

**Cooperation and Opportunism
under Long-Term Public-Private Contracts:
Evidence from Water Concessions in Asia**

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**Thesis submitted in fulfilment of the requirements of Doctor of Philosophy in
Development Studies**

Development Studies Institute, London School of Economics

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ABSTRACT

This thesis addresses the implementation of long-term public-private contracts for utility services. Long-term contracts are inevitably incomplete and need to be adjusted over time to take account of new information or changes in the operating environment. Institutional environments, especially in developing countries, are also very likely to be incomplete. The existing literature has tended to focus on one of these two types of incompleteness; this thesis takes the analysis a step further by integrating the two into a single approach.

Many contracts contain provisions for periodic adjustments to their terms, 'contractually mandated renegotiations.' Other adjustments will be necessary to rebalance a contract after a major shock, 'shock-induced renegotiations.' This research looks at both these types of adjustment in incomplete institutional environments and considers the behaviour of government and firm actors.

The analysis proceeds in three steps. First, regression analysis of an original database of PSP projects, 'WATSUP', is used to test the relationship between institutions the number of PSP projects in each country. This confirms the significance of institutions. Second, a framework for the analysis of government and firm behaviour is developed which takes into account the two types of incompleteness, time inconsistency, actors' time preferences and the role of multiple actors. Third, in-depth case studies of the implementation of PSP contracts for water services in Manila and Jakarta are presented, based on more than 50 personal interviews in the two locations.

The findings suggest that contractual incompleteness can be better managed if: the parties agree a set of principles and procedures for contract adjustment at the outset; set out clear lines of responsibility for contract renegotiation and approval; and establish contract-specific regulatory institutions with clearly defined implementation responsibilities.

DECLARATION

I hereby declare that the work submitted in this thesis is my own. Chapter 4 was written on the basis of research carried out in collaboration with Frédéric Blanc-Brude.



Olivia Jensen Blanc-Brude

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ACRONYMS

ADB	Asian Development Bank
ADR	Appropriate Discount Rate
BOT	Build Operate Transfer Contract
CAPM	Capital Asset Pricing Model
CPI	Consumer Price Index
DKI	Special Administrative Region (Indonesia)
DOF	Department of Finance (Philippines)
DPRD	Provincial Assembly (Indonesia)
DPWH	Department of Public Works and Highways (Philippines)
DSM	Dispute Settlement Mechanism
DV	Dependent Variable
EPA	Extraordinary Price Adjustment (Manila Contract)
GDP	Gross Domestic Product
GNI	Gross National Income
IFC	International Finance Corporation
IPO	Initial Public Offering
IV	Independent Variable
JICA	Japan International Cooperation Agency
JV	Joint Venture
JWSRB	Jakarta Water Supply Regulatory Board
KKN	Korupsi, kolusi dan nepotisme ('corruption, collusion and nepotism', Indonesia slogan)
MDG	Millennium Development Goals
MOF	Ministry of Finance (Indonesia)
MWSS	Metropolitan Waterworks and Sewerage Services (Manila)
MWSS RO	MWSS Regulatory Office
MWSS BOT	MWSS Board of Trustees
NBRM	Negative Binomial Regression Model
NEDA	National Economic Development Authority (Philippines)
NGO	Non Governmental Organisation
NRW	Non Revenue Water
ODA	Overseas Development Assistance
Pam Jaya	Jakarta public water utility company
PALYJA	Pam Lyonnaise Jaya (Jakarta West Concessionaire)
PHP	Philippine Peso
PPC	Public Private Contract
PSP	Private Sector Participation
PRM	Poisson Regression Model
RB	Regulatory Body
RCA	Restated Cooperation Agreement (Jakarta)
ROR	Rate of Return regulation
RPI	Retail Price Index
RRB	Rate Rebasing
SD	Standard Deviation
SOE	State Owned Enterprise
TPJ	Thames Pam Jaya (Jakarta East Concessionaire)
TRO	Temporary Restraining Order
WATSUP	Water and Sanitation Urban Projects Database
WHO	World Health Organization
\$	US Dollars

1 Economic Regulation, Institutions and Development: Issues for the Water Sector

Poor provision of basic services like water and sanitation characterises many developing countries. It is estimated that 1.1 billion people have no access to safe drinking water while 2.6 billion do not have adequate sanitation, most of whom live in low income countries (WHO/UNICEF 2004). The urgent need to improve this situation has been recognised in the Millennium Development Goals (MDGs), but the goal, of course, does not show how it is to be achieved. For a developing country, improving water and sanitation and other utility services requires significant capital investment. The Camdessus Report estimated that spending on water infrastructure in developing countries would have to increase from roughly \$80 billion a year to \$180 billion over the next 20–25 years to achieve ‘water security’ by 2025 (Winpenny 2003).¹ Governments in developing countries may look to several different sources of funds to meet this investment need, including public funds, donor funds and user fees. Another option, which has been explored in many countries, is to involve private firms in the provision of services. Private sector participation also offers other potential advantages: greater efficiency, better management and less politicisation of tariff-setting.

