Renegotiations and Contract Renewals in PPPs. An Empirical Analysis

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Motivation: The puzzle about renegotiations

- In spite of the wide interest for public-private arrangements, the economic literature refers to renegotiation as the principal source of the mitigated success of PPPs[Guasch, 2004].

- Indeed, renegotiations would lead to:
  - Price increases
  - Delays
  - Reduction in investment obligations

- However, interviews with practitioners revealed that:
  - Yes, renegotiations are frequent
  - No, they do not systematically lead to a negative outcome

Motivation: The puzzle about renegotiations

- The theoretical literature is not a one-track approach…
  - Renegotiations as a lack of commitment [Guasch, Laffont, Straub, 2006, 2007]
  - Renegotiations as a way to implement innovation and share additional surplus [Hart, Shleifer, Vishny, 1997]
  - Renegotiations as a necessary but costly process due to maladaptations [Crocker, Reynolds, 1993; Saussier 2000]
  - Renegotiations are not an issue! [Baker, Gibbons, Murphy, 2002]
- …neither is the empirical literature
  - Renegotiations are studied for the trade-off between complete/incomplete contracts or flexible/rigid contracts [Crocker Masten 1991, Crocker Reynolds 1993, Bajari Houghton Tadelis 2007]
  - Summary statistics showing negative outcomes of renegotiations [Guasch 2004]
  - Case studies telling the story of win-win renegotiations [de Brux 2010]

Research question and method

- We investigate the impact of renegotiations on the satisfaction of parties and on contractual surplus
  - Surplus and parties'satisfaction are nearly impossible to assess
  - **Our assumption:** Contract renewal indirectly measures the satisfaction of parties from their previous contractual relationship
  - Parties who felt prejudiced during renegotiations are not willing to contract again together

  ➔ In Fact, we study the impact of **renegotiations** on **contract renewals.**

- Econometric study on an original data-set of 262 expired car park PPP contracts
- Originality:
  - The indirect measure of satisfaction
  - We do not study renegotiations *per se*, but several features of renegotiations

Why the Car Park Sector?

- Municipalities can delegate the construction and operation of their car parks through public-private arrangements (73% of PPPs in the sector)
  - Concession contracts: high discretionary power
  - Public procurement contracts: lower discretionary power

- A competitive market: 10 national operators + local ones
- A mature market

- Scope of the database:
  - Focus on 262 expired contracts/ 477 renegotiations/ 166 renewals
  - Contracts of 1 firm with 135 different municipalities
  - Signed betwwen 1969 and 2008

The different contractual arrangements

Type	Concession Contracts	Public procurement contracts
Discretionnary power of the public authority to award the contracts	High	Low
Number of expired contracts	94	159
Number of renewed Contracts	42	122
Number of renegotiations per year of non renewed contracts	0.35	0.42
Number of renegotiations per year of renewed contracts	0.40	0.45

Variables

What may explain the willingness of the parties to renew their contract together?

Features of renegotiations	Definitions
NO_RENEG	Occurrence of renegotiations during the contract or
CELERITY	Celerity of the 1rst renegotiation after signature
LAST	Proximity of the last renegotiation to expiration
AV_RENEG	Frequence of renegotiations
TYPES OF RENEG	*Tariffs, quality, indexation clause, additional investment, financial equilibrium, perimeter, duration*
SCOPE	Number of renegotiated dimensions

+ Control variables:

PAST_EXPERIENCE, RENEWEDt-1, SAME_AREA

MULTICONTRACT, CHANGE_OF_MAYOR,

Relational & reputational dimensions

YEAR, SIZE, BUILT

Econometric Specification

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

Where:

- $RENEWED_{it}$ is a binary variable that indicates whether the contract *i* is renewed or not at time *t*
- X_{it} is a vector of variables that groups the different features of renegotiations
- Y_{it} is a set of control variables
- e_i is the error term

