Political Contestability and Contract Rigidity
An Analysis of Procurement Contracts

Jean Beuve
U. Paris 1 Panthéon-Sorbonne

Marian Moszoro
Harvard University

and
Stéphane Saussier
Sorbonne Business School

Paris Dauphine – March 21, 2016

1

The EPPP research group in Paris

- Public-private partnerships « at large »
- Many sectors
- Data
- Applied economics based on contract theories
  - Transaction costs
  - Incomplete contract theory
  - Relational contracts
  - Incentive theory
  - Many theories and many questions …<u>but few ingredients specific to public contracts</u>

Perception of Public Contracts

- inefficient
- low quality
- delays
- expensive
- corruption, favoritism
- bureaucratic, red tape

- politics
- intricate, convoluted
- scrutiny, regulation
- controls, inspections
- protests, courts
- specific, rule-based . . .
  formal and rigid

Are public contracts intrinsically different from private ones ?

Chaire Gouvernance et Régulation

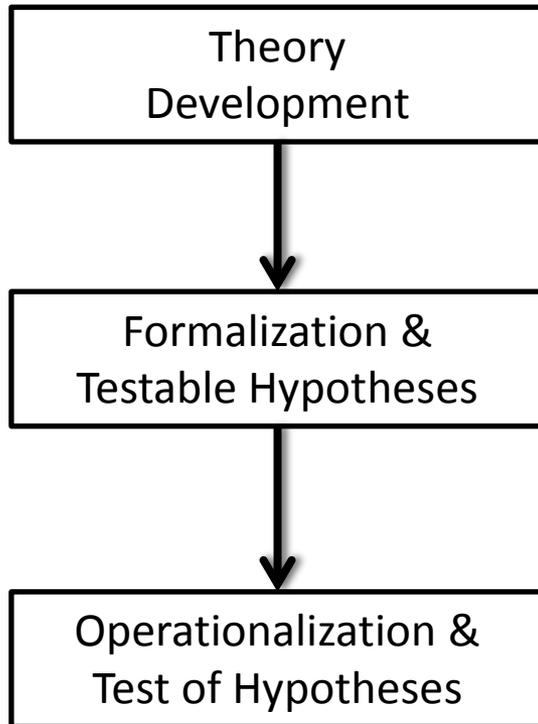# Public Contract Rigidity and Third Party Opportunism
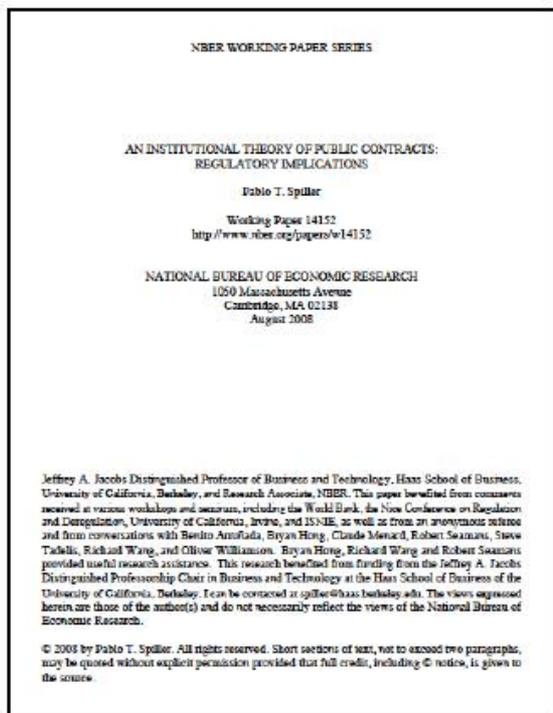
"A fundamental difference between private and public contracts is that public contracts are in the public sphere, and thus, although politics is normally not necessary to understand private contracting, it becomes fundamental to understanding public contracting"

(Spiller 2008, "An Institutional Theory of Public Contracts," NBER Working Paper 14152, p. 3)

- **Third-party opportunism (TPO)** prevents the use of relational contracts for public-private transactions
- **Political contestability** and **public scrutiny** are issues for public authorities → public contracts are rigid