However, these are only potential advantages. Private firms will only invest and improve efficiency if they have the incentives to do so. Governments will only refrain from politically motivated intervention in the decisions of the firm if they face a set of incentives or constraints that make it preferable to hold back. These incentives and constraints form the central focus of this thesis. Their absence helps to account for anecdotal evidence of the ‘failure’ of private sector participation (PSP) in the water and sanitation sector of developing countries, while developed countries have been able to achieve adequate outcomes in terms of access and service quality through a range of different PSP models.

¹ This figure from the Report of the World Panel on Financing Water Infrastructure (Chaired by Michel Camdessus), Winpenny (2003), includes expenditure on agricultural water and flood management, in addition to water and sanitation services. It may be considered an upper bound estimate of the level of financing needed. Other estimates of the financing needed to meet the MDGs (which include only spending on water supply and sanitation services) are considerably lower. The UN Task Force on Water and Sanitation (2005) estimates an annual average of \$6.7 billion for water and sanitation in 2001-15.

1.1 Thesis Topic

In this research, I consider how the system of economic regulation of natural monopolies shapes the incentives and constraints of the firm and government and how this system interacts with the broader institutional framework at the national level in the specific context of developing countries.

The thesis uses new empirical evidence to show the role of institutions in the interaction between the public and private sectors for the provision of water services using both quantitative and qualitative methodologies. It also proposes a new theoretical framework for the analysis of the behaviour of public and private agents in this context which can inform future policy design.

I set out to answer the question, *Do incomplete institutions hinder the successful implementation of long-term contracts for utility services?*

From the point of view of the firm, 'successful' refers to whether the stream of returns from the project is above the firm's hurdle rate; for the government, success relates to the stream of political and financial pay-offs from the contract and relates to the improvements in efficiency, investment, coverage and quality of service that the arrangement delivers.

Two issues pertaining to the (in)completeness of institutions emerge from the literature:

- Do multiple government actors make the institutional framework institutions more complete?
- Does a contract-based regulatory agency make the institutional framework more complete?

As I show below and in the following chapters, these questions are not comprehensively addressed by existing work. The most important gap is a comprehensive framework capable of addressing both incomplete contracts and the incomplete institutional context of a developing country, which can draw out the implications of this for the interaction of public (government) and private (firm) actors.

This thesis contributes to the field of regulatory theory and its relationship to development in two ways:

- It demonstrates the impact of incomplete institutions on the agreement and implementation of public-private contracts;
- It extends our understanding of multiple government actors, including regulators, in the implementation of incomplete contracts.

It also contributes new quantitative and qualitative evidence documenting the interaction of governments and firms when negotiating and implementing long term contracts for the provision of water and sanitation services in the context of developing countries.

1.2 Definitions

At the outset, it will be helpful to clarify terms that will recur throughout the thesis. Firstly, I understand ‘institutions’ as the “fundamental political, social and legal rules that establish the basis for interaction between individuals and organisations,” North’s definition of the institutional environment (North 1990). In keeping with North, I see institutions as structuring the incentives of agents, whether state, market or civil organisations or individuals. However, my focus is narrower than this definition, as I concentrate on formal institutions, rather than on customs and social mores.

The line between institutions and ‘organisations’ or ‘institutional arrangements’ is not hard and fast, but rather one that depends on the level of analysis. As Saleth & Dinar write: “When considering water institutional arrangements, the overall economic, political, and resource-related institutions become part of the institutional environment. Similarly, when the focus is on the institutional arrangements of a particular region or sub-sector, the institutional arrangements at the national and sectoral levels become part of the institutional environment.” (Saleth and Dinar 2004: 25-6). For the purposes of this research, national-level political, judicial and other institutions are considered as features of the institutional environment.

‘Regulation’ refers to rules enforced by a government agency to control economic activity. As such, it falls between indirect methods of control like taxes and subsidies and direct control through the ownership of market entities. Economic regulation – distinct from health regulation or environmental regulation – encompasses rules governing price, output, and industry structure and involves setting prices and monitoring performance. Its aim is to redress a particular market failure, when the

market does not deliver the most efficient outcome, which is associated with natural monopoly, without direct public ownership.

‘Natural monopolies’ are sectors in which costs are minimised by having a single firm providing a good or service. In the absence of economic regulation, private providers of network utility services would be likely to behave as monopolists, restricting output and raising prices above the welfare maximising level. Network industries are examples of natural monopolies as their most efficient industry structure is to have a single network. However, natural monopoly may only apply to one stage in service delivery, such as distribution, while generation or retailing may be most efficiently structured with multiple producers in competition. Network industries therefore include parts of water supply services, gas and electricity supply.

‘Regulation by contract’ refers to one of two basic structures for economic regulation, in which the process or formula for setting prices and requirements for the firm are set out in a formal agreement that takes the form of a legal contract. Regulation by contract is distinguished from regulation by agency, in which a public body sets prices and requirements following a process or procedures specified in primary legislation. In some cases, the regulator is given the scope to set its own objectives, which is known as discretionary regulation. Under regulation by contract, an agency may be set up to monitor and enforce the contract. If the regulator does not have any decision-making powers, this would not constitute regulation by agency. Hybrid types of regulation, combining elements of regulation by contract and regulation by agency, are not only possible, but widespread.

