

UNIVERSITÉ PARIS 1 PANTHÉON - SORBONNE




MASTER RECHERCHE
Stéphane Saussier
Saussier@univ-paris1.fr

LES THÉORIES ECONOMIQUES DE
L'ENTREPRISE

« *La Théorie des contrats incomplets* »


INSTITUT D'ADMINISTRATION DES ENTREPRISES DE PARIS

Introduction to the incomplete contract theory



O. Hart
Harvard U.

- *Pathbreaking article: Grossman S.J., and O.D Hart [1986], The Costs and Benefits of Ownership : a Theory of Vertical Integration, **Journal of Political Economy**, 94, 691-719.*
- *One announced goal: To propose a good formalization of the transaction cost theory*
- *One main strategy : The assumption of bounded rationality is not useful in order to build an organization theory*



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SSA - 28 NOV -08- 2

Assumptions

- Rationality
- Symmetric information
- Risky environment
- Incomplete contracting
 - **Contractual incompleteness comes from asymmetric information or bounded rationality of third parties**
 - Some specific investments are observable, but not verifiable
 - Mainly human asset specificity

A theoretical framework that is criticized, mainly because of internal inconsistency: Tirole 1999 *Econometrica* and *Journal of Legal Studies* 2000.



A sketch of the theory

- Property rights and residual rights of control
- Investments are non verifiable (i.e. non contractible)
- Renegotiation occurs
 - It is efficient
 - Nash bargaining

Date 0	Date 1	Date 2
Signature of the contract Choice of property rights	Investments are made	Contract is renegotiated



Example of Nash bargaining

- Nash bargaining example
 - Two contractants A and B
- Surplus generated by investment i = 100
 - Outside option of agent A = 60
 - Outside option of agent B = 10
 - Surplus is shared such as :
 - Agent A = $60 + (100 - 70)/2 = 75$
 - Agent B = $10 + (100 - 70)/2 = 25$



John Nash
1928 -



Incomplete contracting and under-investment

- Agent A invests i at cost i ; generating a surplus $R(i)$ with $R' > 0$ et $R'' < 0$;
- Agent B does not invest
- Investissement is 100% specific (*i.e.* no outside option)
 - First Best : Maximisation of the realized surplus
 - $\text{Max } R(i) - i \Rightarrow i^* / R'(i^*) = 1$
 - Second best
 - $\text{Max } PO - CO + 1/2 R(i) - i \Rightarrow i^{**} / R'(i^{**}) = 2$
 - Then: $i^{**} < i^*$



Main conclusions

- Contractual incompleteness opens room for hold-up behaviors.
- Agents anticipate this. This anticipation distort ex ante investments
- Property rights distribution permits to influence such distortion
 - By changing outside options
- There is no way to reach the first best



Main Propositions

- Vertical integration issues:
 - Integration does not change the level of control or negotiation power!
 - Non contractible investments are still non contractible!
 - Integration gives to the party that own the assets a higher outside option. Incentives to invest are thus influenced by property rights
 - « *It would be too easy to construct a theory of the firm with the assumption that incentives are decreasing in the firm compared to the market* » (Hart 1995)
 - Who integrates is crucial: Party with the more crucial specific investments should integrate the other
 - but : if investments made by parties are equally important then what is optimal is the non-integration situation



Some quotations

- *"The need, plainly, was to develop formal models of incomplete contract. That got under way with the publication of the path-breaking paper by Sanford Grossman and Oliver Hart [1986]"* (WILLIAMSON [1993], page 42).
- *"It is noteworthy that Grossman and Hart [and related papers of this kind] work from transaction cost economics premises - albeit with terminological differences. Thus Grossman and Hart employ the terms noncontractibility and nonverifiability rather than bounded rationality. And they refer to "relationship-specific investments" rather than asset specificity. Unanticipated state realizations, and the need to adapt thereto, are what pose contractual strains in their model. So uncertainty makes an appearance"* (WILLIAMSON [1990], page 16).