Chaire Gouvernance et Régulation

4

Scholarly Progression: A Research Agenda

Theory Development	Spiller 2008: "*An Institutional Theory of Public Contracts*"
↓	
Formalization & Testable Hypotheses	Moszoro & Spiller 2012: "*Third-Party Opportunism and the Nature of Public Contracts*" Moszoro & Spiller 2014: "*Political Contestability, Scrutiny, and Public Contracting*"
↓	
Operationalization & Test of Hypotheses	Moszoro, Spiller & Stolorz 2013: "*Rigidity of Public Contracts*" Aneja, Moszoro & Spiller 2014: "*Political Bonds: Political Hazards and the Choice of Municipal Financing Instruments*" **Beuve, Moszoro & Saussier 2015: "*Political Contestability and Contract Rigidity: An Analysis of Procurement Contracts*"**

5

« TPO » in a Nutshell

- Mainstream contract theory deals with incentives and frictions of the (**two**) contracting parties
- There are **third parties** and some of them may be…

Figure: Monster-in-law
© Marian Moszoro

… not necessarily interested in the success of the relationship!
(political opponents, excluded bidders, and interest groups)

Moszoro & Spiller (2012) - Results

- Opportunistic challenges is a **key differential hazard** of public transactions

- Rigidity in public contracting is a political risk adaptation by public agents

  - Public agents **limit** the risk of third parties' challenges through formalities and rules

  - … **externalizing** the associated costs to the public at large

Public Oversight	×	Political Contestability ↑	=	Contractual Rigidity ↑

7

Contract rigidity

- What we call **"contract rigidity"** refers to rule-based (bureaucratic) implementation; *i.e.*, the addition of contractual provisions and specifications that impose *ex post* stiff enforcement, intolerance to adaptation, and penalties for deviation
  - Objective: **to reduce the probability of being challenged**

  Example is the city of Bordeaux water contract: 603 KPIs!

  Example is the City of Paris and the Velib' with penalties that were never applied leading to the renegotiation of the contract

  Example is St Etienne car parks contract: The contract is challenged on the fact that it is "*either a gift, or poorly negotiated.*"

Research Question and Propositions

- Are **public contracts more rigid** than private contracts?

- Testable predictions:
    1. Contracts subject to public scrutiny show more rigidity clauses than purely private (*i.e.* relational) contracts
    2. In the sub-sample of public contracts, rigidity increases with political contestability
    3. Public contracts are more frequently formally renegotiated

Data requirements

- The ideal experiment:
  - Public and private contracts for the same "standard" object
  - Sequence of contracts contracting parties write with each other with variation over time in "contestability" associated with one contracting party

- What we have:
  - Data concerning car park contracts signed between 1985 and 2009 in France.
    - One private operator
  - Data on local elections (every 6 years)
- There is only one contractor and car parks arguably entail a standardized product and service
  - A large part of the contractual heterogeneity comes from the procurers' characteristics and time-varying political contestability.

10

Why Car Park Contracts?

- **A relevant sector**

MATURE	**STANDARD**	**PUBLIC vs PRIVATE**
73% of car parks managed through PPPs	Few asset specificity Few bilateral dependency	Existence of public-public and public-private contracts

COMPETITION	**DIFFERENT TYPES OF CONTRACTS**	**POLITICAL CONTESTABILITY**
Growing competition (international and local operators) Credibility of outside option	Concession contracts Operating contracts Provision of services contracts	Political competition at the local level Public scrutiny **SEE NEXT SLIDE**

Are Car Park Contracts Politically Sensible?

- **Political contestability and public scrutiny**

LADEPECHE.fr

Castres. Parkings: l'opposition exige une renégociation

Publié le 19/12/2006 à 10:02

Politique. L'opposition municipale de gauche dit non au parking place Soult et annonce une pétition.
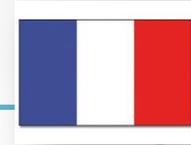
Car parks : the opposition requires a renegociation

5/07527820/020279601/053438
PK SABLONNIERE   ENT 1 SA
31/05/15 12:32
******

copé enfoiré de maire
voleur de maire

Copé, f*ing mayor, thief mayor**

Summary: Data & Propositions:

**Private partners
(24 Contractees)
47 contracts**

C1

C2

C3
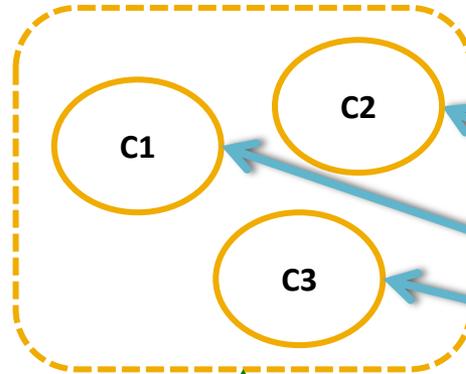
P1: Contracts subject to public scrutiny are more rigid than purely private relational contracts