Results for Concession Contracts

	Model 0 Probit	Model 1 Probit	Model 2 Probit	Model 3 Probit	Model 4 Probit	Model 5 Probit	Model 6 Probit
			Dependant variable : RENEWED				
NO_RENEG	-0.376+	-0.252	-0.020	-0.459**	0.896	0.932	0.561
	(0.230)	(0.316)	(0.255)	(0.211)	(0.526)	(0.331)	(1.078)
CELERITY		-0.049+				-0.154***	-0.451***
		(0.032)				(0.029)	(0.091)
LAST		0.052***				0.057***	0.148***
		(0.015)				(0.016)	(0.040)
AV_RENEG			2.823***			5.375***	11.239***
			(0.786)			(0.807)	(1.924)
AV_RENEG^2			-1.946***			-4.365***	-11.441***
			(0.630)			(1.159)	(2.690)
Type of Renegotiations							
REN_TARIFS				-4.058**		-2.408	4.177
				(2.041)		(2.827)	(4.497)
REN_INDEXATION				-2.989		-1.719	-4.072
				(5.881)		(4.853)	(3.618)
REN_INVESTMENT				-1.213		-4.808***	-6.040**
				(0.908)		(1.779)	(2.696)
REN_QUALITY				12.537***		12.458***	17.068***
				(4.261)		(3.144)	(4.497)
REN_FINAN_EQ				-18.274***		-30.447***	-49.997***
				(3.755)		(4.623)	(5.590)
REN_PERIMETER				-6.917		-13.272+	16.640
				(5.298)		(8.336)	(25.098)
REN_DURATION				0.349		0.613	5.406**
				(0.419)		(1.325)	(2.132)
Scope of Renegotiations							
DIMESIONS					0.987+	0.708***	
					(0.495)	(0.235)	
ONE_DIMENSION							-2.167**
							(0.889)
TWO_DIMENSIONS							1.728*
							(0.916)
THREE_DIMENSIONS							3.751***
							(1.129)
FOUR_DIMENSIONS							4.961***
							(1.343)
FIVE_DIMENSIONS							-0.730
							(2.306)
Control Variables							
CLUSTER	yes	yes	yes	yes	yes	yes	yes
INTERCEPT	-211.168	-131.702	-268.345+	-216.970	-243.483	-198.239	-568.516***
	(152.651)	(131.035)	(177.565)	(230.715)	(189.248)	(215.367)	(200.675)
R2	0.15	0.21	0.19	0.29	0.19	0.46	0.57
PREDICT	72.3	77.7	71.3	76.5	73.4	88.3	86.2
N	94	94	94	94	94	94	94

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

Results for Concession Contracts

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Probit	Probit	Probit	Probit	Probit	Probit	Probit
			Dependant variable : RENEWED				
NO_RENEG	-0.376+	-0.252	-0.020	-0.459**	0.696	0.932	0.561
	(0.230)	(0.316)	(0.255)	(0.211)	(0.526)	(0.331)	(1.078)
CELERITY		-0.049+				-0.154***	-0.451***
		(0.032)				(0.029)	(0.091)
LAST		0.052***				0.057***	0.148***
		(0.015)				(0.016)	(0.040)
AV_RENEG			2.823***			5.375***	11.239***
			(0.786)			(0.807)	(1.924)
AV_RENEG^2			-1.946***			-4.365***	-11.441***
			(0.630)			(1.159)	(2.690)
R2	0.15	0.21	0.19	0.29	0.19	0.46	0.57
PREDICT	72.3	77.7	71.3	75.5	73.4	88.3	86.2
N	94	94	94	94	94	94	94

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

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REN_TARIFS				-4.058**		-2.408	4.177
				(2.041)		(2.827)	(4.497)
REN_INDEXATION				-2.969		-1.719	-4.072
				(5.881)		(4.853)	(3.618)
REN_INVESTMENT				-1.213		-4.808***	-6.040**
				(0.908)		(1.779)	(2.696)
REN_QUALITY				12.537***		12.438***	17.068***
				(4.261)		(3.144)	(4.497)
REN_FINAN_EQ				-18.274***		-30.447***	-49.997***
				(3.755)		(4.623)	(5.590)
REN_PERIMETER				-6.917		-13.272+	16.640
				(5.298)		(8.336)	(25.098)
REN_DURATION				0.349		0.613	5.406**
				(0.419)		(1.325)	(2.132)
Scope of Renegotiations							
DIMESIONS					0.967+	0.706***	
					(0.495)	(0.235)	
ONE_DIMENSION							-2.167**
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TWO_DIMENSIONS							1.728*
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FIVE_DIMENSIONS							-0.730
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Control Variables							
CLUSTER	yes	yes	yes	yes	yes	yes	yes
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Results for Concession Contracts

