relevance of a number of the key ideas about renegotiations proposed by previous studies.

4.2.1 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 public procurement contracts, respectively. 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. A common explanation is that the parties are unwilling to contract again because of dissatisfaction in their previous relationship.

The information collected from our interviews with the head of the legal department of the car park company suggests that, in accordance with a high level of competition in this sector, the private operator always participates in call for tenders at contract renewal times. Thus, scenario (iii) is dismissed, and suggesting that the renewal decision is the sole responsibility of the public authority. But the choice of the partner's renewal could be dictated by bilateral dependency and/or the absence of other competitors. In other words, the probability of a public authority renewing with the same operator may depend on the existence of credible alternatives. However, because we focus on a sector characterized by a standard-

ized service and a high level of competition, we assume 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.

4.2.2 Independent variable

Renegotiation or no renegotiation   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 $NoReneg_i$ 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 with only 32.9% in the public procurement sample. This difference is mainly because public procurement contracts generally involve simpler unbundled tasks that give rise to shorter contract durations compared 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, because examining the occurrence of renegotiations is a crude measure (ignoring information on the frequency or types of renegotiations), we do not expect this variable to play a central role in the explanation of contract renewals.

Frequency of renegotiations   The frequency of renegotiations might influence contractual surplus and ultimately the willingness of parties to renew. 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. We capture the frequency of renegotiations with the variable $AverageReneg_i$. This represents the number of annual renegotiations in each contract i. The ratio of the number of renegotiations divided by the contract duration seems to be the most relevant measure because renegotiating four times over a two-year contract term is not the same as for a 20-year contract. We also include a squared term of our variable $AverageReneg_i$ in our regression in order to identify a potential nonlinear effect and thus, an optimal renegotiation rate. 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 expect this variable to play a role in the decision to renew contracts. We extend the analysis further. First, we focus on the renegotiation date. Second, although the variable $AverageReneg_i$ points us toward a noticeably finer measure of renegotiations, we follow the approach of Oxley and Silverman [2008] by differentiating renegotiations according to their type, which might influence the willingness of contracting parties to renew the contract to different extents.

Speed of the first renegotiation   In order to investigate in more detail the relationships between renegotiations and contract renewals, we pay attention to the speed of the first renegotiation. Indeed, speed can be used as a proxy for opportunism in the contractual relationship, as suggested by Guasch [2004]. Fast contract renegotiations after the initial agreement can reflect aggressive bidding and/or efforts to evade contractual obligations (*i.e.* the candidate voluntarily underestimates the costs of the service because it is confident in its ability to renegotiate contractual terms). They can also emerge because of the "winner's curse effect" (*i.e.* an overly optimistic winner is unable to keep its promises and calls for a revision of the contractual terms). In either case, we expect that the faster the first renegotiation, the lower the probability of contract renewal. In our sample, rapid renegotiation seems rare. In fact, only 5.2% of concession contracts and 7.7% of public procurement contracts were renegotiated during their first year of operation. Nevertheless, renegotiating during the first year varies depending on whether the contract lasts two or 20 years. Thus, in order to obtain a more relevant measure of the speed of the first renegotiation, we built the following variable:

$$Speed_i = \frac{1}{x} \quad \text{where} \quad x = \frac{[\text{Date of the first renegotiation} - \text{Date of Signature}] + 1}{\text{Duration}}$$

We divide the time lapse between the initial agreement and first renegotiation by the total duration of each contract i. As a result, the lower x, the faster the renegotiation. Afterwards we use the inverse of x. In this way, contracts that are never renegotiated are coded 0 and, for all renegotiated contracts, the higher $1/x$, the faster the first renegotiation.[7] As a consequence, if the speed of the first

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[7]The fact that expired contracts that were not renegotiated ($Speed_i$=0) are somewhat assimilated to contracts that are renegotiated at a very late stage ($Speed_i \rightarrow 0$) is controlled for by the presence of the variable $NoReneg_i$ in our regressions.

renegotiation is a sign of opportunism in the contractual relationship (Guasch [2004]), making the parties less prone to contract again, we should observe a negative coefficient associated with the variable $Speed_i$.

Renegotiated dimensions   To disentangle the effect of the frequency of renegotiations by contract type, we describe more precisely the objects of renegotiations by codifying the contractual dimension with which they are concerned. Then, we extract the frequency of renegotiations according to these dimensions. The variable $RenegTariffs_i$ represents the average number of annual renegotiations for each contract i that changes the tariffs charged to service users. Renegotiations on tariffs (which only occur in concession contracts) can take the form of an increase in tariffs and/or the implementation of specific tariffs for regular users (in this latter case, we also codified the renegotiation as $RenegQuality_i$ defined later). In public procurement contracts, by contrast, tariffs are decided by the public authority and the private operator has no payoff rights.

The variable $RenegInvestment_i$ stands for the average number of annual renegotiations for each contract i that concern additional investment unforeseen in the original contract. 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, which can make the public authority reluctant to contract again with the same operator. Thus, we cannot formulate expectations about the influence of this variable.