P3: Public contracts more frequently rengotiated

One private contractor

M1

M2

M3

P2: Public contracts' rigidity rises in political contestability
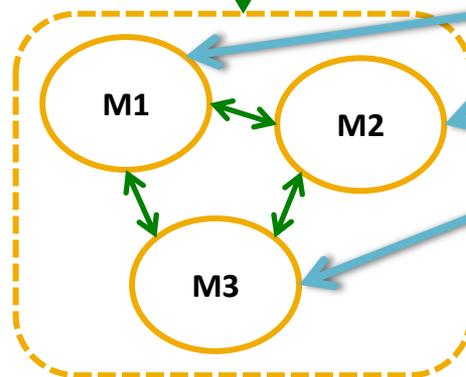
**396 contracts
793 amendments
Signed between
1985 and 2008**

**Public authorities
(152 Municipalities)
349 contracts**

13

Empirical Strategy

- **Public vs private Contracts**

Controls

$$Rigidity_{i,t} = \alpha + \beta Public_{i,t} + \sum_j \beta_j X_{i,t,j} + \epsilon_{i,t}$$
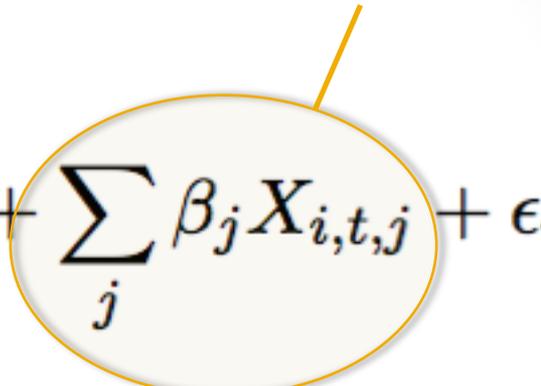
- **Political contestability within public contracts**

$$Rigidity_{i,t} = \alpha + \sum_j \beta_j X_{i,t,j} + \sum_k \beta_k Y_{i,t,k} + \epsilon_{i,t}$$

Pol. contestability
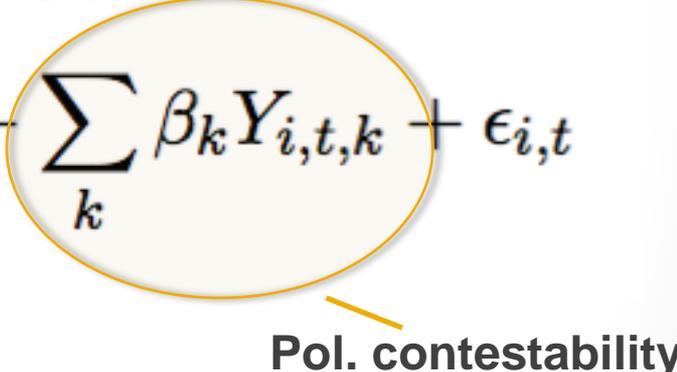
- **Frequency of amendments**

$$Average\_Amendments_{i,t} = \alpha + \beta Public_{i,t} + \sum_j \beta_j X_{i,t,j} + \epsilon_{i,t}$$

Chaire Gouvernance et Régulation

14

Dependent Variable: Contract Rigidity

- **Apply algorithmic data reading and textual analysis to compare the complexity of public contracts subject to public scrutiny with relational private contracts**

15

Keywords in Rigidity Categories: "Dictionaries"

Table 1: Keywords searched and grouped into contract rigidity categories.

Arbitration	appeal, arbitration, conciliation, guarantee, intervention, mediation, settlement, warranty, whereas[16]	10,241
Certification	certification, permit, regulation	3,263
Evaluation	accountability, control, covenant, obligation, quality, specification, scrutiny	8,090
Litigation	court, dispute, indictment, jury, lawsuit, litigation, pleading, prosecution, trial	2,479
Penalties	damage, fine, indemnification, penalty, sanction	5,431
Termination	breach, cancel, dissolution, separation, termination, unilateral	580
Contingencies	contingent, if, provided that, providing that, subject to, whenever, whether	4,488
Design	anticipation, event, scenario, plan	109
Total		34,681

