



PPPs – Review of Empirical Literature

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ERSA Summer School 2010, Stockholm
Training session 9, 13.08.2010



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PPPs – Review of Empirical Literature

1. PPP Data and PPP Market in Europe
2. Determinants of PPPs
3. Construction Costs
4. Renegotiation
5. Open Issues



Empirical Literature on PPPs

- ❖ Hodge and Greve (2009): overview on literature on performance of PPP projects

- ❖ Few quantitative studies on PPPs
 - ❖ Blanc-Brude et.al (2006): only considers construction costs
 - ❖ Guasch (2003): Renegotiation

- ❖ Overview papers
 - ❖ E.g. Kappeler and Nemoz (2010): PPP market in Europe
 - ❖ Hodge and Greve (2009): literature review on performance of PPP projects

- ❖ Case studies
 - ❖ Pollitt (2002)
 - ❖ Pollock (2007)



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1. Data availability - Public and private sources

❖ **Commercial databases**

- ❖ Infrastructure Journal, IJ: more than 5000 transactions
 - ❖ <http://www.ijonline.com/genv2/Secured/Data/DataLandingPage.aspx>
- ❖ Projectware: More than 1600 PPP projects in Europe, and many more non PPPs and outside Europe

❖ **Publicly available databases**

- ❖ HMT: UK data only, but investment flows available
 - ❖ http://www.hm-treasury.gov.uk/ppp_policy_team.htm
- ❖ Irish Government Public Private Partnership (PPP) website
 - ❖ <http://www.ppp.gov.ie/>
- ❖ World Bank PPI (all investment in infrastructure with private involvement)
 - ❖ http://ppi.worldbank.org/resources/ppi_faq.aspx



1. European PPP database (Kappeler and Nemoz (2010))

- **Data mainly from ProjectWare and Infrastructure Journal**
 - cross-checked by EPEC/against EIB own project files

- **Project value: total investment commitment at financial close**

- **Difficulties:**
 - PPP often treated as sub-category of project finance deals
 - Non-project financed deals are often not included
 - Re-financings sometimes included (risk of double counting)

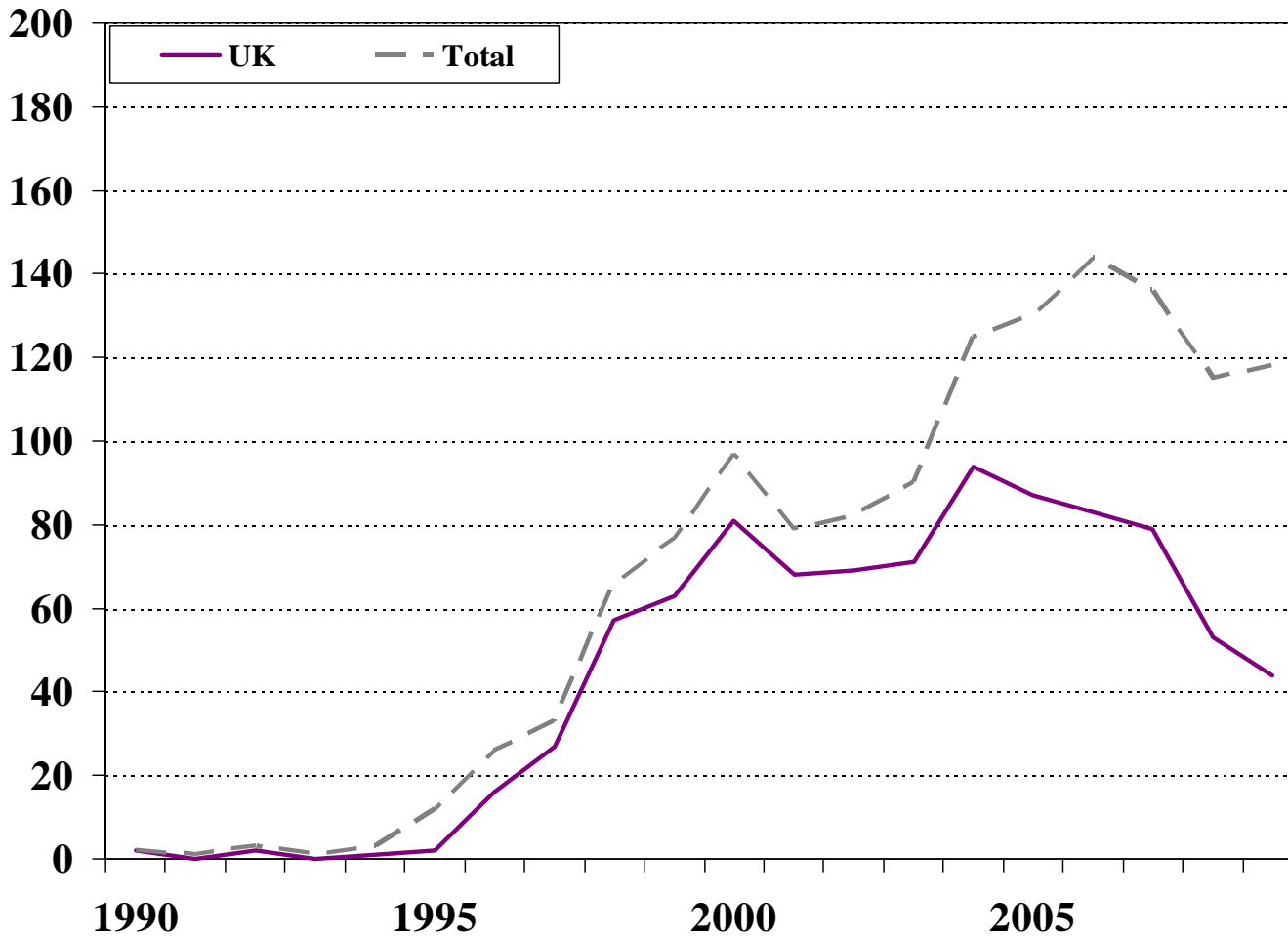
 - Data refer to total financing requirements of PPPs
 - **stock** and **flow** variables not directly comparable
 - (e.g. government investment)