The independence of the regulator is a separate question from the degree of regulatory discretion. Regulatory independence refers to the extent to which politicians can and do intervene in regulatory decisions.

‘Regulatory incentives’ refer to the principles for setting tariffs. The basic distinction is between rate-of-return (ROR) regulation and price-cap or ‘incentive regulation,’ also sometimes known as ‘RPI-X’ regulation in reference to its application in the UK.² In

² RPI is the Retail Price Index measure of inflation, while X is an efficiency saving. RPI-X regulation was developed by Michael Beesley and Stephen Littlechild and introduced for telecommunications and power regulation in the UK in the 1980s. (Beesley and Littlechild 1983)

practice, these two types of regulation are not always clearly distinct and may instead be seen as the two ends of a spectrum.

‘Private Sector Participation’ (PSP) refers to a range of public-private arrangements for the delivery of services. Here, the public sector refers to the state, and the private sector refers to for-profit enterprises in which the state does not have majority ownership. PSP encompasses divestiture, concessions, leases, management and service contracts, each of which is described below. All these types of PSP are also sometimes referred to under the potentially emotive label of ‘privatisation.’ I also use the term public-private contracts to refer specifically to those PSP arrangements that are based on regulation by contract.

It is useful to set out here the differences between types of PSP arrangement as they are associated with distinctive sets of incentives and constraints. The focus of the thesis is on those arrangements in which the firm carries out the bulk of capital investment – divestitures and concessions – as these arrangements imply particular incentive problems, and here I show how these are different from other PSP forms. The definitions set out here allow us to distinguish between projects based on underlying economic characteristics – ownership of assets, source of finance for capital and operational expenditure, source of revenue – and the distribution of risks between the parties.

Divestiture refers to the sale of assets by the public sector to the private sector. It includes the sale of shares through a public share offer as well as the sale of assets direct to a private company. Divestiture often takes place in the reform of a utility sector and is accompanied by restructuring, vertical disintegration and the establishment of a new regulatory framework. However, there is no requirement that divestiture be accompanied by other sector reforms. Under a full divestiture, all risks are taken by the private party. The government may define a regulatory procedure in law to set prices and performance requirements for the firm. In cases of partial divestiture, the public and private parties may also sign a joint venture (JV) agreement clarifying management control and other conditions.

Concessions are PSP arrangements based on a contract granted to a private agent, the ‘concessionaire’, by a public body, the ‘conceding authority’. Under a concession

contract, the public sector retains ownership of the assets, but all capital investment is financed by the private sector and the firm's revenues are at least in part dependent on tariffs paid by end-users.³ The firm takes on financing, management and revenue risks. These features of concessions imply a distinctive set of incentives for the government and the firm, and in particular emphasise the trade-off between capital investment by the concessionaire and tariffs paid by customers. The structure of a concession for the water sector is described in more detail in the following section.

Leases are PSP arrangements in which the public sector retains ownership of assets and retains responsibility for financing major capital works. The dividing line between leases and concessions is not precise, as the classification of operating and capital costs is itself disputable. However, under a lease, the public sector will always finance at least some capital investment. These contracts imply that the public and private parties share financing and revenue risks according to the specific provisions of the contract.

Under a management contract, capital expenditure is financed by the public sector while operating expenditure is financed by the private sector. Revenues to the private party will take the form of a management fee paid by the government or utility and will vary only indirectly, if at all, with tariff revenues from end-users. Tariff revenues may be shared between public and private parties according to a pre-established formula. In practice, the scope of a management contract may vary depending on the classification of operating and capital expenditure, as noted above, and on the degree of influence that the private entity has in deciding the capital investment programme. Under these contracts, the firm takes on only the management risk associated with operating the utility while financing risk and most revenue risk remain with the public sector.

In service contracts, the role of the private entity is limited to the provision of specified services relating directly to the provision of utility services, such as billing and customer management, in return for a fee from the public entity. Services relating to non-core activities such as cleaning or catering fall outside the definition of PSP as they do not imply the same challenges of incentive design and monitoring.

³ In this research, concessions are distinguished from Build-Operate-Transfer (BOT) projects in which the private firm receives revenue payments from a single public entity, or 'off-taker,' and the public utility provides services to end-users. BOT contracts often specify a minimum volume of water or wastewater and the tariff that will be paid for this, reducing the firm's revenue risk. Under a 'take-or-pay' agreement, the firm does not take on any revenue risk.

1.3 Concession Contract Structure

This research focuses on the most difficult privatisations to regulate – divestitures and concessions – in which most responsibility for capital investment and financing risk are transferred to the private sector. Concessions are of particular interest for two reasons: they are long-term contracts, and the questions that I wish to investigate are related to the incomplete nature of long-term contracts (Williamson 1985). Secondly, concessions bring the private sector into direct contact with the consumer, and the revenue of the company depends on how much these consumers purchase and how much they pay for it, which in turn raises political and social issues.