The variable $RenegQuality_i$ represents the average number of annual renegotiations in each contract i that improve service quality. This process of improvement might be accompanied by additional investment ($RenegInvestment_i$ here above), 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 $RenegFinanEq_i$ 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 asset. In public procurement contracts, these renegotiations lead to an increase in payment for the private

14

operator.

The variable $RenegDuration_i$ 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.

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.

The variable $RenegIndex_i$ stands for the average number of annual renegotiations in each contract i that relate to a change in the indexation clause to which a number of aspects of the contract may be attached. Indexation clauses are a function of different indexes, such as the workforce price index in the building trade and the price index of different materials (cement, concrete, etc.). It is generally foreseen in the original contracts that renegotiations will take place if price indexes disappear or if they no longer make sense for the contract. However, as these changes are not supposed to have specific implications for either party, they should not influence contractual surplus. Consequently, we expect this variable not to be significant, and the contrary result should cast doubt on the reliability of our dataset.

In addition of variable measuring renegotiation types, we believe that the scope of renegotiations is also relevant. In fact, in addition to the frequency of renegotiations, it is important to focus on the number of contractual dimensions influenced by *ex post* modifications. As the public authorities and private operators may have contradictory objectives, it may be easier for these diverging interests to meet if a number of dimensions are renegotiated. What one party loses in one dimension can be recovered in another dimension, thereby avoiding a zero-sum game. In other words, the larger the scope of renegotiations, the higher the probability of a contract being renewed. To take into account this relationship with scope, we built the variable $Scope_i$, which corresponds to the number of renegotiated dimensions of each contract i during its lifetime. $Scope_i$ is an ordinal variable that is equal to 0 when there is no renegotiation and equal to 5 if the contract i

relates to all the previously cited renegotiated dimensions (excluding *RenegIndex*).

Despite the thoroughness of our model construction, the foregoing renegotiation characteristics may not be the only relevant factors that influence contract renewal. In order to tackle this issue and to obtain a robust analysis of how renegotiations influence contract renewal, we also introduce a set of control variables that may play a role. As described in the next subsection, these variables take account of previous experience, perspective on future business and political influence, among others.

4.2.3   Control variables

Previous experience   As emphasized previously, the discretionary power of the public authorities allows them to take into account previous experience. However, previous experience is not limited to renegotiations of the studied contract: the municipality and the private operator can have previously shared other contracts. Thus, we include the variable $PastExperiences_i$, which stands for the number of other expired contracts the private operator had with municipality in the past. 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. Because this variable may reflect the skills developed by contracting partners in order to interact efficiently together, with low transaction costs, we expect this variable to influence positively the probability of a contract being renewed. To characterize this variable, we use the entire dataset (n = 666) rather than just expired contracts.

Future business and reputational concerns   As emphasised by relational contract theory, future business perspectives allow contracting parties to deter opportunism and encourage cooperative behaviour. Thus, we also take into account the influence of future business and reputational concerns by including two variables. The first, $MultiContract_i$, stands for the number of other ongoing car parking contracts the co-contractors share on 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 dataset, the private operator and municipalities share on average 1.6 contracts in addition to the studied contract.

Nevertheless, we also observe that they share one contract only in 43% of cases. The second variable, $SameArea_i$, stands for the number of other contracts the operator has with other public authorities in the same region on the expiry of each contract i. 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 for public procurement contracts, the private operator has almost five other ongoing contracts in the same region. We therefore expect these two variables to influence positively the probability of renewing a contract. To construct these two variables, our observations are based on all 666 contracts, namely the ongoing contracts as well as the expired ones.

Political dimensions   A number of authors have already pointed out the role of political dimensions in the decision to privatize public services.[8] Given this possible influence of political issues on contract renewal, we introduce *ChangeOf-Mayor_i*, which is a dummy variable that accounts for a change of mayor in the two years preceding the end of the contract. With this variable, we depart from previous studies, which take into account the influence of politics by focusing on the political allegiance of the public authority. There are two reasons why we feel that a change of mayor is a better proxy of political influence in the present setting. First, small municipalities frequently elect apolitical mayors who do not officially belong to a particular party. Second, but of primary importance, we think that more than a change of ideology (left wing vs. right wing), the most important element is a change of interlocutor, because this can represent a breach in the dialog between the operator and municipality. Furthermore, a change of political allegiance necessarily leads to a change of mayor, while a change of mayor can occur without a change of political allegiance. In our dataset, a change of mayor in the two years preceding the re-auctioning of the contract occurred 20 times for concession contracts (21.8%) and 17 times for public procurement contracts (10.7%). We therefore expect a breach in the dialog between interlocutors because of a change of mayor to influence negatively the likelihood of contract renewal.