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	(0.230)	(0.316)	(0.255)	(0.211)	(0.526)	(0.331)	(1.078)
CELERITY		-0.049+				-0.154***	-0.451***
		(0.032)				(0.029)	(0.091)
LAST		0.052***				0.057***	0.148***
		(0.015)				(0.016)	(0.040)
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AV_RENEG^2			-1.946***			-4.365***	-11.441***
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				(2.041)		(2.827)	(4.497)
REN_INDEXATION				-2.969		-1.719	-4.072
				(5.881)		(4.853)	(3.618)
REN_INVESTMENT				-1.213		-4.808***	-6.040**
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REN_QUALITY				12.537***		12.458***	17.068***
				(4.261)		(3.144)	(4.497)
REN_FINAN_EQ				-18.274***		-30.447***	-49.997***
				(3.755)		(4.623)	(5.590)
REN_PERIMETER				-6.917		-13.272+	16.640
				(5.298)		(8.336)	(25.098)
REN_DURATION				0.349		0.613	5.406**
				[illegible]		[illegible]	[illegible]
Scope of Renegotiations							
DIMESIONS					0.967+	0.706***	
					(0.495)	(0.235)	
ONE_DIMENSION							-2.167**
							(0.889)
TWO_DIMENSIONS							1.728*
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THREE_DIMENSIONS							3.751***
							(1.129)
FOUR_DIMENSIONS							4.961***
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FIVE_DIMENSIONS							-0.730
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Control variables							
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	(152.651)	(131.035)	(177.565)	(230.715)	(189.248)	(215.367)	(200.675)
R2	0.15	0.21	0.19	0.29	0.19	0.46	0.57
PREDICT	72.3	77.7	71.3	75.5	73.4	88.3	86.2
N	94	94	94	94	94	94	94

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

Results for Concession Contracts

	Model 0 Probit	Model 1 Probit	Model 2 Probit	Model 3 Probit	Model 4 Probit	Model 5 Probit	Model 6 Probit
				Dependant variable : RENEWED			
Scope of Renegotiations							
DIMESIONS					0.967+	0.706***	
					(0.495)	(0.235)	
ONE_DIMENSION							-2.167**
							(0.889)
TWO_DIMENSIONS							1.728*
							(0.916)
THREE_DIMENSIONS							3.751***
							(1.129)
FOUR_DIMENSIONS							4.961***
							(1.343)
FIVE_DIMENSIONS							-0.730
							(2.305)
R2	0.15	0.21	0.19	0.29	0.19	0.46	0.57
PREDICT	72.3	77.7	71.3	75.5	73.4	88.3	86.2
N	94	94	94	94	94	94	94

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

Results for Public Procurement Contracts

	Model 0 Probit	Model 1 Probit	Model 2 Probit	Model 3 Probit	Model 4 Probit	Model 5 Probit	Model 6 Probit
	Dependant variable : RENEWED						
NO_RENEG	0.062	-0.048	0.221	0.377	-0.545	0.396	0.789
	(0.381)	(0.392)	(0.449)	(0.323)	(0.392)	[illegible]	[illegible]
CELERITY		-0.166***				-0.227***	-0.224***
		(0.040)				(0.035)	(0.036)
LAST		0.014				0.031	0.063
		(0.079)				(0.072)	(0.108)
AV_RENEG			0.061			0.150	0.116
			(0.333)			(0.240)	(0.316)
AV_RENEG^2			0.044			0.030	0.027
			(0.089)			(0.023)	(0.020)
Type of Renegotiations							
REN_INVEST				-0.484		-0.538	-0.139
				(0.486)		(0.818)	(0.978)
REN_QUALITY				0.078		-0.278	-0.271
				[illegible]		[illegible]	[illegible]
REN_FINAN_EQ				-2.626***		-2.853***	-2.324***
				(0.756)		(0.717)	(0.628)
REN_DURATION				0.088		-0.181	-0.123
				(0.093)		(0.270)	(0.343)
Scope of Renegotiations							
DIMENSIONS					-0.654	0.166	
					(0.501)	(0.388)	
ONE_DIMENSION							0.445
							(1.595)
TWO_DIMENSIONS							0.071
							(1.880)
THREE_DIMENSIONS							.
							.
FOUR_DIMENSIONS							.
CLUSTER	yes	yes	yes	yes	yes	yes	yes
INTERCEPT	-100.636	-136.007	-130.930	-29.102	-112.932	-66.605	-120.898
	(137.572)	(138.065)	(158.260)	(180.804)	(140.334)	(192.996)	(169.772)
R^2	0.06	0.11	0.10	0.13	0.10	0.16	0.17
PREDICT	78.5	77.8	79.1	77.5	76.6	77.5	77.2
N	158	158	158	158	158	158	158