Contract Rigidity at First Glance
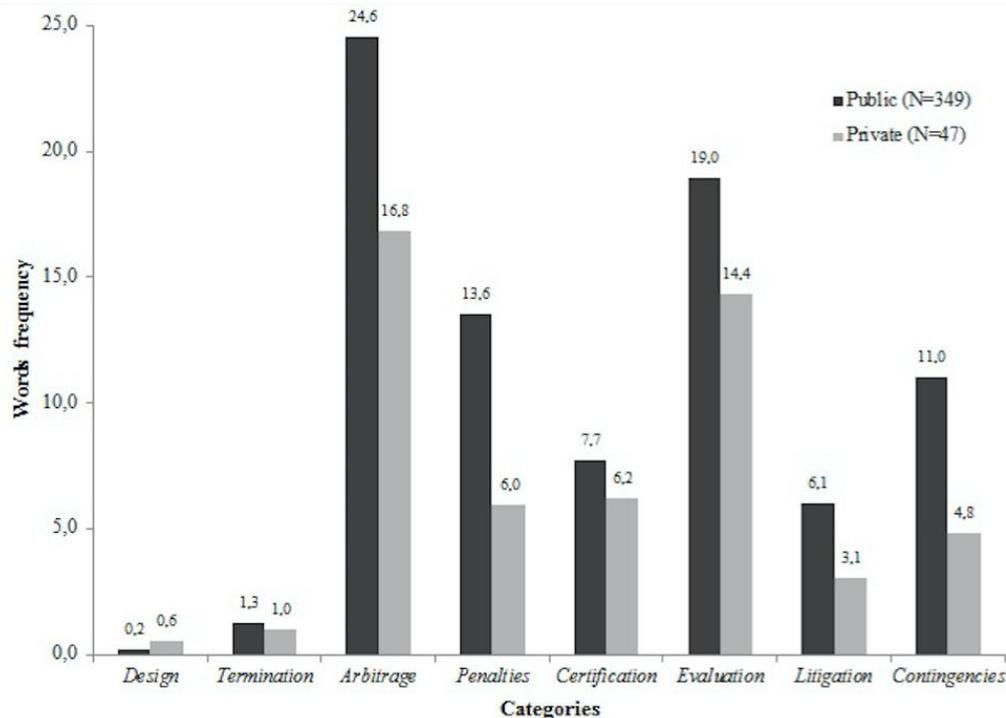
We used the normalized frequencies of word categories:

$$zArbitration = \frac{Arbitration - \mu}{\sigma}$$

And

$$xArbitration = \frac{Arbitration}{\ln(\text{total number of words})}$$

$$yArbitration = \frac{xArbitration - \mu}{\sigma}$$

$$zRigidity = zArbitration + zCertification + zEvaluation + zLitigation$$
$$+ zPenalties + zTermination + zContingencies + zDesign$$

17

Explanatory Variables

- Dummy Public versus Private (***Public***)

- Political Contestability
  - ***HHI***: Herfindahl-Hirschman Index of the first round of elections preceding the date of signature
  - ***Residual_HHI***: Concentration of all non-winning parties to measure the strength of the political opposition
  - ***Win_Margin***: Margin of victory between the winner and the runner-up party (+ ***Win_Margin²***)
  - ***Distance***: Time between the date of signature and the date of future election (+ ***Distance²***)

Control Variables

E.g.

- Type of contracts (***Concession , Operating***, ***Provision_of_Services***)

- Size of the city (number of ***Inhabitants***)

- Political color of the mayor (***Left_Wing*** vs ***Right_Wing***)

- ***Renewed*** contract (dummy)

- ***Past_Contracts*** – *number of contracts signed between the two parties since 1985*

- ***Trend***

- ***Past_experiences*** – number of years the two contractors know each other

- Participation to the election (***Election_participation***)

- Number of corruption cases at the city level three years before the contract signature (***Corruption***)

Results

20

P1: Public vs Private Contract Rigidity

Table 5: This table presents results from panel OLS regressions of two measures of global rigidity ($zRigidity$ and $yRigidity$) on contract characteristics and controls described in table 4. Clustered standard errors (at the department level) are in parentheses. Levels of significance: * 10%, ** 5%, and *** 1%.