 - Classification of PPPs as public/private investment ambiguous
 - Makes it difficult to assess their significance



1. European PPP market: growing and diversifying

Number of deals reaching financial close per year

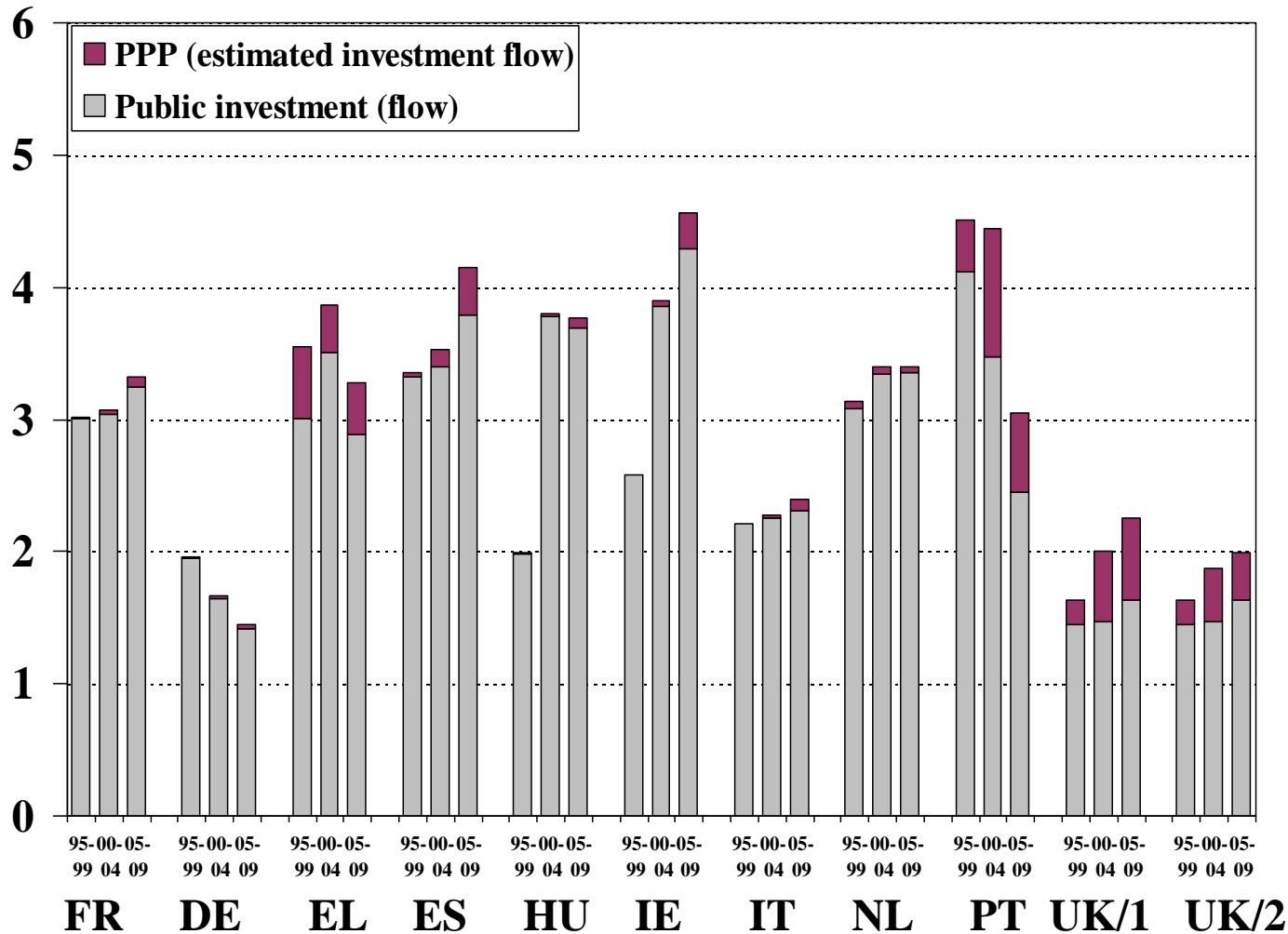


Source: Kappeler and Nemoz (2010)