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

Results for Public Procurement Contracts

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Probit	Probit	Probit	Probit	Probit	Probit	Probit
			Dependant variable : RENEWED				
CELERITY		-0.166***				-0.227***	-0.224***
		(0.040)				(0.035)	(0.036)
Type of Renegotiations							
REN_FINAN_EQ				-2.626***		-2.853***	-2.324***
				(0.756)		(0.717)	(0.628)
CLUSTER	yes	yes	yes	yes	yes	yes	yes
INTERCEPT	-100.636	-136.007	-130.930	-29.102	-112.932	-66.605	-120.896
	(137.572)	(138.065)	(158.260)	(180.804)	(140.334)	(192.996)	(169.772)
R^2	0.09	0.11	0.10	0.13	0.10	0.16	0.17
PREDICT	78.5	77.8	79.1	77.5	76.6	77.5	77.2
N	158	158	158	158	158	158	158

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

Conclusion

- Summary of our results:

<u>When there is discretionary power</u>:
•There is an optimal level of renegotiations
•Some renegotiation types influence positively (negatively) the willingness of the parties to contract again together.
•The scope of renegotiations and the celerity of the first one matter as well.

No univocal effect of renegotiation

- We should not try to elaborate contracts that are rigid enough /complete enough to avoid renegotiations

- To Do List:
  - No data about users' satisfaction
  - No data about the content of other submitted bids
  - No data about the contracts that were not renewed

Control variables - Concessions

	Model 0 Probit	Model 1 Probit	Model 2 Probit	Model 3 Probit	Model 4 Probit	Model 5 Probit	Model 6 Probit
			Dependant variable : **RENEWED**				
Control Variables							
$RENEWED_{t-1}$	-1.101***	-0.877***	-1.588***	-1.560***	-1.203***	-2.318***	-4.431***
	(0.247)	(0.242)	(0.252)	(0.388)	(0.196)	(0.575)	(0.962)
PAST_EXPERIENCES	-0.081	-0.128	-0.063	0.012	-0.057	0.043	-0.161
	(0.084)	(0.093)	(0.078)	(0.097)	(0.078)	(0.100)	(0.121)
MULTICONTRACT	0.727**	0.842**	0.524*	0.745***	0.735**	0.527+	1.463**
	(0.318)	(0.415)	(0.305)	(0.232)	(0.310)	(0.347)	(0.570)
SAME_AREA	0.085***	0.093***	0.083***	0.130***	0.086***	0.149***	0.240***
	(0.032)	(0.029)	(0.029)	(0.038)	(0.031)	(0.035)	(0.049)
CHANGE_OF_MAYOR	-0.665***	-0.660***	-0.536*	-0.615**	-0.639***	-0.922***	-2.171***
	(0.254)	(0.195)	(0.320)	(0.246)	(0.248)	(0.194)	(0.356)
YEAR	0.099	0.059	0.134+	0.108	0.100	0.094	0.275**
	(0.070)	(0.061)	(0.089)	(0.109)	(0.078)	(0.107)	(0.111)
SIZE	1.465	1.767	1.738	0.377	1.212	0.310	-0.927
	(1.661)	(1.617)	(1.992)	(1.740)	(1.536)	(1.446)	(1.646)
BUILD	-0.509	-1.119***	-0.348	-0.494	-0.479	-1.045**	-1.956**
	(0.383)	(0.337)	(0.408)	(0.420)	(0.360)	(0.423)	(0.835)
CLUSTER_CITY	yes	yes	yes	yes	yes	yes	yes
INTERCEPT	-200.043	-118.648	-269.018+	-218.532	-202.372	-191.057	-554.297**
	(141.750)	(122.284)	(179.472)	(218.843)	(156.583)	(214.185)	(223.780)
R^2	0.14	0.21	0.19	0.28	0.16	0.45	0.57
PREDICT	72.3	74.5	71.3	72.3	74.5	84	85.1
N	96	96	96	96	96	96	96

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