This section sets out a typical structure for a concession contract, showing the main legal and financial relationships. The contracting parties are a designated public contracting authority and the private firm, but other public and private actors will also be involved. The important points to note are the sources of revenue and the financial obligations of the concessionaire and the financial implications of the concession contract for the public sector. The private firm receives revenues from tariffs, which are set by the government or regulatory agency in accordance with the terms of the contract. The obligation for the bulk of capital investment is shifted to the private sector, reducing the government's requirement to invest.

In practical terms, the question of cooperation between government and firm for the provision of water services via a long term contract involves a fundamental trade-off between the level of water tariffs for consumers and the level of capital investment in the water system by the private concessionaire. As water tariffs are often politicised, this in turn raises important issues of political economy.

The structure of the contract will affect the incentives of the parties and thus the outcomes of the concession. For example, if the local government receives a regular fee from the private concessionaire, it will have an incentive to support the private concessionaire's ability to pay that fee. If the government receives only a one-off payment from the private sector for the acquisition of an asset, the government may not have a strong incentive to ensure that the firm earns an appropriate return on its investment, unless it can extract a further payment.

Figure 1.1 illustrates the financial structure of a typical concession contract for a water utility. Although each contract has its own distinctive features, the main financial relationships are common to most concessions.

Usually, consumers will pay a tariff for each unit of water used, which will be collected by the concession company and either paid into an escrow account or received directly as revenue by the concession company. The concession company's revenue is based on the volume of water actually sold, so demand, billing and collection risks lie with the concession company. In some cases, the operating expenses of the regulatory body and the concession fees will be paid out of the escrow account according to a formula established in the contract and will take precedence over payments to the firm. In other cases, the concession company will have closer control over these revenues. Not all contracts require the payment of a concession fee, but in cases where the fee is used to repay debts incurred by the public utility in the pre-privatisation period, it constitutes an important contribution to public revenues. In some contracts, the concessionaire is also required to post a performance bond which can be drawn down by the regulatory body or contracting party if the firm fails to meet its performance targets.

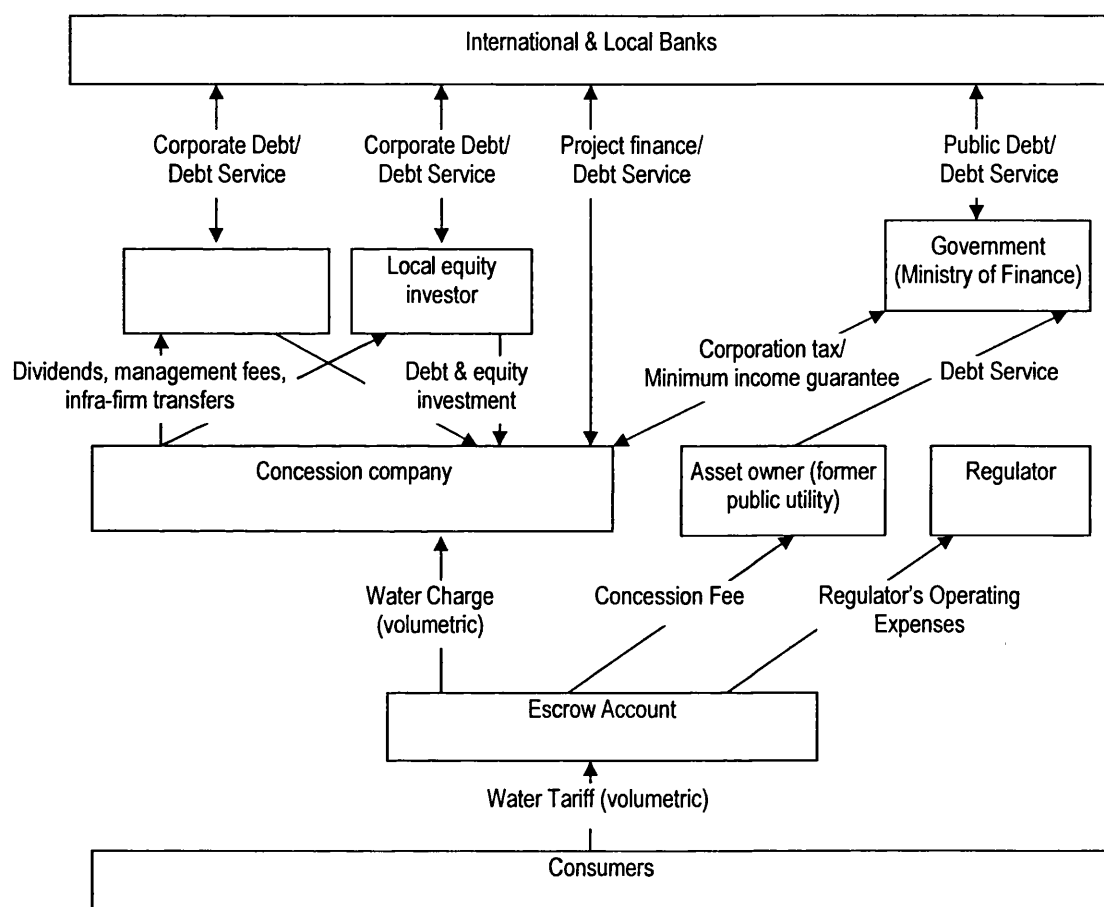
The regulatory incentive structures of concession contracts differ. Under ROR regulation, tariffs are calculated on the basis of (eligible) costs incurred plus a fixed return for the firm based on the asset base or 'rate base.' Under this type of contract, prices are often adjusted annually. Under price-cap systems, a tariff is set for each operating period, typically five years, based on the firm's financial model and adjusted for any efficiency savings made by the firm. These periodic reviews are referred to in some contracts as 'comprehensive tariff reviews' or 'rate rebasing.' Hybrid systems combine annual or periodic adjustments for certain cost items with a periodic comprehensive review. Common cost pass-through items are inflation and adjustments for foreign exchange losses.