Dependent variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
			$zRigidity$						$yRigidity$			
Public	10.878***	9.581**	9.366*	11.610***	10.245**	9.383*	11.723**	10.362**	10.193*	12.424**	11.013**	10.152*
	(4.049)	(4.056)	(5.271)	(4.339)	(4.174)	(5.340)	(4.444)	(4.424)	(5.718)	(4.768)	(4.563)	(5.791)
Renewed	-2.946	-2.819	-2.727	-3.079	-2.892	-2.731	-3.217	-3.084	-2.921	-3.184	-2.991	-2.782
	(2.127)	(2.138)	(2.021)	(2.421)	(2.387)	(2.194)	(2.284)	(2.298)	(2.129)	(2.556)	(2.519)	(2.295)
Provision_of_Services	-13.391***	-11.997***	-10.490***	-13.312***	-11.907***	-10.351**	-13.944***	-12.481***	-10.802***	-13.885***	-12.432***	-10.714**
	(2.960)	(3.150)	(3.578)	(3.374)	(3.613)	(4.105)	(3.185)	(3.388)	(3.821)	(3.626)	(3.882)	(4.391)
Concession	-0.917	-2.241	-1.179	-	-	-	-0.672	-2.060	-0.962	-	-	-
	(1.999)	(1.981)	(1.700)	-	-	-	(2.180)	(2.177)	(1.934)	-	-	-
Inhabitants	0.158	0.164	0.319	0.697	0.704	0.579	0.127	0.133	0.280	0.648	0.655	0.497
	(0.664)	(0.656)	(1.297)	(0.954)	(0.949)	(1.444)	(0.697)	(0.692)	(1.376)	(1.022)	(1.017)	(1.558)
Left_Wing	-0.235	-1.172	0.089	1.038	-0.230	0.841	-0.301	-1.284	0.018	1.015	-0.296	0.938
	(1.934)	(1.858)	(1.883)	(3.218)	(2.926)	(2.829)	(1.976)	(1.914)	(1.907)	(3.385)	(3.102)	(2.965)
Right_Wing	2.293	2.117	0.789	2.574	2.484	1.201	2.133	1.949	0.583	2.545	2.451	1.120
	(2.007)	(1.981)	(2.118)	(2.162)	(2.141)	(2.284)	(2.113)	(2.084)	(2.243)	(2.246)	(2.222)	(2.388)
Trend	0.523***	0.684***	0.685***	0.590**	0.765***	0.744***	0.558***	0.727***	0.728***	0.623**	0.804***	0.786***
	(0.159)	(0.163)	(0.165)	(0.243)	(0.251)	(0.256)	(0.172)	(0.174)	(0.177)	(0.263)	(0.270)	(0.274)
Duration	-	0.181**	0.180**	-	0.193**	0.200**	-	0.190**	0.188**	-	0.199**	0.206**
	-	(0.086)	(0.081)	-	(0.094)	(0.093)	-	(0.089)	(0.084)	-	(0.099)	(0.088)
Places	-	-	0.001***	-	-	0.001***	-	-	0.001***	-	-	0.001***
	-	-	(0.000)	-	-	(0.000)	-	-	(0.000)	-	-	(0.000)
Places^2	-	-	-0.000***	-	-	-0.000***	-	-	-0.000***	-	-	-0.000***
	-	-	(0.000)	-	-	(0.000)	-	-	(0.000)	-	-	(0.000)
Underground	-	-	3.050	-	-	2.827	-	-	3.537	-	-	3.339
	-	-	(2.038)	-	-	(2.138)	-	-	(2.119)	-	-	(2.237)
Both_Services	-	-	5.238*	-	-	5.300*	-	-	6.036*	-	-	6.111*
	-	-	(2.863)	-	-	(3.143)	-	-	(3.030)	-	-	(3.328)
Experience	-	-	0.065	-	-	0.072	-	-	0.052	-	-	0.062
	-	-	(0.137)	-	-	(0.155)	-	-	(0.143)	-	-	(0.162)
Past_Contracts	-	-	-0.135	-	-	-0.141	-	-	-0.125	-	-	-0.132
	-	-	(0.092)	-	-	(0.100)	-	-	(0.096)	-	-	(0.106)
N	396	396	393	306	306	303	396	396	393	306	306	303
r^2	0.160	0.170	0.224	0.174	0.184	0.242	0.159	0.169	0.226	0.171	0.180	0.242

Table 7: This table presents results from panel OLS regressions of two measures of global rigidity ($zRigidity$ and $yRigidity$) on contract characteristics, political contestability variables, and controls described in table 4 for **the subsample of public contracts**. Clustered standard errors (at the department level) are in parentheses. Levels of significance: * 10%, ** 5%, and *** 1%.