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[8]See, for example, the theoretical analysis provided by Boycko et al. [1996] and the empirical analysis of local public services in the US by Lopez-De-Silanes and Chong [2004]

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 $Size_i$, 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, $Size_i$ 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 $AverageReneg_i$. The coefficient of this latter variable captures the influence of the frequency of renegotiations and cannot be imputed to contract duration. Further, 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 public procurement 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. Finally, as the estimation results could be driven by unobserved characteristics related to the municipalities and/or the sector, we control for this potential bias by introducing the variable $Year_i$, which stands for the year of the expiration of the contract i, and by clustering our data at the municipality level.[9]

Insert Table 3 here

4.3 Empirical strategy

Our goal is to explore how types, frequency and scope of renegotiations may influence cooperative adaptations over the contractual relationship and thus the likelihood of contract renewal. In order to do so, we estimate the following model:

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[9]Correlation matrix of all the variables are provided in Tables 7 and 8 in Appendix.

$$Z_{it}^* = X_{it}^{'}\alpha + Y_{it}^{'}\beta + \epsilon_i$$

where Z_{it}^* is the feeling of satisfaction concerning contract i at renewal date t, which is an unobserved latent variable. However, we consider the renewal decision to be an indicator of whether our latent variable Z_{it}^* is positive:

$$Renewed = \mathbf{1}_{\{Z^*>0\}} \Leftrightarrow \begin{cases} 1 \text{ if } Z^* > 0 \\ 0 \text{ otherwise} \end{cases}$$

Hence, our problem boils down to a probit estimation of the following model:

$$Renewed_{it} = a.X_{it} + b.Y_{it} + e_i$$

where $Renewed_{it}$ is the binary variable that indicates whether contract i is renewed at time t; X_{it} is a vector of variables that groups the different characteristics of renegotiations (*NoReneg, Speed, AverageReneg, Scope*, renegotiated dimensions); Y_{it} is a vector of control variables that may also influence contract renewal (*PastExperiences, MultiContract, SameArea, ChangeOfMayor, Size, Duration, Year*) and e_i is the error term (we assume that $e_{it} to(0, \Sigma)$). 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 (concession contracts)

Table 4 provides the results of our probit estimates for concession contracts. Model 1 is the simplest, and only includes the control variables and the dummy variable that indicates whether the contract was renegotiated (*NoReneg*). Models 2 to 5 successively incorporate each of the characteristics of renegotiations presented in Section 4; Model 5 includes all the described independent variables and allows us to reach a satisfying McFadden r^2 and a high predictive power (77.7% of correctly specified predictions).[10]

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[10]A naive prediction would allow us to obtain a rate of 56.3% at most. The predictive power of the fully specified model is also confirmed by Pearson and Hosmer-Lemeshow goodness-of-fit tests.

The results of the model estimations suggest that renegotiating a contract is not significantly correlated with the decision to renew it (Model 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 dimensions, frequency and speed. First, the estimation on the speed of the first renegotiation seems to confirm the arguments presented by Guasch [2004] and Estache [2006]. *Speed* is negatively and significantly correlated with the dependent variable *Renewed*, meaning that rapid renegotiation adversely influences the continuation of the relationship. This result is consistent with the idea that fast renegotiations can be a matter of aggressive bidding or of the winner's curse effect in the French car park sector.

Second, our results suggest that the frequency of renegotiations influences the probability of renewing with the same partner (Model 2). Indeed, we find that *AverageReneg* is significantly and positively correlated with the probability of renewing the contract with the same operator. Moreover, the squared term of this variable *AverageReneg* is significantly and negatively correlated with the dependent variable. This nonlinear effect of *AverageReneg* suggests the existence of an optimal frequency of renegotiations (See Figure 1). Here again, our 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. Nonetheless, 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.

In the following specifications (Models (3) to (5)), we explore the influence of the frequency of renegotiations by also taking into account their type. As expected, the degree of correlation depends on the dimensions concerned with contractual amendments. First, the coefficient associated with the variable *RenegQuality* is positive and significant across all estimates. 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 coefficient associated with the variable *RenegFinanEq* is negative and significant across all estimates. 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. Similarly, the negative influence found for renegotiations driven by the need for additional investment, as indicated by the negative and significant coefficient of the variable *RenegInvestment*, suggests that parties can feel prejudiced when they renegotiate on this aspect. As previously emphasized, 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. Surprisingly, however, the tariff renegotiation variable *RenegTariffs* is not significantly correlated with the renewal decision. However, as described in the previous section, tariffs are likely to be revised in two situations: (i) when the level of investment has to be increased or (ii) when the quality of the service is improved. Those two scenarii can explain why our variable *RenegTariffs* does not directly and significantly impacts the decision of contract renewal. Throughout, our results about the several types of renegotiations suggest that they impact differently on the relationship during the contract lifespan, conditioning the probability of contract renewal.

Our results also highlight that the scope of renegotiations matters in the case of concession. Indeed, the positive and significant sign associated with our variable *Scope* indicates that contracts have greater chance to be renewed when renegotiated dimensions are numerous. This effect is investigated in greater details in model 5 where we put a dummy for each possible "scope configuration" (*i.e.* number of different dimensions renegotiated during the contract lifetime). It appears that the probability of contract renewal is higher when contract are renegotiated on two, three or four dimensions rather than zero. It seems to suit the story according to which parties would prefer to contract again together when the previous contract was a win-win game, rather that a zero-sum game.