The concession company is responsible for securing its own financing, which will include a mix of debt and equity. In some contracts, there may be a minimum equity requirement. Where possible, equity investors will try to raise limited recourse finance (where the loan is secured on project assets and stream of revenues only) as this reduces the financing risk taken by the equity holder. However, where project risks are high, equity investors may have to raise commercial debt on their own balance sheet. Equity

investors earn returns from the concession company through dividends, management fees and intra-firm transfers. The central or municipal government may provide a minimum income guarantee to the concession company in order to ensure its financial viability and provide reassurance to lenders.

The government would normally receive corporation tax revenues from the concession company, unless the company is given a special exemption or a tax holiday.

Figure 1.1: Financial Structure of a Water Concession



Source: Compiled by the author

Figure 1.2 illustrates the legal structure of a concession. At the heart of the structure is the concession contract, which will be signed by the concession company on the one hand and a public sector agency on the other hand. The public signatory may be the asset owner (which in turn may be the former public water company or the municipal government) or the regulatory body, an inter-ministerial panel, or the central government executive. This diagram illustrates a situation in which the asset owning

and regulatory functions are separated, and the executive does not have a direct contractual relationship with the concessionaire.

A concession contract would normally have a term of 15-30 years, although some contracts are longer. The appropriate length of the contract relates to the amount of capital investment by the firm and the length of time needed to recoup this investment through project revenues.

Where more than one company is an equity investor in the concession, their relationship will be set out in a JV agreement that creates a concession company. Where there is only one equity investor, the investor will exercise direct control over the concession company as a wholly owned subsidiary.

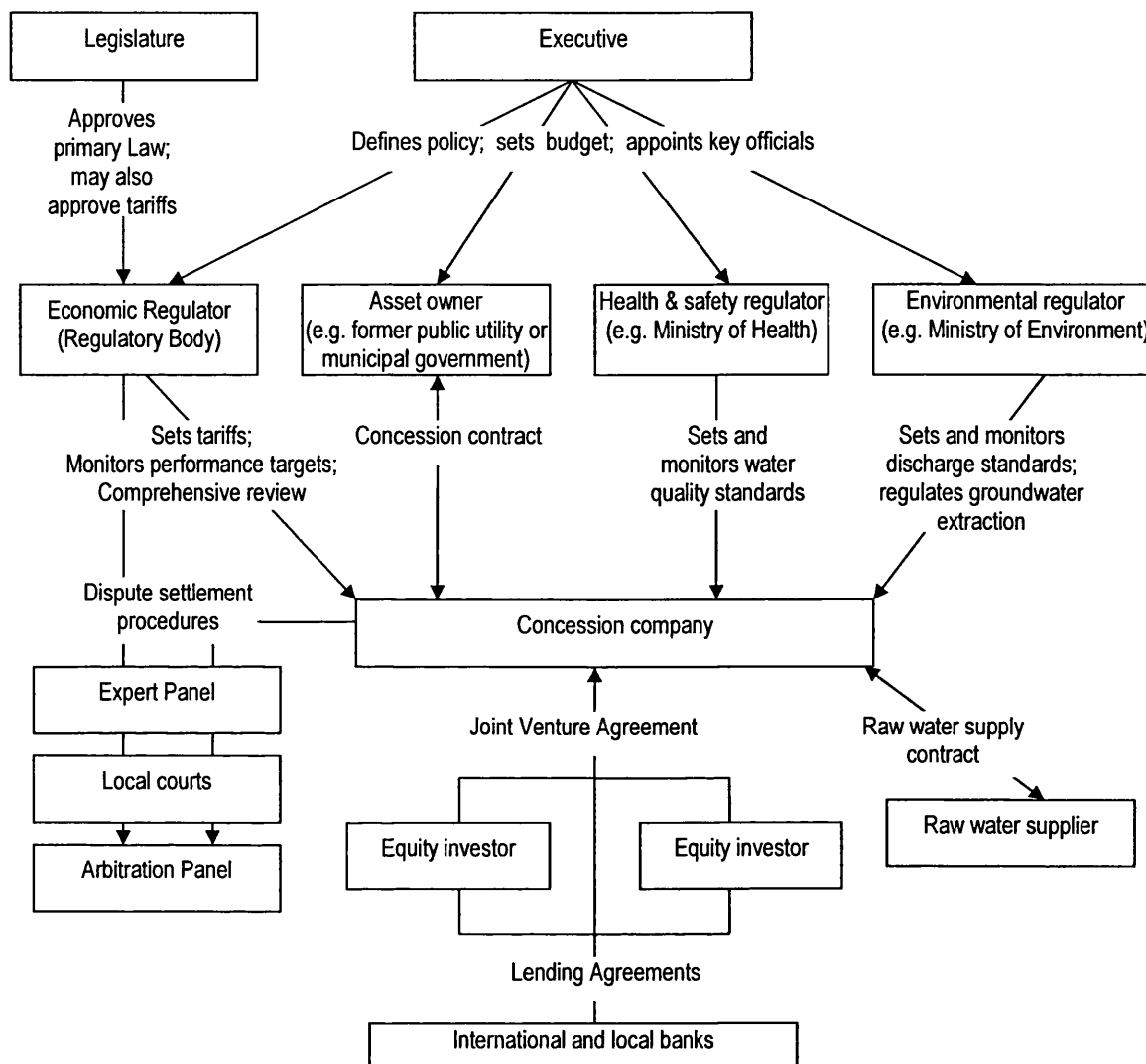
The concession contract is usually monitored by a public agency, whether an autonomous regulatory agency or a department of the bureaucracy. The identity and powers of this agency vary widely according to the particular contract and the institutional framework within which the contract has been signed.