1. European PPP market: Significance



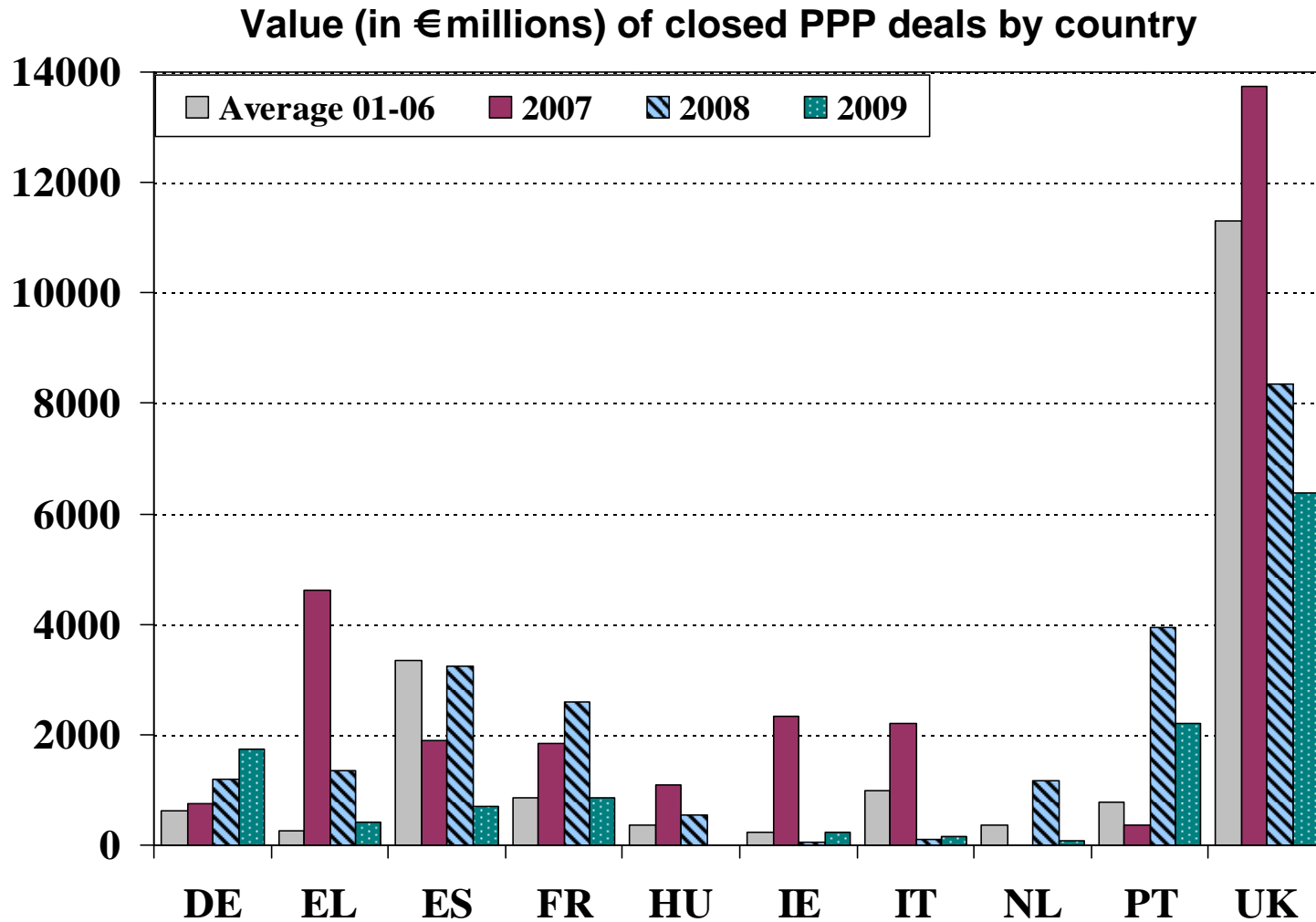
PPPs and Public investment relative to GDP



Source: Kappeler and Nemoz (2010)



1. The European PPP market: not homogeneous...

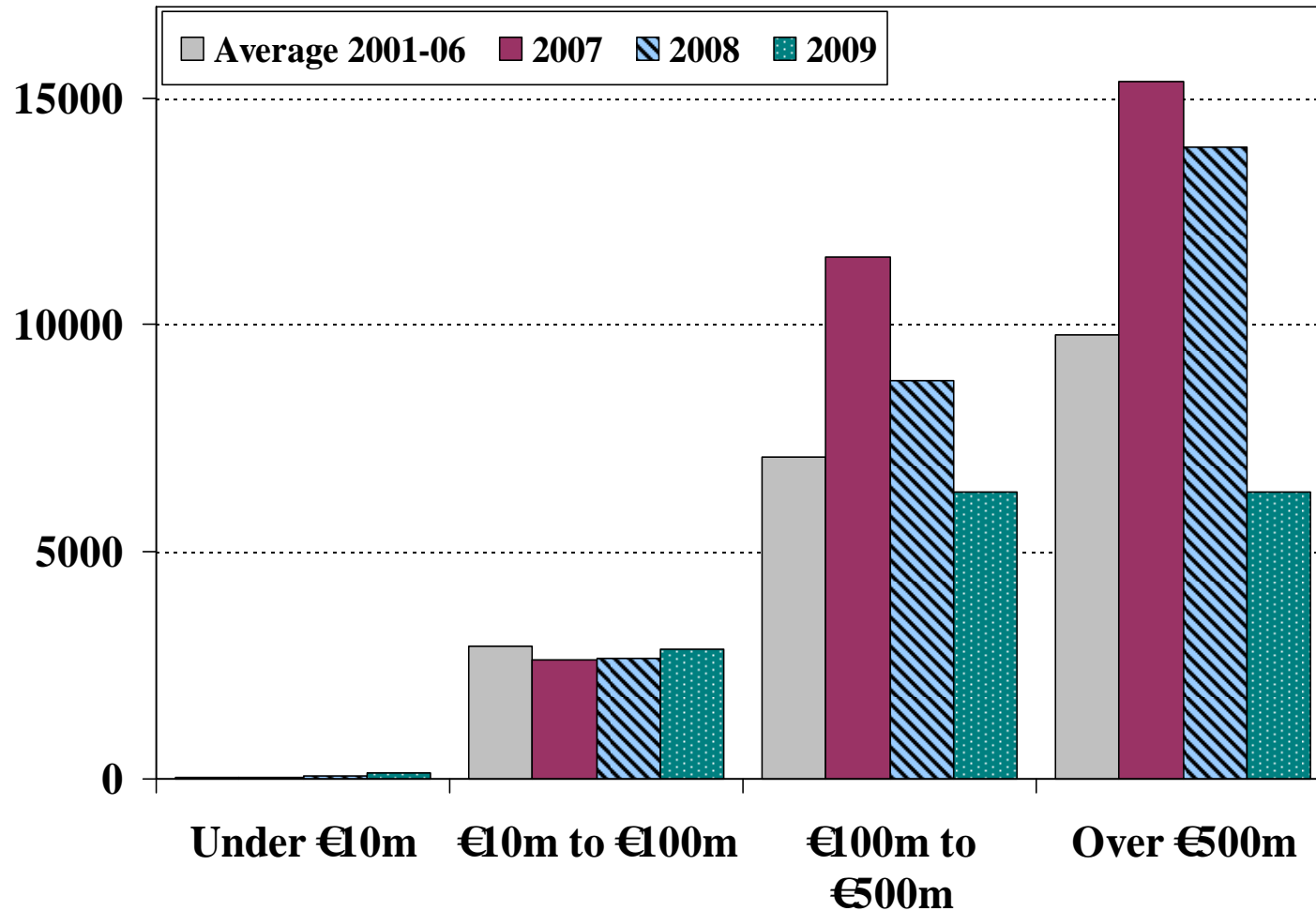


Source: Kappeler and Nemoz (2010)