5.2 Other relevant variables (concession contracts)

The variable *PastExperiences* has a negative influence on the likelihood of contract renewal but this result is not stable across our econometric specifications. This finding comes as a surprise because it runs counter to the argument that learning and mutual understanding develop between parties over time. A possible explanation could be that the public authorities are not willing to remain with the same operator for too long in order to benefit from the advantage of competition and to avoid potential routine. The results concerning our variable *Build* are surprising as well. Contrary to our expectations, the construction of the infrastructure does not seem to provide a competitive advantage to the incumbent (contrary to previous results such as the study by Zupan [1989]).[11] On the contrary, our variables on future business and reputational concerns are more consistent with expectations. We observe that the variables *MultiContract* and *SameArea* have a positive and significant influence on the probability of contract renewal. 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 neighbouring 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, 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 *ChangeOfMayor*. From a strategic point of view, in order to differentiate him- or herself from the incumbent and or her make his opposition visible, the new mayor may be prone to changing the operator, irrespective of the quality of the new bid.

All these control variables allow us to check the robustness of the present results. However, other variables concerning the specific effects of cities or general evolution of the sector might be missing. Therefore, the main variables in our models could be correlated with those unobserved characteristics and mistakenly shown to have explanatory power. We consider this bias in two ways. First, we include *Year* in order to deal with general evolution in the car parking sector (such as an increase in competitive pressure). Second, we cluster our dataset at the city level in order to overcome the issue of municipalities' fixed effects. As observed in Table 4, we find that *Year* is not significant. Regressions without clustering (not

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[11]This result may be driven by the small number of cases in the dataset. The majority of contracts including construction are ongoing.

provided) lead to the same results with a slight loss of significance.

5.3   Discretionary power and contractual arrangements

As expected, our results do not hold for public procurement contracts (see Table 5).

Insert Table 5 here

One of the main differences between concession and public procurement contracts is the discretionary power of the public authority, which is typically expressed at the stage of award procedure as described in Subsection 3.2. While in concession procedures, there is room for negotiation and the consideration of previous experience, public procurement procedures are much more rigid. Thus, unsurprisingly, the results on the frequency, type and scope of renegotiation found for concession contracts largely disappear for public procurement contracts[12]

Nonetheless, the decisions taken by public authorities to renew a contract do not seem to be immune to relational aspects. Indeed, some aspects play a role in the decision to reaward a contract to the same operator: the variable *Speed*, for example, is significant and negatively correlated with the probability of renewal, while the same effect is found for *RenegFinanEq*. For the control variables, we obtain similar effects as in the case of concession contracts for the variables *ChangeOfMayor* (negative and significant correlation) and *SameArea* (positive and significant correlation).[13] Likewise, *Speed* and *RenegFinanEq* rely on the same possible explanation, namely that public procurement contracts are shorter term and more rigid than concession contracts. Moreover, because the tasks of the private operator are less complex and generally well defined, bidders are predominantly selected based on the price they propose to the market.[14] Consequently, proposing a low price can be an operational strategy for winning the contract, based

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[12]This finding is consistent with the statement by the Administrative Court of Paris previously mentioned, which sanctioned a public authority for disqualifying a competitor owing to a bad previous experience.

[13]Note that in the models of public procurement contracts, the variable *Built* disappears as well because there is no construction in the case of public procurement.

[14]This price is not to be confused with the fees charged to users.

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 again. These results thus seem to indicate that discretionary power and the relational effect are not completely absent from public procurement procedures. Even if public authorities are not allowed to use their discretionary power, at the risk of being pursued (e.g. our previous example of one public authority that has been sanctioned by the Administrative Court of Paris for disqualifying a competitor owing to a bad previous experience), our result suggest that they occasionally do. However, compared to concession contracts, such elements are clearly pushed to the background.

5.4 Addressing the endogeneity issue

Although we have argued that certain features of renegotiations influence the probability of the municipality renewing with the same operator, it is impossible to ignore the existence of reverse causality. Indeed, despite the illegality of such a procedure, one could easily argue that the decision of the municipality to renew the operator's contract actually drives renegotiations. Consequently, most of the coefficients discussed herein must be interpreted as correlations. Moreover, endogeneity may also come from unobserved, omitted sector and/or municipality characteristics. Therefore, further extensions must be made in order to find an *ad hoc* instrument to overcome the endogeneity issue of renegotiation frequency. One solution to endogeneity is to run an instrumental variable (IV) estimation procedure. Once potential endogenous variables have been identified, the standard procedure requires finding, in addition to the variables used in the previous estimations, appropriate IVs that are correlated with the endogenous regressor but uncorrelated with the error in the structural equation. In this subsection, we thus endogenize the frequency of renegotiations (*AverageReneg*).

To instrument the variable *AverageReneg*, we use three variables that initially motivate renegotiations during the contract lifetime but not the renewal decision of the public authority. The first IV, *LocalMarketPower*, estimates the market power of the private operator in each city on the date of signature. This variable corresponds to the number of car parks managed by the operator relative to the total number of car parks in the city and thus captures the potential bargaining power of the private operator. The second IV is the experience of the municipality in outsourcing public services. For each city, we calculate the difference

between the date of signature of each contract i and the date of signature of their first outsourcing of car park services. The resulting variable *ContractExperience* proxies for municipalities' know-how in creating more sophisticated contractual agreements that are less prone to renegotiation. We expect more experienced public authorities to be less prone to renegotiating their contracts.[15] The third IV, *VarOfGDP*, is variance in French GDP during the contract lifetime. Inspired from the argument of Guasch [2004] that contracts are more likely to be renegotiated during economic booms and busts, this variable is expected to be positively correlated with the frequency of renegotiations.