Economic regulation will be carried out by a public agency. In some cases, this will be the former public utility, or a department of the bureaucracy, often under the Ministry of Public Works, or equivalent; in others it will be an autonomous or semi-autonomous agency. The Ministries responsible for public health and environment will monitor the relevant aspects of the concession's performance with regard to water quality and discharge standards, either at the central level or through their regional or municipal offices. The concessionaire will also interact with the public or private agencies responsible for development or protection of raw water resources, and may have a separate contract with these agencies. This could be the Environment Ministry, the Ministry of Natural Resources or the Water Ministry or a separate agency, to give a few examples. This will depend on the administrative structure of the country.

The concession company will have a further set of contractual relationships with banks, lending either directly to the project company or lending to the equity investors. While the banks would not normally have any direct contractual relationship with any government agency, the government may provide financial guarantees to the concession company which function as security for the banks. An alternative not illustrated is for

International Financial Institutions to provide loans to the project via the Ministry of Finance, governed by a loan covenant.

Figure 1.2: Legal Structure of a Water Concession



Source: Compiled by the author

Disputes may be resolved either through the system of local courts and appeal courts or through a specific dispute settlement mechanism (DSM) defined in the concession contract. A DSM may involve convening an expert panel as a first step to review a regulatory decision. If the decision of the expert panel is not binding, and the parties fail to come to an agreement, then many contracts make provision for binding arbitration, often before an international arbitration panel. Although the arbitration decision is binding on the parties, it will still need to be enforced by local courts. The parties may pursue cases in local courts as an alternative to international arbitration, or prior to or subsequent to an international case.

1.4 Issues

Under conditions of natural monopoly, economic regulation has the potential to redress market failure. However, the institutional structure of regulation and the design of regulatory incentives are both areas of controversy that have given rise to extensive analysis and debate. The effects of privatisation on efficiency, investment, coverage and quality of service have been assessed in the literature. These contributions are reviewed in Chapter 2. Relevant theoretical works are reviewed in Chapter 3. Here I draw attention to a few key issues raised in the literature on economic regulation, focusing on the ‘regulation by contract/regulation by agency’ debate, and the relationship between regulation and economic development.

1.4.1 Regulation by Contract and Regulation by Agency

Good regulation is generally recognised to be a necessary component in successful privatisation (Chisari, Estache et al. 1999; Chisari, Estache et al. 2003; Estache 2004 for a survey). But what constitutes good regulation?

One long-standing debate about the optimal structure of regulation contrasts regulation by contract and regulation by agency. The debate is sometimes construed in geographical terms, contrasting the ‘Anglo-Saxon’ tradition of independent, discretionary regulatory agencies, and the ‘French’ or ‘continental’ model of specifying regulatory provisions in a public-private contract, although in practice, many regulatory systems fall between these two poles. Developing countries have experimented with both these models and hybrid mixes when liberalising and restructuring utility sectors.

The early literature on regulators developed in the US, which has a long history of private ownership in network industries under regulation by agency. In the first half of the 20th Century, these regulatory agencies were seen as agents of the public interest (See McCraw 1975 for a review). Over time, however, critiques of regulation emerged, which showed how agencies were vulnerable to ‘capture’ by the regulated industry or by other powerful interest groups (Stigler 1971; Posner 1972). These critiques were formalised by Peltzman (1976). Concerns about the vulnerability of regulators to capture provided the background to Demsetz’s influential 1968 paper, which showed how natural monopoly market failures could be addressed through ‘regulation by contract,’ obviating the need for a regulatory agency (Demsetz 1968). He argued that ‘competition for the market’ could be created by periodically re-bidding short-term

monopoly contracts for service. Competitive tendering would ensure that prices were set at competitive levels.