1. ... and the largest deals impacted

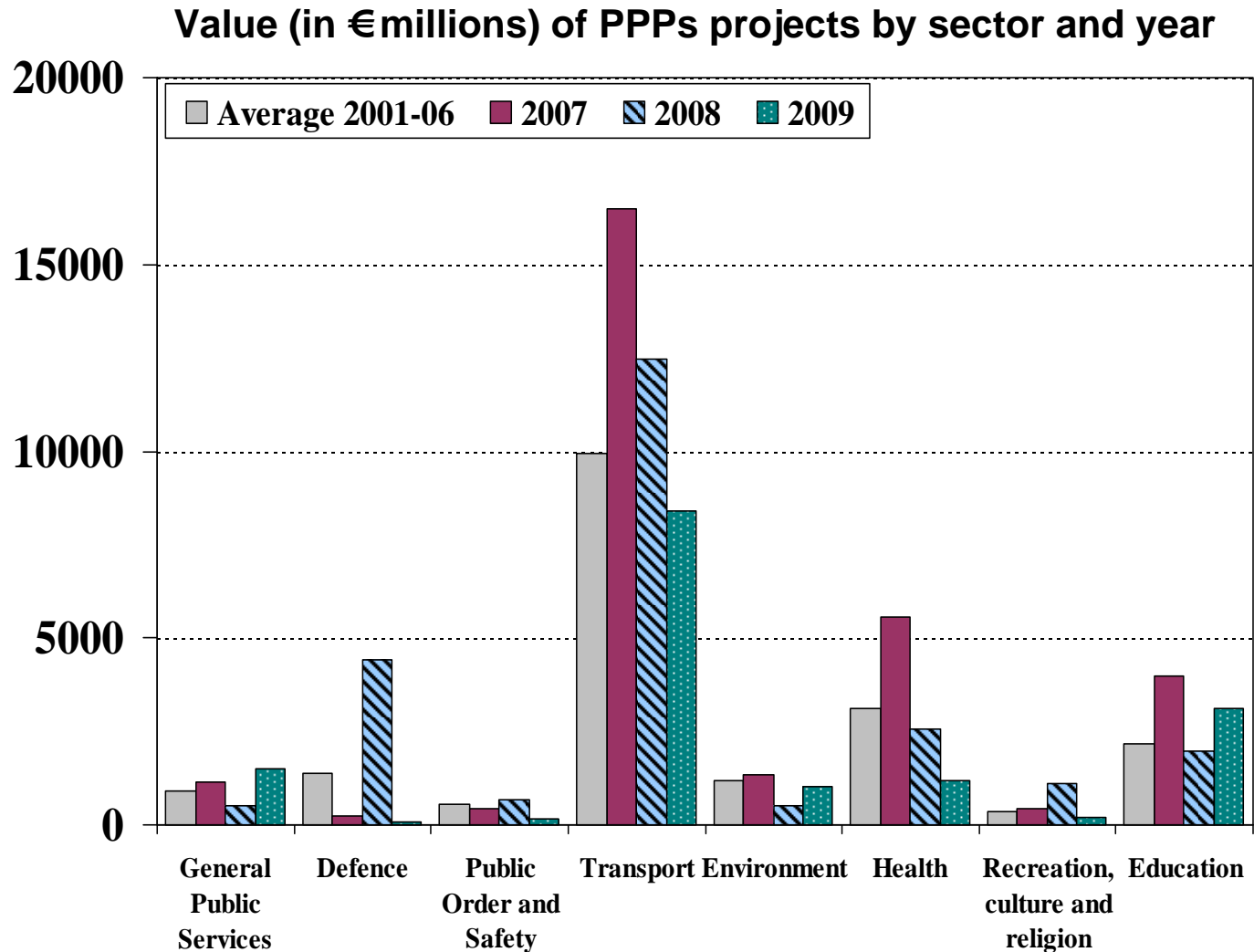
Value (in € millions) by size of PPPs.



Source: Kappeler and Nemoz (2010)