Table 6 presents the results of our IV-probit estimates. We observe that *Contract-Experience* is a good IV: there is a negative and significant correlation between this variable and the average number of renegotiations, meaning that more experimented municipalities are less likely to force a renegotiation. *LocalMarketPower* and *VarOfGDP* also are good IVs but these influence renegotiation frequency in the opposite direction (positive and significant correlation with *AverageReneg*). In the second stage of the estimation, we obtain a positive and significant correlation between the dependent variable *Renewed* and the instrumented variable *AverageReneg*, consistent with our previous results. We also observe that despite a slight loss of significance, the other independent variables retain the same effects as in the earlier probit estimates: *PastExperiences* and *ChangeOfMayor* negatively influence contract renewal, while *SameArea* and *MultiContract* are positive influences.

*** Insert Table 6 here ***

5.5 Alternative story: The possibility of corruption

One question not directly addressed in the present paper is whether the willingness of the contracting parties to renew a contract is the result of the contractual surplus generated by the relationship or whether it is driven by other factors such as corruption or collusion. Such possibilities merit some attention because our model incorporates neither a contract performance measure nor a user satisfaction index. In other words, the public authorities are implicitly assumed to be benevolent.

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[15] *ContractExperience* is distributed from 0 to 39, with a mean of 18.5 years and a standard deviation of 10.5 years.

However, this story does not fit with our results. If corruption was facilitating cooperative renegotiations and subsequently contract renewals, we should observe that the more frequent renegotiations are, the more corrupt the public authority is and the more willing both parties are to renew a contract. This is partly what we observe. However, in addition, we would expect public authorities to be indifferent to tariff increases, implying that frequent renegotiations over tariffs would not prevent contract renewals. Our results suggest the opposite. Notably, although the variable *RenegTariffs* is not always significant, the negative correlation between tariff renegotiations and the dependent variable *Renewed* suggests that contracts with frequent renegotiations over price increases have a lower probability of renewal, which matches the benevolence assumption.

6   Conclusion and Public Policy Implications

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 renegotiations are necessary adaptation processes that are punished (by non contract renewal) when they lead to unbalanced results between the contracting parties. We found out that the frequency of renegotiations, as well as the scope and the type of renegotiations impact on the willingness of the contracting parties to continue their relationship. These are original results because we paid particular attention to the effects of our targeted features of renegotiations on the likelihood of contractual renewal rather than simply assessing the occurrence of renegotiations.

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, most of 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. At a time when the European Union is attempting to establish a legal framework for the PPPs of its member states, we recommend not categorically rejecting the possibility of the public authorities using their discretionary power.

7 Tables and Figures

Table 1: Contractual renegotiations - Some studies

Geographical Area	Sector	% of renegotiated contracts	References
Latin and Caribbean America	All Sectors	68 %	Guasch (2004)
	Electricity	41 %	
	Transport	78 %	
	Water	92 %	
United States	Transport	40 %	Engel et al. (2011)
France	Highways	50 %	Athias and Saussier (2010)
United Kingdom	All Sectors	55 %	NAO (2001)

Table 2: Contractual agreements, renegotiations and renewal

	All Contracts	Delegated Management	Public Procurement
Number of expired contracts	252	94	158
Number of contract renewals	166	42	124
Rate of contract renewals	65.9	44.7	78.4
Average number of renegotiations per year of expired contracts	0.420	0.381	0.453
Average number of renegotiations per year of expired contracts leading to renewal	0.443	0.402	0.458
Average number of renegotiations per year of expired contracts not leading to renewal	0.391	0.364	0.433

Figure 1: Optimal level of Renegotiations

28
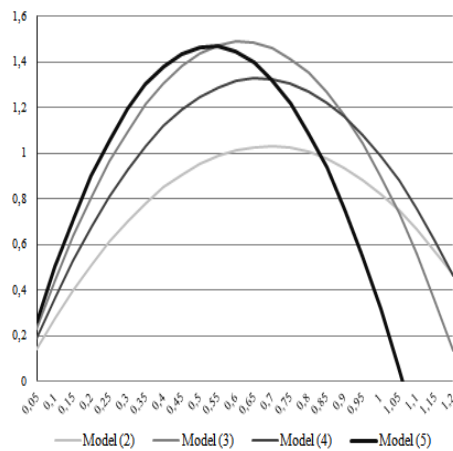
Table 3: Variables : descriptives statistics