Regulation by contract has, in turn, been criticised on two main grounds: competition for contracts may be ineffective because of collusion or incumbency advantages; and regular rebidding may lead to under-investment, depending on the observability and transferability of investment. Contracts are also vulnerable to opportunistic renegotiation (Guasch 2004). In any case, the government will have a continuing role in contract administration (monitoring, enforcing and bargaining over unspecified contingencies) (Vickers and Yarrow 1991). In network industries where significant capital investment is required in assets with no alternative uses (known as sunk assets), rebidding is rare.

Connected to the debate over the regulatory system is the question of the role and structure of the regulatory agency, including the independence of the regulatory agency. An independent agency should be able to fulfil a mandate of balancing producer and consumer interests better than a body within the government that could be influenced by short-term political pressures (Levine, Stern et al. 2002). However, some empirical works have found that the independence of the regulator is either not significant or has a significant negative effect on private investment (Wallsten 2001; Pargal 2003). Their findings are discussed further in Chapter 2. There is now a general recognition of the need for balance between constraints on the discretion of the regulator and the need for flexibility to adjust the regulatory arrangements to changing conditions, or as new information becomes available (Estache 2004). However, the actual role played by regulatory agencies in the implementation of concession contracts has not been systematically investigated, due in large part to the absence of cross-country comparative data.

1.4.2 Regulation, Institutions and Development

Theoretical and empirical analysis of economic regulation has developed in the context of developed countries, and tended to assume either that institutions play no role, for example in constraining the renegotiation of contracts, or it has assumed the existence of 'institutional completeness,' implying that the institutions of rule of law, separation of powers, well functioning democracy and an independent and competent judiciary would be in place. Neither fits the reality of developing countries, where incomplete institutions are pervasive. As Laffont writes in his 2005 book, "The new economics of

regulation has provided a useful normative framework for the reforms of public services in developed countries. However, this literature has paid no attention to the specific characteristics of developing countries.” (Laffont 2005: xix). Laffont’s work is highly relevant to this research as it brings together and extends several strands of research on the implications of development for economic regulation.

Laffont considers how a number of characteristics of developing countries will affect the design of regulatory incentives and institutions: the high cost of public funds; the quality of auditing and accounting mechanisms; constitutional control of the government, implementation of contracts; quality of the judicial system; functioning of capital markets and the extent of corruption. He finds that the optimal regulatory contract where the cost of public funds is high has lower-powered incentives (i.e. tends towards ROR regulation). There is a sacrifice in efficiency in order to decrease the rents earned by the firm. Similarly, lower credibility of the regulatory regime implies lower-powered incentive schemes. But where accounting and auditing systems are particularly weak, the transactions costs of implementing ROR regulation will be very high and price-cap regulation will be optimal.

He also finds that there will be a U-shaped relationship between corruption and privatisation, with very low and very high levels of corruption associated with low levels of privatisation. In terms of the structure of regulatory agencies, Laffont considers whether integrated multi-sector regulators will be preferable to single sector regulators. He finds that there are complex trade-offs between the availability of resources and the advantages of specialisation and that the optimal structure will depend on specific conditions; on the other hand, having two regulators may reduce the chances of capture where political checks and balances are weak. This work suggests several avenues for further research on contract implementation: the significance of corruption, multiple government actors and poor credibility.

Estache sums up the contribution of the body of literature on regulation and development: “The first main lesson of this literature is that regulators must arbitrate between risk levels and their distribution, the efficiency levels that can be achieved in infrastructure, and the rents that remain with operators... This means, for instance, that when risk levels are perceived to be very high, rate of return regulation may be more effective at attracting private capital than a price cap regime. More generally, this

literature argues that the characteristics of developing countries will often lead to recommendations quite different from those that would be given for infrastructure restructuring in industrial countries. Indeed, the limited enforcement capabilities in developing countries are significant in practice and, along with unusually high risk levels, are one of the main reasons one size does not fit all when reforming infrastructure.” (Estache 2004: 17-18)

Despite these advances in linking economic regulation with institutions, the complex nature of institutional attributes means that the significance of particular attributes and the mechanisms through which they operate are difficult to identify. These interactions between institutions, contracts and outcomes are addressed in Gomez-Ibanez’s 2003 study of PSP which draws on experience from multiple regions and historical periods. This study demonstrates clearly the trade-offs between flexibility and credibility under both regulation by contract and regulation by agency associated with weak enforcement environments. As the author writes, “We can design regulatory strategies to compensate for weak institutions and political legitimacy, but our ability to do so is probably limited. Concession contracts are popular in many developing countries because they are thought to be less vulnerable to weak institutions than discretionary regulation, although how much this is true is the subject of debate.” (Gómez-Ibáñez 2003: 345).

Other works have focused in on particular aspects of the relationship between economic regulation and institutional attributes, and have subjected these to empirical testing (Henisz and Zelner 2001; Henisz 2002). Again, these are discussed in more detail in Chapter 2. Here, I begin by introducing the argument of Levy & Spiller’s paper on the links between political and judicial institutions and economic regulation (Levy and Spiller 1994). This paper distinguishes between two basic types of political institutions, parliamentary and presidential, and their argument runs like this: in parliamentary systems with alternating majority governments, laws are easy to implement or reverse so the government will not be able to show commitment to a stable regulatory regime through primary law. In this case, governments should sign contracts with the private providers which can be enforced through ordinary commercial law. In presidential systems, laws are difficult to pass or repeal, so the government can show commitment to a stable regulatory system by passing a primary law to create a discretionary regulatory body. This article made an important contribution to the overall debate, but its narrow focus on one particular institutional dichotomy underestimated the manifold ways in

which institutions impose constraints on public and private actors. Subsequent research has, for example, emphasised the prevalence of corruption as an the most relevant institutional attribute to utility service provision (Estache, Goicoechea et al. 2006).