1. The dominance of the transport sector is diminishing



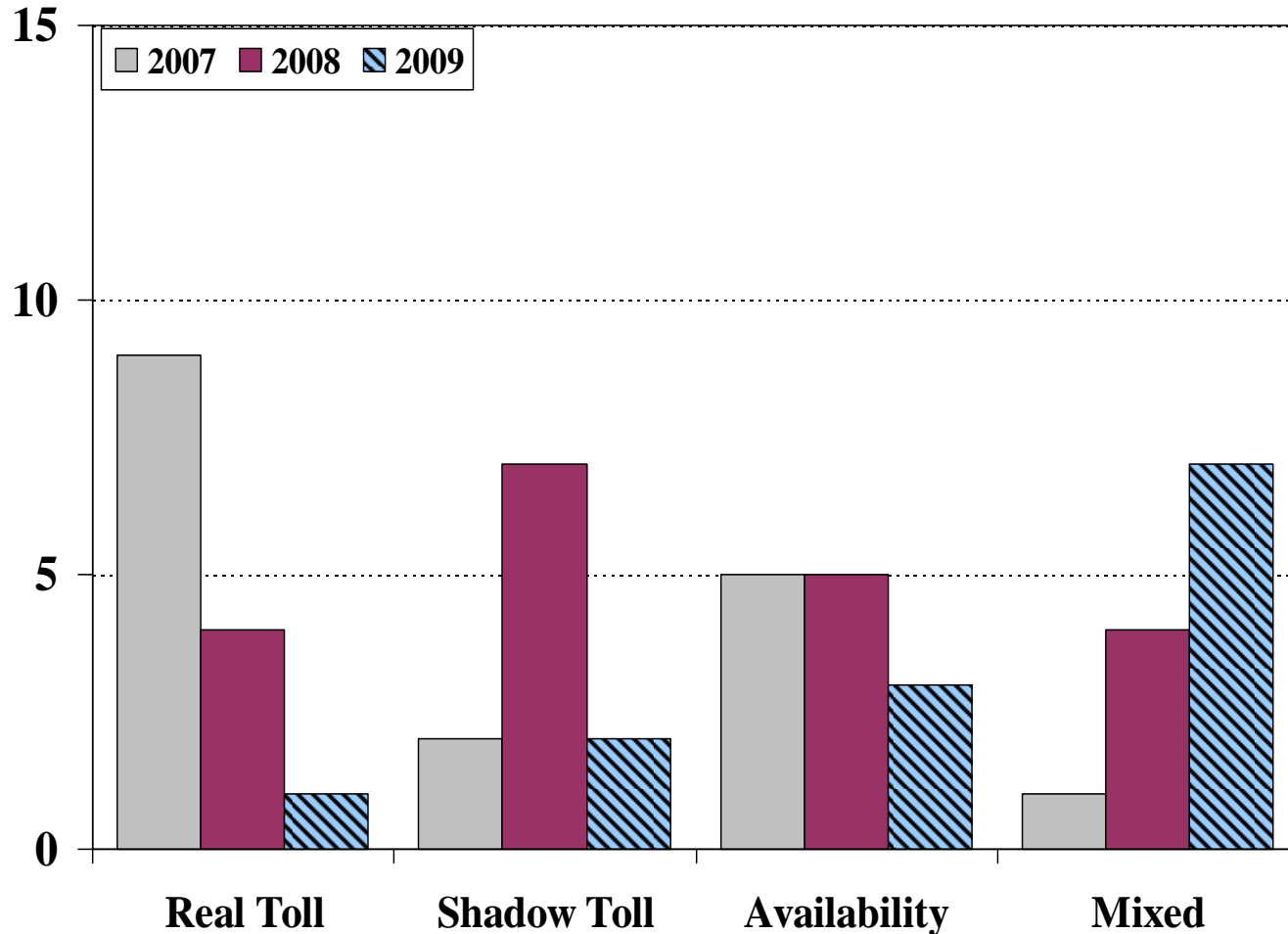
Source: Kappeler and Nemoz (2010)



1. Payment profile has been altered



Number of deals by payment mechanism for PPP roads, bridges and tunnels in the EU (2007-09)



Source: Kappeler and Nemoz (2010)



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2. Determinants of PPPs - Questions



Based on Hammami et al. (2006)

- Which variables determine the number and volume of PPPs?
- Sign and significance of these determinants?
- How to specify dependent variable?
- Econometric approach?



2. Determinants of PPPs

- Government
 - General government balance (percent of GDP)
 - Total debt (percent of total exports)
 - PPP experience (dummy)

- Economy
 - Population (log)
 - Real GDP per capita (lagged)
 - Inflation/ Money supply / International reserves
 - Fuel exports (percent of merchandise exports)
 - Composite country risk (index)

- Political Economy
 - Rule of law (index)
 - Control of corruption (index)
 - Opposition parties in legislature (number)
 - Ethnic fractionalization (index)
 - Chief executive's party orientation (index)



2. Determinants of PPPs - Hypotheses



- ❖ Large public deficit/debt increases likelihood of PPPs
- ❖ Countries with market-oriented policies more likely to run PPPs
- ❖ PPPs are more prevalent in politically stable countries
- ❖ PPPs more common in larger markets (population, GDP/capita)
- ❖ Countries with weak institutions and low-quality bureaucracies are less likely to foster PPPs
- ❖ PPP arrangements are likely to be higher in countries with previous PPP experiences
- ❖ Likelihood of PPPs positively correlated with technology structure required to provide them



2. Determinants of PPPs - Model Specification

- ❖ Data:
 - ❖ based on World Bank PPI database
 - ❖ annual data, country level, worldwide
 - ❖ covers period 1990-2003

- ❖ Three specifications of dependent variable:
 - ❖ number of PPP projects
 - ❖ dollar value of each investment in PPPs (percent of GDP)
 - ❖ distinguish different types of PPP arrangements
 - ❖ Allows to rank PPPs according to private involvement



2. Determinants of PPPs - Types of PPPs

Table 1. Characteristics of Main Types of PPPs and Index of Private Participation

Index	Types of PPPs	Acronym	Mode of Entry	Operation and Maintenance	Investment	Ultimate Ownership	Market Risk	Duration (years)
1	Management contract		Contract	Private	Public	Public	Public	3-5
2	Leasing		Contract	Private	Public	Public	Semi-private	8-15
3	Rehabilitate, Operate and Transfer	ROT	Concession	Private	Private	Public	Semi-private	20-30
4	Rehabilitate, Lease/Rent and Transfer	RLRT	Concession	Private	Private	Public	More-private	20-30
5	Merchant		Greenfield	Private	Private	Public	More-private	20-30
6	Build, Rehabilitate, Operate and Transfer	BROT	Concession	Private	Private	Public	Private	20-30
7	Build, Own and Transfer	BOT	Greenfield	Private	Private	Semi-private	Private	20-30
8	Build, Own, Operate and Transfer	BOOT	Greenfield	Private	Private	Semi-private	Private	30+
9	Build, Lease and Own	BLO	Greenfield	Private	Private	Private	Private	30+
10	Build, Own and Operate	BOO	Greenfield	Private	Private	Private	Private	30+
11	Partial Privatization		Divesture	Private	Private	Private	Private	30+
12	Full Privatization		Divesture	Private	Private	Private	Private	Indefinite

Source: Thomsen (2005), OECD Secretariat, World Bank's PPI database, and authors' assessments.