Dependent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	zRigidity				*yRigidity*			
Renewed	-2.782	-3.336	-3.025	-3.050	-3.019	-3.676	-3.269	-3.334
	(2.683)	(2.878)	(2.766)	(2.822)	(2.830)	(3.024)	(2.911)	(2.949)
Provision_of_Services	-10.651***	-10.706***	-10.435***	-10.510***	-11.007***	-11.006***	-10.782***	-10.797***
	(2.965)	(3.023)	(3.021)	(3.001)	(3.103)	(3.147)	(3.159)	(3.123)
Concession	-1.243	-1.977	-1.751	-1.625	-1.125	-1.900	-1.632	-1.500
	(2.306)	(2.243)	(2.287)	(2.210)	(2.468)	(2.379)	(2.440)	(2.359)
Inhabitants	0.423	1.544	0.926	1.340	0.422	1.565	0.918	1.329
	(1.370)	(1.486)	(1.366)	(1.446)	(1.390)	(1.518)	(1.387)	(1.467)

(…)

Political Contestability Variables

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
HHI	-17.266**	-	-	-	-17.035**	-	-	-
	(6.667)				(6.856)			
Residual_HHI	-	8.223*	-	-	-	9.437**	-	-
	-	(4.193)	-	-	-	(4.391)	-	-
Win_Margin	-	-	0.224*	-	-	-	0.230*	-
	-	-	(0.123)	-	-	-	(0.129)	-
Win_Margin^2	-	-	-0.004***	-	-	-	-0.004***	-
	-	-	(0.001)	-	-	-	(0.001)	-
Distance	-	-	-	-2.662*	-	-	-	-2.968**
	-	-	-	(1.393)	-	-	-	(1.439)
Distance^2	-	-	-	0.387*	-	-	-	0.430*
	-	-	-	(0.226)	-	-	-	(0.234)
N	300	300	300	300	300	300	300	300
r^2	0.265	0.268	0.276	0.263	0.266	0.272	0.276	0.266

Election participation & corruption added

Table 8: This table presents results from panel OLS regressions of two measures of global rigidity ($zRigidity$ and $yRigidity$) on contract characteristics, political contestability variables, and controls described in table 4 for **the subsample of private contracts**. Clustered standard errors (at the department level) are in parentheses. Levels of significance: * 10%, ** 5%, and *** 1%.

Dependent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
		zRigidity				*yRigidity*		
Renewed	9.436	-15.537	8.310	12.263	9.736	-17.175	8.602	12.766
	(10.111)	(16.574)	(13.196)	(10.368)	(10.907)	(17.951)	(14.257)	(11.017)
Provision_of_Services	15.308	11.708	28.853**	26.229**	14.468	10.590	28.747**	26.509**
	(9.000)	(12.789)	(11.685)	(9.541)	(9.520)	(13.637)	(13.108)	(9.924)
Concession	16.387	-6.566	10.352	-2.356	18.392	-6.348	11.947	-2.117
	(10.614)	(11.070)	(10.971)	(4.858)	(11.530)	(12.002)	(11.931)	(5.553)
Inhabitants	-2.469	-11.989	-5.261	-5.456	-2.816	-13.080	-5.845	-6.014
	(2.802)	(7.825)	(5.212)	(5.432)	(3.058)	(8.488)	(5.690)	(5.888)

(…)

Political Contestability Variables								
HHI	123.745	-	-	-	133.506	-	-	-
	(101.934)	-	-	-	(109.580)	-	-	-
Residual_HHI	-	85.043	-	-	-	91.646	-	-
	-	(49.194)	-	-	-	(53.089)	-	-
Win_Margin	-	-	1.823	-	-	-	1.915	-
	-	-	(1.378)	-	-	-	(1.516)	-
Win_Margin^2	-	-	-0.024	-	-	-	-0.025	-
	-	-	(0.028)	-	-	-	(0.031)	-
Distance	-	-	-	6.003	-	-	-	6.438
	-	-	-	(7.941)	-	-	-	(8.456)
Distance^2	-	-	-	0.022	-	-	-	0.053
	-	-	-	(0.965)	-	-	-	(1.015)
N	47	47	47	47	47	47	47	47
r^2	0.431	0.428	0.312	0.354	0.431	0.429	0.309	0.360

Table 9: This table presents results from panel OLS regressions of two measures of global rigidity ($zRigidity$ and $yRigidity$) on contract characteristics, political contestability variables, and controls described in table 4 for the **whole sample of public and private contracts**. Clustered standard errors (at the department level) are in parentheses. Levels of significance: * 10%, ** 5%, and *** 1%.