Versus

- *If some of the central and critical ideas in transaction-cost economics as formulated by Williamson have been captured, others, equally important, have been missed. In particular, mathematics-based theory still lacks the language needed to capture essential ideas of bounded rationality, which are central to Williamson's concepts of transaction costs and contractual forms"* David M. KREPS [1996], page 2.
- Williamson 1999, 2000, 2002, Whinston 2003



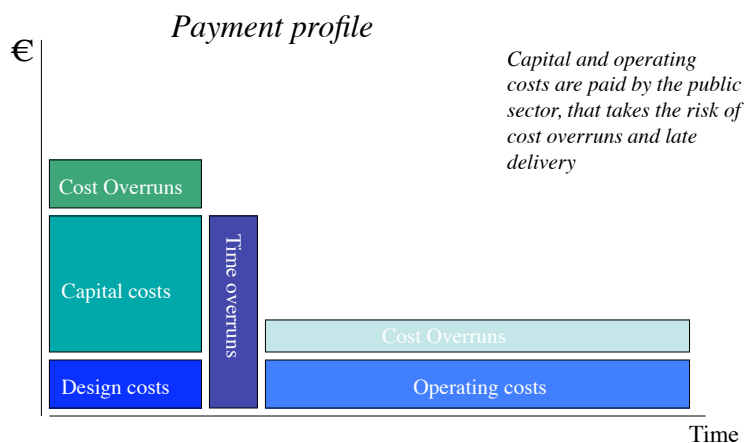
APPLICATION: The organisation of public services

- State might be viewed as an economic actor just like firm
 - The same decisions have to be taken concerning the way public services should be organized
 - Scope of government
 - Kind of contractual agreement
 - Incentives and/or control
- More generally linked to the question public private partnerships (PPPs)
- A common view : PPPs are an optimal solution in order to organize public services
 - By attributing after competition a franchise to a private operator
 - A solution that avoids public failures (See Laffont 2000)
 - A solution that bring « market » into the game without any market failures



To resume

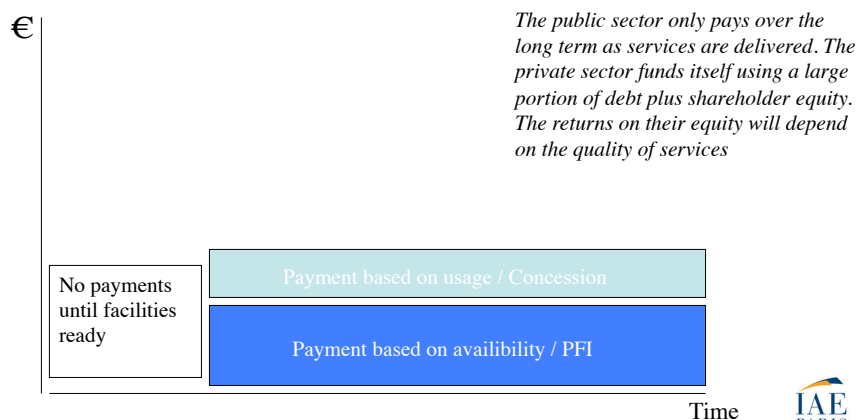
Traditional procurement



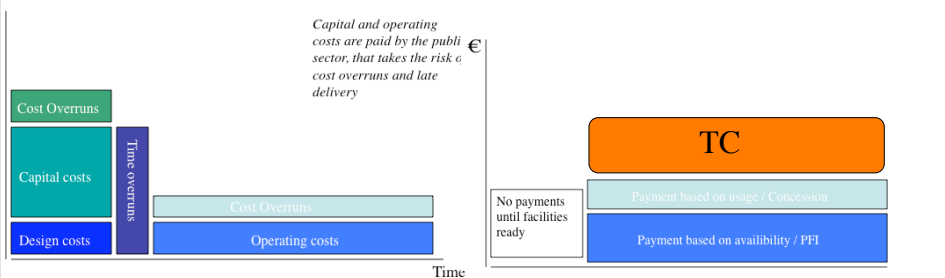
To resume

PPPs

Payment profile



What about Transaction costs!!