Source: Hammami et al. (2006)



2. Determinants of PPPs - Econometric Approach

- ❖ Dependent variable: nonnegative dollar value of investments in PPPs:
 - ❖ truncation might create bias in OLS and GLS estimators
 - ❖ use Tobit regression model

- ❖ Dependent variable: extent of private participation in PPP arrangements
 - ❖ ordinal nature of the dependent variable
 - ❖ scale from 1 to 12 (Table 1).
 - ❖ potential loss of efficiency with the use of OLS
 - ❖ use ordered Probit/Logit regression model

2. Determinants of PPPs - Results



**Dependent variable: Total investment in PPPs
(percentage of GDP)**

	OLS	GLS	Tobit
General government balance (percent of GDP)	-62.829 (0.71)	-62.119 (0.66)	128.605 (0.83)
Total debt (percent of total exports)	1.634 (1.80)	1.556 (1.73)	1.935 (4.45)**
Aid per capita (current US\$)	-0.023 (0.28)	-0.063 (0.82)	0.222 (1.05)
Fuel exports (percent of merchandise exports)	-0.154 (1.13)	-0.244 (1.69)	-0.172 (0.59)
Ethnic fractionalization (index)	1.667 (0.15)	3.224 (0.29)	32.906 (1.23)
Chief executive's party orientation (index)	-3.809 (1.55)	-4.874 (1.86)	-4.467 (1.01)
Opposition parties in legislature (number)	0.201 (1.88)	0.235 (2.08)*	0.233 (2.52)*
Population (log)	6.848 (2.04)*	5.078 (1.52)	27.218 (3.82)**
Real GDP per capita (lagged)	-0.001 (0.64)	0.000 (0.35)	-0.002 (0.80)

Source: Hammami et al. (2006)

2. Determinants of PPPs - Results continued



**Dependent variable: Total investment in PPPs
(percentage of GDP)**

	OLS	GLS	Tobit
Inflation (annual percent change GDP deflator)	-0.561 (2.20)*	-0.514 (1.98)*	-0.562 (1.97)*
Money supply (M2 in percent of GDP)	-0.254 (1.64)	-0.289 (1.86)	-0.189 (0.58)
International reserves (month of imports)	0.841 (0.58)	0.783 (0.53)	-2.200 (0.84)
Control of corruption (index)	4.689 (1.83)	4.312 (1.73)	4.419 (0.83)
Composite country risk (index)	-0.093 (0.33)	0.197 (0.71)	0.784 (1.29)
Rule of law (index)	9.090 (1.37)	5.582 (0.86)	45.692 (3.04)**
Common law origin (dummy)	1.256 (0.20)	1.025 (0.16)	-12.351 (0.83)
PPP experience (dummy)	-4.286 (0.62)	3.060 (0.42)	-35.851 (2.20)*

Source: Hammami et al. (2006)



2. Determinants of PPPs - Conclusions



- ❖ Probability of PPPs increases
 - ❖ if governments suffer from heavy debt burdens
 - ❖ if aggregate demand and market size are large
 - ❖ with macroeconomic stability (e.g. low inflation)
 - ❖ with corruption and effective rule of law
 - ❖ if previous PPP experiences exist

- ❖ Results at industry level
 - ❖ determinants vary across industries depending on nature of public infrastructure and capital intensity

- ❖ PPPs also depend on technology requirements
 - ❖ Sector dummies show that PPP projects in e.g. water industry have less private sector involvement than in telecommunication sector



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3. Construction costs and PPPs - Questions

Based on Blanc-Brude et al. (2006)

- ❖ Which kind of costs are relevant when talking about PPPs?
- ❖ Determinants of construction costs?
- ❖ Construction costs expected to be higher for PPPs than non-PPPs?
 - ❖ Bundling
 - ❖ Construction costs vs live-cycle cost
- ❖ Econometric approach?
 - ❖ Diagnostics?



3. Construction costs and PPPs

- ❖ Research Question:
 - ❖ Test for differences between PPPs and traditional procurement in terms of ex-ante construction costs

- ❖ Data:
 - ❖ 227 new road sections of which 65 are PPPs
 - ❖ EU-15 plus Norway;

- ❖ OLS regression
 - ❖ Dependent variable: Construction cost (log)
 - ❖ PPP dummy
 - ❖ unit labour costs
 - ❖ (Logarithm of) the length of the road section to be constructed
 - ❖ Relative length of tunnels and bridges
 - ❖ Dummies for single and dual carriageways/the number of lanes
 - ❖ Dummies for urban and mountainous terrains
 - ❖ Country dummies



3. Construction costs and PPPs

Appendix 2: Estimation results

Table A1. Estimation results for all roads (full sample)

	Coefficient	Prob.
(Constant)	1.432	0.000
PPP	0.313	0.000
Labour	0.043	0.000
Dual carriageway dummy	-0.101	0.239
Single carriageway dummy	-0.415	0.097
2 Lanes	-0.504	0.032
6 Lanes	0.401	0.000
Urban Terrain	0.331	0.001
Mountain Terrain	0.129	0.301
Log(length)	-0.241	0.000
Tunnel/road	0.019	0.000
Bridge/road	0.017	0.000
N	227	
Adjusted R2	0.82	

Note: Significant country dummies included in the estimation include Denmark, Finland, Germany, Ireland, Italy the Netherlands, Norway, Spain, Sweden, and the UK.



3. Construction costs and PPPs

Table 1. Summary of estimation results

Sample	N	PPP coefficient	Adjusted R2	Diagnostics
Motorways				
full sample	156	0.29	0.74	OK
Total cost (20, 300) Eur million	117	0.33	0.76	OK
Dependent variable w/in 1.5 stdev	138	0.29	0.64	OK
Only countries with both PPP and trad projects	120	0.23	0.77	1/
All roads				
full sample	227	0.31	0.82	OK
Total cost (20, 300) Eur million	168	0.33	0.80	OK
Dependent variable w/in 1.5 stdev	201	0.27	0.69	OK
Only countries with both PPP and trad projects	175	0.28	0.79	OK

1/ There is evidence of residual non-normality at 5% level.