Variables	Concession (N = 94)		Public Procurement (N = 158)	
	m	σ	m	σ
Renewed	0.45	0.50	0.78	0.41
NoReneg	0.27	0.44	0.67	0.47
Speed	3.83	4.95	0.61	1.31
AverageReneg	0.38	0.41	0.45	0.92
AverageReneg^2	0.31	0.75	1.05	5.40
RenegTariffs	0.05	0.16	0.02	0.18
RenegInvestment	0.05	0.12	0.05	0.21
RenegQuality	0.04	0.09	0.06	0.26
RenegDuration	0.14	0.23	0.21	0.80
RenegIndex	0.02	0.05	0.07	0.25
Scope	1.54	1.54	0.44	0.88
OneDimension	0.30	0.46	0.19	0.39
TwoDimensions	0.16	0.37	0.03	0.18
ThreeDimensions	0.07	0.26	0.00	0.00
FourDimensions	0.10	0.30	0.00	0.00
FiveDimensions	0.06	0.25	0.00	0.00
PastExperiences	2.02	2.26	2.53	3.11
MultiContract	0.67	0.47	0.54	0.50
SameArea	4.89	5.49	5.00	5.34
ChangeOfMayor	0.21	0.41	0.11	0.31
Year	2004	2	2005	2
Size	95797	119490	51839	52561
Build	0.17	0.38	0.00	0.00
Duration	14.99	10.82	2.30	2.18
MarketPower	0.38	0.25	0.49	0.27
ContractExperience	18.55	10.52	12.41	11.05
VarOfGDP	1.30	0.55	0.63	0.59

Table 4: Probit analysis of concession contracts renewals

	(1)	(2)	(3)	(4)	(5)	(6)
			Dependant variable : ***Renewed***			
NoReneg	-0.275	-0.430+	-0.089	-0.234	0.226	-0.067
	(0.213)	(0.248)	(0.282)	(0.235)	(0.264)	(0.485)
Speed		-0.047	-0.077*	-0.115**	-0.134**	-0.222***
		(0.034)	(0.033)	(0.039)	(0.045)	(0.063)
AverageReneg		-0.113	2.991***	4.848***	4.000***	5.545***
		(0.292)	(0.826)	(0.987)	(0.780)	(1.377)
AverageReneg^2			-2.168**	-3.947***	-3.012***	-5.228***
			(0.673)	(0.744)	(0.597)	(1.187)
Type of Renegotiations						
RenegTariffs				-2.133	-2.889	-2.156
				(2.302)	(2.439)	(1.790)
RenegInvestment				-2.363	-3.551*	-4.620**
				(1.583)	(1.556)	(1.749)
RenegQuality				11.738*	8.644*	13.675**
				(4.636)	(3.759)	(5.256)
RenegFinanEq				-17.512***	-20.454***	-29.649***
				(3.192)	(3.761)	(5.366)
RenegDuration				-0.455	-0.724	0.673
				(0.812)	(0.797)	(0.701)
RenegIndex				-5.165	-4.601	-4.859
				(4.986)	(5.022)	(5.037)
Scope of Renegotiations						
Scope					0.457***	
					(0.130)	
Scope=1						-0.608
						(0.488)
Scope=2						1.567+
						(0.807)
Scope=3						2.372**
						(0.883)
Scope=4						2.208**
						(0.764)
Scope=5						0.761
						(0.816)
Control Variables						
PastExperiences	-0.103	-0.121+	-0.149**	-0.060	-0.063	-0.135+
	(0.065)	(0.062)	(0.057)	(0.078)	(0.091)	(0.080)
MultiContract	0.725**	0.702*	0.570+	0.565+	0.737*	1.341*
	(0.279)	(0.303)	(0.305)	(0.365)	(0.365)	(0.522)
SameArea	0.085***	0.085***	0.091***	0.127***	0.126***	0.160***
	(0.021)	(0.022)	(0.023)	(0.033)	(0.033)	(0.042)
ChangeOfMayor	-0.628**	-0.661**	-0.576+	-0.618*	-0.731**	-1.135**
	(0.237)	(0.249)	(0.316)	(0.270)	(0.241)	(0.382)
Year	0.066	0.054	0.057	0.026	0.007	0.053
	(0.088)	(0.083)	(0.090)	(0.091)	(0.097)	(0.093)
Size	1.768	2.024	2.854	1.915	1.535	1.451
	(1.421)	(1.539)	(2.012)	(1.495)	(1.383)	(1.381)
Build	-0.439	-0.629	-0.717	-0.867+	-0.969*	-1.439**
	(0.569)	(0.596)	(0.584)	(0.522)	(0.477)	(0.494)
Duration	0.004	0.015	0.032+	0.042**	0.036*	0.056**
	(0.018)	(0.016)	(0.018)	(0.015)	(0.017)	(0.020)
Cluster	yes	yes	yes	yes	yes	yes
Intercept	-132.530	-109.042	-115.716	-53.356	-15.112	-108.406
	(176.773)	(167.308)	(181.151)	(181.954)	(193.957)	(187.451)
r^2	0.12	0.14	0.17	0.32	0.34	0.42
Predict	62.8	67	71.3	75.5	79.8	77.7
N	94	94	94	94	94	94

Level of significance: $^+$:15%, *:10%, **:5%, ***:1%.