Dependent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
		$zRigidity$				$yRigidity$		
Renewed	-2.602	-4.004	-3.323	-3.241	-2.845	-4.393*	-3.576	-3.525
	(2.232)	(2.511)	(2.308)	(2.322)	(2.336)	(2.614)	(2.427)	(2.400)
Provision_of_Services	-3.630	-3.643	-3.332	-3.557	-3.768	-3.751	-3.426	-3.653
	(2.672)	(2.716)	(2.494)	(2.735)	(2.813)	(2.854)	(2.618)	(2.872)
Concession	-0.260	-1.254	-0.803	-1.024	-0.094	-1.154	-0.630	-0.875
	(2.475)	(2.234)	(2.407)	(2.329)	(2.673)	(2.382)	(2.584)	(2.498)
Inhabitants	0.901	-0.362	-0.225	0.283	0.942	-0.497	-0.314	0.227
	(1.054)	(1.873)	(1.404)	(1.301)	(1.064)	(2.012)	(1.489)	(1.359)
				(...)				

Political Contestability Variables

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
HHI	-13.884*	-	-	-	-13.369	-	-	-
	(7.913)	-	-	-	(8.181)	-	-	-
HHI*Private	103.023	-	-	-	110.336	-	-	-
	(79.573)	-	-	-	(86.234)	-	-	-
Residual_HHI	-	9.180**	-	-	-	10.434**	-	-
	-	(4.175)	-	-	-	(4.339)	-	-
Residual_HHI*Private	-	11.188	-	-	-	12.458	-	-
	-	(31.654)	-	-	-	(33.601)	-	-
Win_Margin	-	-	0.232*	-	-	-	0.238*	-
	-	-	(0.130)	-	-	-	(0.136)	-
Win_Margin^2	-	-	-0.005***	-	-	-	-0.005***	-
	-	-	(0.001)	-	-	-	(0.001)	-
Win_Margin*Private	-	-	0.844	-	-	-	0.978	-
	-	-	(1.142)	-	-	-	(1.244)	-
Win_Margin^2 *Private	-	-	-0.010	-	-	-	-0.012	-
	-	-	(0.020)	-	-	-	(0.021)	-
Distance*Private	-	-	-	0.047	-	-	-	-0.017
	-	-	-	(5.250)	-	-	-	(5.633)
Distance	-	-	-	-2.836*	-	-	-	-3.116*
	-	-	-	(1.617)	-	-	-	(1.668)
$Distance^2$	-	-	-	0.372	-	-	-	0.412
	-	-	-	(0.276)	-	-	-	(0.288)
$Distance^2$ *Private	-	-	-	0.282	-	-	-	0.323
	-	-	-	(0.850)	-	-	-	(0.921)
N	347	347	347	347	347	347	347	347
r^2	0.222	0.195	0.208	0.190	0.226	0.200	0.212	0.194

P3: Frequency of Contract Renegotiations

- Public contract should be renegotiated more frequently through formal amendments than private ones (*i.e.* no relational contract)

- "*When faced with unforeseen or unexpected circumstances, private parties, as long as the relation remains worthwhile, adjust their required performance without the need for costly renegotiation or formal recontracting*"

    (Spiller 2008, page 1)

P3: Frequency of Contract Renegotiations

Table 10: This table presents results from panel OLS and 2SLS regressions of average number of amendements (*Average_Amendements*) on contract characteristics and controls described in table 4. In models 4 and 5, the variables used to instrument *zRigidity* are the winning margin and the type of contract. Clustered standard errors (at the department level) are in parentheses. Levels of significance: * 10%, ** 5%, and *** 1%.