3. Construction costs and PPPs

Table 3. Summary of diagnostic test results

Sample	Jarque-Bera	Prob. 1/	White	Prob. 2/
Motorways				
full sample	0.277	0.871	11.143	0.599
Total cost (20, 300) Eur million	0.826	0.662	12.474	0.568
Dependent variable w/in 1.5 stdev	0.978	0.613	13.383	0.710
Only countries with both PPP and trad projects	8.504	0.014	13.301	0.503
All roads				
full sample	2.103	0.349	20.980	0.694
Total cost (20, 300) Eur million	3.940	0.139	13.889	0.790
Dependent variable w/in 1.5 stdev	0.036	0.982	21.424	0.433
Only countries with both PPP and trad projects	2.697	0.260	12.009	0.885

1/ Should be > 0.1 for residual normality at 10% significance level.

2/ Should be > 0.1 for residual homoskedasticity at 10% significance level.



3. Construction costs and PPPs - Conclusions

- Ex ante costs of PPP roads higher than in case of traditional procurement
 - coefficient between 0.21 (%) and 0.38 (%)
 - corresponds roughly to ex post cost overruns in traditionally procured public roads.
- But: With bundling private partner takes into account cost of construction and operation
- Study does not make any statement about whether total cost (construction + maintenance + transaction) in case of PPPs are higher



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4. Renegotiations - Questions

Based on Guasch (2003)

- Determinants of Probability of Renegotiation?

- How to set up empirical model?
 - Estimation method/diagnostics?
 - Potential endogeneity?

4. Renegotiations – Econometric approach

- Data: 307 concessions from Latin America and Caribbean, 1989 – 2000
- Panel data
- Dummies available for: Renegotiation, party initiating renegotiation
- Probit model to detect determinants of probability to renegotiate.

4. Renegotiations – By country and year



Table 5: Renegotiations by country and by year

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total
Argentina	0/0	12/12	2/2	1/1	0/0	0/0	1/1	3/3	10/11	3/3	0/0	0/0	32/33
Brazil	-	-	-	-	-	0/0	0/0	0/0	0/1	0/5	0/24	0/6	0/36
Chile	-	-	-	0/0	0/0	0/0	0/0	0/0	0/0	1/1	0/0	0/0	1/1
Colombia	-	-	-	0/0	0/0	0/0	0/1	0/1	0/0	0/0	1/3	14/14	15/19
Mexico	0/0	0/1	0/1	1/8	0/12	1/14	2/21	0/11	1/3	0/2	0/0	0/0	5/73
Total	0/0	12/13	2/3	2/9	0/12	1/14	3/23	3/15	11/15	4/11	1/27	14/20	53/162

Renegotiations led by firms / total of renegotiations

Source: Guasch et al. (2003)



4. Renegotiations – Determinants

- ❖ Regulation
 - ❖ Existence of regulatory body
 - ❖ Price cap regulation (dummy)

- ❖ Contract
 - ❖ Bidding process (dummy)
 - ❖ Duration of contract/ Duration since award
 - ❖ Arbitration process (dummy)
 - ❖ Minimum income guarantee (dummy)

- ❖ Cost
 - ❖ Private financing (dummy)
 - ❖ Investment requirements included in contract (dummy)

- ❖ Political and economic conditions
 - ❖ Bureaucratic quality
 - ❖ Corruption
 - ❖ Year following national election
 - ❖ GDP growth (recessions vs booms)
 - ❖ Sector

4. Renegotiations – Dependent variable: Renegotiation dummy

	(1)	(2)	(3)	(4)	(5)	(6)
Existence of regulatory body	-1.09* (-5.07)	-1.15* (-5.05)	-1.07* (-4.98)	-1.08* (-5.09)	-1.10* (-5.09)	-1.51* (-5.82)
Price cap	0.55*** (1.68)	0.63*** (1.88)	0.58*** (1.75)	0.60*** (1.85)	0.45 (1.25)	0.81** (2.46)
Duration since award	0.19* (3.97)	0.18* (3.58)	0.20* (4.07)	0.20* (4.03)	0.18* (3.53)	0.15* (2.72)
Investment requirements	0.78** (1.99)	0.74*** (1.87)	0.83** (2.09)	0.60 (1.57)	0.79** (1.99)	0.65*** (1.71)
Private financing	0.51** (1.90)	0.40 (1.38)	0.48*** (1.80)	-0.11 (-0.23)	0.55** (2.00)	0.15 (0.53)
Bureaucratic quality	-0.35** (-2.54)	-0.29*** (-1.82)	-0.36* (-2.60)	-0.39* (-2.76)	-0.32** (-2.19)	-0.21 (-1.47)
Bidding process		-0.27 (-0.91)				
Duration of contract			-0.01 (-1.00)			
Arbitration process				0.73 (1.32)		
Minimum income guarantee					0.16 (0.67)	
Corruption						-0.43* (-3.73)
Election-1	0.29 (1.53)	0.30 (1.59)	0.28 (1.50)	0.27 (1.44)	0.29 (1.55)	0.40*** (1.95)
GDP growth-1	-0.06* (-3.38)	-0.06* (-3.24)	-0.06* (-3.17)	-0.06* (-3.21)	-0.06* (-3.36)	-0.07* (-3.26)
GDP growth-2	-0.14* (-6.15)	-0.14* (-6.18)	-0.14* (-6.06)	-0.14* (-6.15)	-0.14* (-6.14)	-0.15* (-6.07)
Transport sector dummy	0.75** (2.21)	0.80** (2.32)	0.70** (2.03)	0.59 (1.53)	0.69*** (1.93)	1.05* (2.94)
Number of obs.	1132	1132	1128	1100	1127	1132
Log Likelihood	-132.49	-132.08	-131.95	-130.97	-132.26	-125.21

Source:
Guasch et al. (2003)

4. Renegotiations – Endogeneity problem



- ❖ Potential endogeneity problem:
 - ❖ Ex-ante self selection problem: contracting parties would select specific clauses according to (unobservable) own and project characteristics
 - ❖ e.g. negotiation skills of firm, risk of project
 - ❖ Ex-post moral hazard problem: once contract signed, both firm and government act strategically
 - ❖ e.g. shorter contract might induce firm to behave more efficiently to increase chance of contract renewal

- ❖ Disentangle these two effects by controlling for self-selection problem

4. Renegotiations – Endogeneity problem



- ❖ Test for endogeneity by running regressions augmented with the residuals of the first stage.
 - ❖ endogeneity confirmed for price cap, arbitration and minimum income

- ❖ Instruments:
 - ❖ sectors, corruption, bureaucratic quality, rule of law and existence of regulatory body
 - ❖ difficult to find instruments that would not explain prob. of renegotiation

- ❖ Econometric approach: 2SLS probit model:
 - ❖ run probit estimates for each of variables to be instrumented
 - ❖ reintroduce each of these instrumented variables in the probit panel
 - ❖ estimate the equations with these instrumented variables.