Table 5: Probit analysis of public procurement contracts renewals

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependant variable : *Renewed*					
NoReneg	0.018	0.125	0.090	-0.033	0.040	1.066
	(0.413)	(0.436)	(0.469)	(0.705)	(1.115)	(0.983)
Speed		-0.174**	-0.168*	-0.156*	-0.164+	-0.168+
		(0.060)	(0.069)	(0.073)	(0.089)	(0.098)
AverageReneg		0.169	0.088	0.012	0.017	0.050
		(0.237)	(0.394)	(0.345)	(0.337)	(0.417)
AverageReneg^2			0.019	0.048	0.048	0.058
			(0.038)	(0.031)	(0.034)	(0.040)
Type of Renegotiations						
RenegTariffs				1.465	1.411	2.891
				(1.489)	(1.733)	(1.812)
RenegInvestment				-1.009	-1.070	-1.385
				(1.000)	(0.923)	(1.171)
RenegQuality				-0.562	-0.566	-0.946+
				(0.649)	(0.633)	(0.513)
RenegFinanEq				-2.943***	-2.975***	-2.572**
				(0.874)	(0.750)	(0.912)
RenegDuration				-0.259	-0.259	-0.350
				(0.345)	(0.345)	(0.368)
Scope of Renegotiations						
Scope					0.065	
					(0.460)	
Scope=1						1.195
						(1.087)
Scope=2						0.420
						(1.038)
Scope=3						.
						.
Control Variables						
PastExperiences	-0.032	-0.040	-0.040	-0.038	-0.037	-0.037
	(0.044)	(0.045)	(0.044)	(0.048)	(0.051)	(0.054)
MultiContract	-0.277	-0.357	-0.360	-0.287	-0.297	-0.267
	(0.251)	(0.228)	(0.227)	(0.314)	(0.356)	(0.332)
SameArea	0.024	0.029+	0.029+	0.037*	0.037*	0.035*
	(0.016)	(0.015)	(0.015)	(0.016)	(0.015)	(0.016)
ChangeOfMayor	-0.581	-0.632+	-0.628+	-0.585+	-0.588+	-0.530
	(0.443)	(0.379)	(0.378)	(0.351)	(0.347)	(0.439)
Year	0.078	0.105	0.104	0.042	0.040	0.063
	(0.063)	(0.085)	(0.085)	(0.102)	(0.105)	(0.103)
Size	-2.285	-1.477	-1.453	-2.187	-2.202	-3.183
	(2.410)	(2.454)	(2.471)	(2.457)	(2.442)	(2.318)
Duration	-0.070	0.008	0.005	-0.039	-0.039	-0.023
	(0.043)	(0.037)	(0.041)	(0.046)	(0.045)	(0.057)
Cluster	yes	yes	yes	yes	yes	yes
Intercept	-154.979	-208.493	-208.267	-81.966	-78.881	-126.236
	(127.284)	(170.158)	(170.833)	(204.480)	(209.620)	(206.853)
r^2	0.09	0.11	0.11	0.16	0.16	0.18
Predict	80.4	79.1	79.1	79.7	79.7	80.1
Observations	158	158	158	158	158	158

Level of significance: $^+$:15%, *:10%, **:5%, ***:1%.

Table 6: IV-probit Analysis

	1st **Stage** Dependant variable: **AverageReneg**	2nd **Stage** Dependant variable: **Renewed**
AverageReneg	.	2.554***
	.	(0.483)
NoReneg	-0.317***	0.573
	(0.078)	(0.422)
Speed	0.004 *	-0.035+
	(0.003)	(0.024)
PastExperiences	-0.007	-0.032
	(0.014)	(0.048)
MultiContract	-0.084	0.445**
	(0.113)	(0.198)
SameArea	-0.006**	0.057**
	(0.003)	(0.025)
ChangeOfMayor	-0.013	-0.361**
	(0.084)	(0.183)
Year	-0.006	0.083
	(0.012)	(0.080)
Size	0.535*	1.408
	(0.302)	(1.501)
Build	0.120*	-0.630**
	(0.065)	(0.305)
Duration	-0.018***	0.056***
	(0.003)	(0.015)
Instruments		
MarketPower	0.266*	.
	(0.145)	.
ContractExperience	-0.008**	.
	(0.004)	.
VarOfGDP	0.085**	.
	(0.040)	.
Intercept	12.178	-168.716
	(23.053)	(159.785)
AthRho (Wald Test)	-1.266**	.
	(0.506)	.
LnSigma	-1.166***	.
	(0.110)	.
r^2	0.34	0.15
Predict	.	60.6
N	94	94

Level of significance: [+]:15%, *:10%, **:5%, ***:1%.