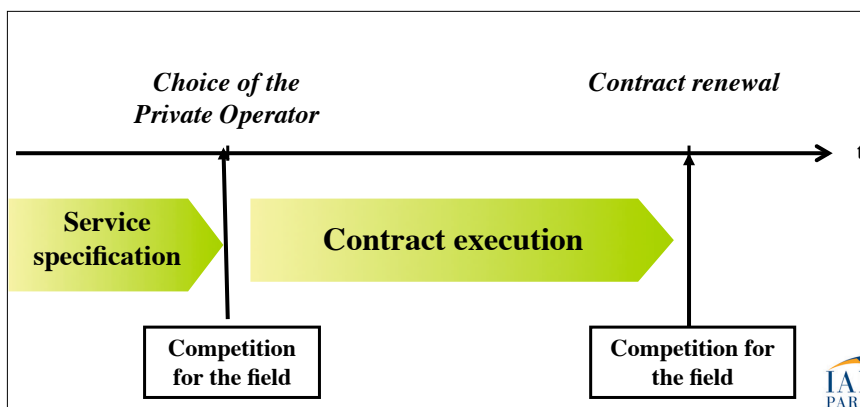


- What is implicit is:
 - You can avoid overruns by contacting with a private operator
 - You can pay a « fair price » by putting in competition for the market private operators
 - No other cost appear with PPPs.

With a transaction cost analysis, what becomes clear is that PPPs are characterized by their own transaction costs & failures



PPPs and transaction costs



PPP's failures (1)

- The difficulties to put firms in « competition for the field »
 - Price criteria does not always resume what is expected from the private operator
 - Price criteria might be complex (price vector instead of one single price)
 - Artificial and obscure award criterion
 - CATV - Oakland Case
 - Aggressive bids
 - "Winners' curse"



Potential (imperfect) solutions

- Littlechild (02): the SPL/LUL Case
 - Menu auctions
 - But difficulty to identify the winning bid
 - Lack of transparency
 - Still room for opportunistic behavior
 - Pre qualification criteria
 - (e.g. engineering, safety, human resources, financial capacities)
 - Bids formulated in terms of a constant revenue stream (Engel-Fisher-galetovic 1997)
 - Viaduc de Millau case
 - Allocation of risk
 - (e.g. risk associated with demand growth assumed by the franchisor)
 - See Spl-Lul case
 - Negotiation instead of competition! (Bajari-Mcmillan-Tadelis 07)
 - "dialogue compétitif" in France
 - "intuitu personae"



PPP's failures (2)

- Difficulties to enforce [incomplete] contractual agreements
 - Disconnection between price and costs over time
 - Penalties are difficult to apply (CATV Case)
 - Non-verifiable dimensions of the contract
- Opportunistic behaviors might arise
 - Delay in construction and provision (CATV Case)
 - Efforts to evade or renegotiate the contract (Guasch 2004)
 - Underinvestment (Bordeaux - Lyonnaise Case)
 - Investments at the beginning of the contract, not at the end
 - Lower level of quality than promised (CATV)
 - Price increase
 - Absence of responsiveness to consumer's needs
 - Connected to the king of PPPs contract
 - Concession vs. PFI



PPP's failures (3)

- Long term contracts and refranchising are problematic
- Specific Investments \Rightarrow Long term contracts \Rightarrow Lack of bidding parity at franchise renewal (« Fundamental transformation »)
 - More than 90% of contracts are renewed with the same partner (France - water sector)



Illustration of what we studied in this course. The Case of Water Supply in France

- Elements suggesting potential drawbacks for auctioning water supply services in France
 - Market structure: 3 operators shares more than 95% of the market
 - Possible cartel strategies (very similar to the case of urban transport in France - the 3 main operators have been sanctioned in July 2005)
 - Many contracts are renegotiated or maladapted (Cour des Comptes 2003)
 - At the renewal stage, competition is hard to organize
 - (Only?) 10% of the new contracts are changing hands in 2001 (Engref 2001)