4. Renegotiations – Results - Accounting for endogeneity

Dependent variable: Renegotiation dummy

	(1)	(2)	(3)	(4)	(5)
Existence of regulatory body	0.41 (1.00)	0.03 (0.05)	-1.20 (-1.40)	0.84*** (1.87)	1.91* (2.94)
Price cap (IV)	8.42* (3.97)	8.09* (3.65)	6.57* (2.90)	18.15* (4.49)	13.37* (4.77)
Duration since award	0.23* (4.12)	0.23* (4.19)	0.20* (3.45)	0.17* (2.93)	0.20* (3.41)
Investment requirements	0.86** (2.19)	0.79*** (1.96)	0.93** (2.36)	0.82** (2.06)	0.77** (1.97)
Private financing (IV)	4.56* (3.96)	1.48 (0.66)	2.89** (2.07)	3.87* (2.99)	4.28* (3.59)
Bureaucratic quality	-0.75* (-3.77)	-0.85* (-4.05)	-0.21 (-0.65)	-0.23 (-0.83)	-0.23 (-0.87)
Arbitration process (IV)		3.74 (1.61)			
Minimum income guarantee (IV)			7.98** (2.10)		
Bidding process (IV)				-3.48* (-3.25)	
Duration of contract (IV)					-0.13* (-3.15)
Election-1	0.21 (1.02)	0.23 (1.16)	0.30 (1.41)	0.23 (1.09)	0.21 (1.02)
GDP growth-1	-0.07* (-3.18)	-0.07* (-3.33)	-0.08* (-3.52)	-0.07* (-3.02)	-0.07* (-3.15)
GDP growth-2	-0.16* (-6.41)	-0.16* (-6.50)	-0.18* (-6.10)	-0.20* (-6.11)	-0.17* (-5.98)
Transport sector	-1.85** (-2.43)	-2.79* (-2.86)	-2.45* (-2.93)	-2.20* (-2.65)	-2.87* (-3.35)
Number of obs.	1132	1132	1132	1132	1132
Log Likelihood	-126.43	-125.08	-124.07	-119.60	-121.05

Note: IV in parenthesis denotes an instrumented variable.

Source: Guasch et al. (2003)



4. Renegotiations - Conclusions

- ❖ Probability of renegotiation increases
 - ❖ with income guarantees and price cap regulation
 - ❖ in post-election years (political cycles have a positive effect)
 - ❖ during recessions
 - ❖ in presence of arbitration rules

- ❖ Probability of renegotiation decreases
 - ❖ with better institutional quality (rule of law, non-corruption, or quality of the bureaucracy)
 - ❖ with existence of a regulator
 - ❖ during booms



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5. PPPs open issues

- ❖ Still not clear when PPPs improve life cycle efficiency
 - ❖ Very long life cycle. So only few projects went through entire life-cycle to date
 - ❖ Empirical evidence on potential efficiency gains remains weak
- ❖ Long term nature of contracts requires flexibility of contracts to adjust (lossa 2010)
 - ❖ Leads to empirical question: is there a premium to be paid for the inclusion of flexible clauses?
- ❖ Political economy of PPPs
 - ❖ Empirical verification: level of government debt/deficit and likelihood for a project to be run as PPP
- ❖ Risk sharing not properly modelled so far (see lossa and Martimort 2008)
- ❖ Classification of PPPs as government vs. private investment remains challenge



- ❖ Ball, R., M. Heafey and D. King (2007) 'The Private Finance Initiative in the UK', *Public Management Review* , 9, 2, 289–310.
- ❖ Blanc-Brude, F., H. Goldsmith and T. Valila (2006) *Ex Ante Construction Costs in the European Road Sector: A Comparison of Public–Private Partnerships and Traditional Public Procurement*, Economic and Financial Report 2006/01, Luxembourg, EIB.
- ❖ Guasch J.L., J-J Laffont and S. Straub (2003) Renegotiation of Concession Contracts in Latin America. Policy Research Paper 3011, The World Bank.
- ❖ Hammami, M. J-F. Ruhashyzniko, E.B. Yehoue (2006) Determinants of Public-Private Partnerships in Infrastructure, IMF Working Paper, WP/06/99.
- ❖ Hodge G.A. and C. Greve (2009) PPPs: The Passage of Time Permits a Sober Reflection. Institute of Economic Affairs, Blackwell Publishing, Oxford.
- ❖ Kappeler A. and M. Nemoz (2010) Public-Private Partnerships in Europe – Before and During the Recent Financial Crisis. Economic and Financial Report, Luxembourg, EIB, forthcoming.
- ❖ Pollitt, M. (2002) 'The Declining Role of the State in Infrastructure Investment in the UK', in S. V. Berg, M. G. Pollitt and M. Tsuji (eds.) *Private Initiatives in Infrastructure: Priorities, Incentives and Performance* , Aldershot: Edward Elgar.
- ❖ Pollock, A., D. Price and S. Playe (2007) 'An Examination of the UK Treasury's Evidence Base for Cost and Time Overrun Data in UK Value-for-Money Policy and Appraisal', *Public Money and Management* , 27, 2, 127–133.
- ❖ Shaoul, J. (2005) 'The Private Finance Initiative or the Public Funding of Private Profit', in G. Hodge and C. Greve (eds.) *The Challenge of Public–Private Partnerships: Learning from International Experience*, Cheltenham: Edward Elgar.