8 Appendixm

Table 7: Correlations (Concession sample - N = 94)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.
1. Renewed																					
2. NoReneg	-0.105																				
3. Speed	-0.143	-0.133																			
4. AverageReneg	0.047	-0.437	-0.082																		
5. AverageReneg²	-0.056	-0.237	-0.110	0.886																	
6. RenegTariffs	-0.009	-0.204	0.058	0.648	0.764																
7. RenegInvestment	-0.054	-0.232	0.017	0.587	0.580	0.348															
8. RenegQuality	0.212	-0.288	0.196	0.406	0.243	0.534	0.363														
9. RenegDuration	0.006	-0.358	-0.205	0.599	0.428	0.038	0.081	-0.092													
10. RenegIndex	-0.130	-0.215	-0.115	0.160	0.046	-0.068	0.219	-0.082	0.076												
11. Scope	0.156	-0.605	0.367	0.453	0.286	0.383	0.528	0.676	0.076	0.027											
12. PastExperiences	-0.009	-0.016	-0.096	-0.106	-0.133	-0.137	-0.106	-0.109	-0.014	0.128	-0.096										
13. MultiContract	0.130	-0.192	-0.126	0.071	-0.063	-0.055	0.032	0.117	0.094	0.236	0.012	0.571									
14. SameArea	0.229	0.087	-0.130	0.037	0.108	0.059	-0.009	-0.181	-0.020	-0.073	-0.109	-0.109	-0.221								
15. ChangeOfMayor	-0.154	-0.019	0.097	-0.049	0.071	0.028	-0.049	-0.198	0.007	-0.067	-0.014	-0.051	-0.078	0.082							
16. Year	0.057	0.051	0.014	-0.207	-0.147	-0.197	-0.080	-0.057	-0.052	-0.194	-0.009	-0.088	-0.164	-0.049	-0.060						
17. Size	-0.008	-0.031	0.056	-0.082	-0.077	-0.147	-0.077	-0.076	0.118	-0.057	-0.016	0.493	0.319	-0.289	0.118	-0.036					
18. Build	-0.122	0.112	0.064	-0.288	-0.178	-0.142	-0.113	-0.154	-0.229	-0.143	-0.050	0.134	-0.044	-0.059	0.041	0.148	0.190				
19. Duration	-0.151	0.205	0.390	-0.498	-0.337	-0.172	-0.156	-0.118	-0.480	-0.230	-0.005	0.073	-0.135	-0.219	0.128	0.239	0.159	0.658			
20. MarketPower	0.176	-0.172	-0.139	0.286	0.195	0.325	0.015	0.161	0.129	-0.042	0.023	0.059	0.302	0.161	-0.212	-0.233	-0.431	-0.136	-0.261		
21. ContractExperience	-0.187	-0.129	0.179	-0.234	-0.173	-0.129	0.023	0.006	-0.228	-0.057	0.180	0.493	0.303	-0.382	0.040	-0.023	0.589	0.431	0.447	-0.278	
22. VarOfGDP	-0.082	-0.042	0.278	-0.137	-0.090	-0.004	0.037	0.001	-0.258	-0.161	0.192	0.050	0.052	-0.194	0.263	-0.377	0.129	0.293	0.448	-0.120	0.414

Table 8: Correlations (Public Procurement sample - N = 158)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
1. *Renewed*																				
2. *NoReneg*	0,043																			
3. *Speed*	-0,175	-0,349																		
4. *AverageReneg*	0,009	-0,553	0,107																	
5. *AverageReneg²*	0,033	-0,261	-0,017	0,857																
6. *RenegTariffs*	0,021	-0,198	0,032	0,260	0,132															
7. *RenegInvestment*	-0,052	-0,325	0,067	0,273	0,090	0,647														
8. *RenegQuality*	-0,039	-0,319	0,070	0,346	0,161	0,651	0,475													
9. *RenegDuration*	-0,033	-0,378	-0,019	0,742	0,826	0,185	0,157	0,108												
10. *RenegIndex*	0,148	-0,414	0,055	0,281	0,072	-0,024	0,089	-0,018	-0,028											
11. *Scope*	-0,116	-0,723	0,471	0,420	0,185	0,445	0,527	0,458	0,296	0,067										
12. *PastExperiences*	-0,117	0,028	-0,071	-0,078	-0,061	-0,059	-0,063	-0,065	-0,076	-0,009	-0,138									
13. *MultiContract*	-0,161	-0,065	-0,045	0,112	0,106	-0,020	-0,038	0,024	0,102	0,003	0,039	0,569								
14. *SameArea*	0,117	0,117	-0,059	-0,028	-0,025	0,166	0,051	0,060	0,024	-0,131	-0,045	-0,006	-0,107							
15. *ChangeOfMayor*	-0,136	-0,081	0,184	0,116	0,060	0,079	0,136	0,014	0,010	-0,012	0,167	-0,112	-0,028	-0,005						
16. *Year*	0,057	-0,175	0,074	-0,127	-0,166	-0,123	-0,101	-0,091	-0,129	0,178	0,057	0,332	0,059	-0,104	-0,121					
17. *Size*	-0,182	-0,088	0,120	-0,019	-0,056	0,000	0,020	0,014	-0,068	0,016	0,079	0,584	0,574	-0,144	-0,095	0,101				
18. *Duration*	-0,140	-0,234	0,658	-0,092	-0,113	-0,031	-0,013	-0,050	-0,138	-0,039	0,349	-0,073	-0,020	-0,159	0,208	0,011	0,111			
19. *MarketPower*	0,143	0,045	-0,100	0,103	0,223	-0,091	-0,120	-0,096	0,201	-0,067	-0,112	0,325	0,405	0,011	-0,095	0,107	-0,191	-0,107		
20. *ContractExperience*	-0,262	-0,077	0,119	0,000	-0,010	0,018	-0,045	-0,037	-0,018	-0,004	0,049	0,744	0,641	-0,176	0,026	0,234	0,724	0,171	0,156	
21. *VarOfGDP*	-0,126	-0,115	0,208	0,262	0,254	0,004	0,025	0,082	0,144	-0,053	0,169	0,076	0,117	0,074	0,304	-0,192	0,119	0,325	-0,055	0,122

35

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36

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