↳ Local Gvts decide of the organizational structure



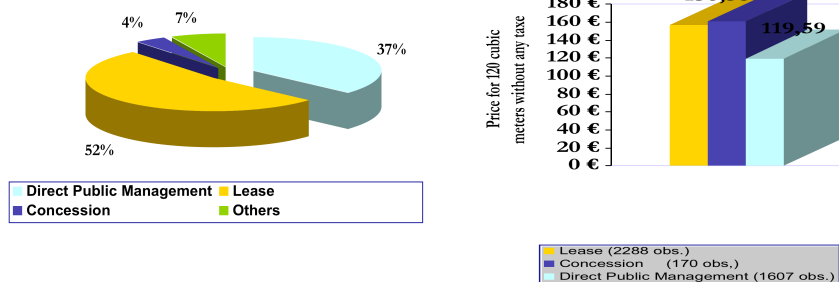
The Case of Water Supply in France

- Elements suggesting potential advantages for auctioning water supply services in France
 - Freedom to contract
 - Before 1982, standard contracts that are compulsory
 - Between 1982 and 1993, no more obligation concerning contractual provisions
 - Auctioning such services is an obligation for local governments since 1993 (Anti-corruption law)
 - With a maximum contract duration (<20 years)
 - With no fixed fee
 - All contracts that are renegotiated cannot change value of the contract by more than 5%
 - Such contract are administrative contracts
 - "intuitu personae" principle
 - Unilateral renegotiation



The Case of Water Supply in France

A large range of organizational choices leading to different price levels



Source: IFEN-SCEES 2001

Study concerning 5 000 French Local Governments



Price differences: what can we conclude ?

- Observed prices differences can be explained because:
 - Collusion exist; corruption exist : this explains higher prices observed with lease and concession contracts! Private operators make a lot of profits
 - « la marge monte à 58,7 % en moyenne pour les 114 communes du Syndicat des eaux d'Ile-de-France (Sedif), 56,1 % à Marseille, où l'eau est « 2,2 fois plus cher que ce qu'elle coûte » » UFC que Choisir Nov 2007
 - Lease and concessions are chosen when the public solution is no longer feasible. Concessions are specialized on complex services. That is why observed prices are higher for those organizational forms!
 - « Antoine Frérot, directeur général de Veolia Eau, reconnaît que les prix des entreprises privées sont plus élevés de 15 % à 20%. "Le service est plus complexe et mieux géré, explique-t-il. Les réseaux gérés par les entreprises perdent en général 20 % d'eau en moins que les services en régie. Les entreprises acquittent aussi une fiscalité plus lourde que les collectivités locales. Si on tient compte de ces éléments, le service est en fait un peu moins cher pour la délégation que pour la régie directe.» Le Monde 29-10-07
- Organization choices are not endogenous!



Case: Water distribution in France

- Case 1. Paris and the decision stop PPPs for public solution
 - Paris and competition for the field
 - Paris and enforcement of contracts
 - Paris and the renewal of contracts
- Case 2. New « Contrats de partenariat » in France
 - The importance of property rights distribution
 - Revenue rights
 - Risk sharing
 - Importance of institutions
- Case 3. Sédif and the aggressive behaviour of Suez with Veolia (1923-1962-2009)
 - Suez asking for smaller contracts (allotment).
 - What advantages?
 - What drawbacks?



Conclusion of the course

- Transaction cost economics, theory of institutions, incomplete contract theory and incentive theories (the new institutional economics) are “lens” through which we can analyze decision made by public and private organizations
 - Internal and external strategies are intertwined
 - The frontier of the firm
 - The way it is organized internally
 - The way property rights are distributed
 - (Institutional) environment is also crucial
 - What is true in a sector and a country might not be elsewhere
- All this is true because of transaction costs!