	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent Variable			AverageReneg		
	OLS	OLS	OLS	2SLS	2SLS
Public	0.107*	0.100*	0.121*	0.172*	0.208*
	(0.059)	(0.059)	(0.063)	(0.100)	(0.114)
Renewed	-0.160***	-0.151***	-0.152***	-0.163***	-0.163***
	(0.045)	(0.044)	(0.053)	(0.055)	(0.064)
Inhabitants	0.009	0.012	0.027	0.030	0.043
	(0.020)	(0.019)	(0.020)	(0.025)	(0.029)
Left_Wing	-0.006	-0.009	-0.052	-0.032	-0.060
	(0.031)	(0.035)	(0.069)	(0.055)	(0.085)
Right_Wing	0.024	0.032	0.032	0.038	0.042
	(0.050)	(0.050)	(0.056)	(0.056)	(0.063)
Duration	-0.010***	-0.009***	-0.011***	-0.009***	-0.009***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Places	-0.000	-0.000	-0.000	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Places^2	0.000	0.000	0.000	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Underground	-0.055	-0.064	-0.051	-0.018	0.002
	(0.050)	(0.051)	(0.058)	(0.053)	(0.058)
Both_Services	0.000	0.004	0.002	0.043	0.042
	(0.052)	(0.055)	(0.061)	(0.066)	(0.067)
Experience	-0.000	-0.000	-0.000	0.002	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Past_Contracts	-0.004*	-0.004*	-0.005**	-0.013**	-0.012**
	(0.002)	(0.002)	(0.002)	(0.006)	(0.006)
Provision_of_Services	0.043	0.057	0.068*	-	-
	(0.040)	(0.039)	(0.038)	-	-
Concession	-0.019	-0.017	-	-	-
	(0.038)	(0.040)	-	-	-
Election_Participation	-	-0.094	0.044	0.159	0.168
	-	(0.276)	(0.345)	(0.325)	(0.377)
Corruption	-	0.003	0.001	-0.058	-0.074
	-	(0.012)	(0.021)	(0.048)	(0.047)
Trend	-0.019***	-0.020***	-0.023***	-0.015***	-0.017***
	(0.004)	(0.004)	(0.005)	(0.004)	(0.006)
zRigidity	-	-	-	-0.007*	-0.008*
	-	-	-	(0.004)	(0.004)
N	393	393	303	347	294
r^2	0.199	0.201	0.192	0.170	0.141

"Such high rates of contract renegotiation have raised serious questions about the viability of the concession model in developing countries." Guasch et al. [2008, p. 421]

Vs.

"In a sense, [...] the frequency of contract renegotiation may provide concessions a 'relational' quality" [Spiller, 2008, p. 22].

Discussion and Conclusion

Limitations

- Algorithmic textual analysis imperfect interpretation
  - Algorithmic textual analysis is still in its early stage and is not yet close to human interpretation, especially when it comes to legal nuances!
  - But, strong results we obtained even with imperfect methods, are indicative that correlations are not spurious.
  - Better algorithms and "dictionaries" in the future will corroborate these findings

- Corruption as confounding factor
  - Not much relevant to our setting ; **Corruption** *is* never significant

- Omitted variables: demand stochasticity and prices
  - No data; year and geographic fixed effects

28

Thank you

29

Additional Material

		All sample			
	N	μ	σ	min	max
Public	396	0.88	0.32	0.00	1.00
zRigidity	396	2.21	16.31	-27.64	80.22
zDesign	396	0.04	1.52	-0.50	13.55
zTermination	396	0.08	3.43	-2.40	24.02
zArbitrage	396	0.50	3.61	-4.77	21.13
zPenalties	396	0.43	3.61	-4.75	20.60
zCertification	396	0.34	3.21	-3.00	18.25
zEvaluation	396	0.50	4.24	-5.61	24.11
zLitigation	396	0.28	3.55	-4.63	19.36
zContingencies	396	0.04	2.76	-2.45	17.64
yTotRigid	396	2.22	17.18	-27.24	87.73
Renewed	396	0.16	0.37	0.00	1.00
Inhabitants	396	10.83	1.59	8.09	14.08
Left_Wing	396	0.15	0.35	0.00	1.00
Right_Wing	396	0.28	0.45	0.00	1.00
Trend	396	2 000	7.41	1 985	2 009
Duration	396	15.00	15.12	1.00	65.00
Places	393	1 694	12 297	9.00	241 600
Experience	396	9.85	12.33	0.00	46.00
Past_Contracts	396	5.46	13.07	0.00	68.00
Average_Amendments	396	0.19	0.33	0.00	2.00
Election_Participation	329	0.59	0.08	0.35	0.90
Corruption	347	0,24	0,79	0,00	5,00
HHI	347	0,39	0,12	0,20	1,00
Residual_HHI	347	0,42	0,25	0,00	1,00
Win_Margin	347	20,82	16,30	0,15	100,00
Distance	347	2,60	2,61	0,00	6,00