The investigation of the importance of institutions in economic regulation is part of a much wider field of literature that connects institutions with economic development. Among the large number of papers on this topic, the following institutional attributes of developing countries have been found to be significant for economic outcomes: protection for property rights (Acemoglu and Johnson 2003); the rule of law (Rigobón and Rodrik 2004); political stability, policy credibility and the existence of a sound regulatory framework (Easterly and Serven 2003); bureaucratic quality and the timing of elections (Guasch, Laffont et al. 2003). These institutional attributes may also have implications for the implementation of economic regulation.

1.5 The Research Boundary and Contribution

The existing literature has not fully considered the implications of institutional and contractual incompleteness on contract agreement and implementation. The decision to privatise and the award of contracts has been widely analysed, as has formal renegotiation of contracts, but less work has examined the firm's decision to engage in the contract, or the behaviour of both parties after the contract has been signed. This thesis develops a framework of analysis for contract implementation that addresses:

- contractually mandated and shock-induced contract adjustments;
- multiple periods of implementation, taking into account changes in the parties' discount rates;
- the effect of multiple actors on contract implementation and adjustment;
- the role of contract-specific regulators.

The limitations in existing research are partly the result of limitations in the data, both relating to the financial and operating performance of concessions and to the performance of regulators. These limitations are recognised by Estache et al (2006) in their analysis of institutional-performance links, and much of their analysis cannot be carried out for the water sector as a result. I begin to address these gaps by developing and analysing a new dataset of public-private contracts in the water and sanitation sector.

The existing literature has taken significant steps towards a systematic analysis of the implications of development on economic regulation. However, the complex interaction of institutions at the national or local level makes it extremely difficult to move from the theoretical findings of Laffont and others on optimal contract design or regulatory structure to ascertain how a particular set of regulatory choices will function in a particular institutional environment. This thesis approaches the problem with an inductive approach: it focuses on the rich detail of the case studies to identify relevant institutions.

Finally, this thesis contributes to the debate on the relative advantages of regulation by contract and regulation by agency through comparative case studies of different regulatory structures in developing countries, including hybrid structures which combine contracts with agencies responsible for monitoring and implementation. The approach is again based on rich qualitative material which makes it possible to go beyond the assumptions of existing literature on the vulnerability to capture or government intervention to reveal the multiple roles that regulatory agencies can play in a developing country institutional environment and to assess their relevance.

1.6 *The Water Sector*

This thesis considers these issues through a focus on the water and sanitation sector. The characteristics of this sector make it particularly suitable for an investigation of public and private interaction. This section presents a brief overview of these characteristics.

Water services are an archetypal natural monopoly, as the bulk of costs are incurred in the construction and maintenance of the distribution network. There is limited scope for the introduction of competition in the treatment of water or sewage water, but water systems tend to be vertically integrated, reflecting the small proportion of costs incurred in treatment. The pipe network is a typical sunk asset – an asset without alternative uses – and its hidden nature raises the transactions costs of tendering short-term contracts. Slow technological change in the sector suggests that new opportunities for restructuring in the industry are not likely to open up in the near future. As a result, economic regulation is needed for water services over the long term.

The level of private investment in the water sector has been lower than in other infrastructure sectors (Izaguirre 2005) but the number of countries that have introduced

PSP is comparable with other infrastructure sectors, including electricity distribution and rail transport: 35 percent of developing countries and 50 percent of lower middle income countries have private capital in the water sector (Estache and Goicoechea 2005), generating an adequate number of data points to pursue quantitative analysis.

Water and sanitation are mass consumption services, so water tariffs are susceptible to politicisation (Savedoff and Spiller 1999). Over time, this has led to low levels of cost recovery for water services (ADB 2004 for evidence from a sample of Asian cities). Yet, significant capital investment is needed to extend coverage to unserved communities in developing countries. This need for investment brings to the fore the difficult regulatory trade-off between affordability of water services and the need for private investors to receive an appropriate return on their investments. The political sensitivity of tariffs and the need for capital investment makes the task of the regulator particularly challenging for the water and sanitation sector. In terms of the research strategy, the water sector therefore provides an excellent example for the analysis of economic regulation in developing countries.

Within the water sector, the qualitative analysis focuses on concessions, which the World Bank describes as the most ‘challenging’ contract type. According to the World Bank’s Privatization Toolkit, these contract types “allow all the potential benefits [or PSP] to be realized,” referring to management and financing capacity brought by the firm under these contracts (World Bank and PPIAF 2006). From an analytical point of view, concessions are interesting not just because they are a common model for developing country PSP, but because they transfer most financing and revenue risk to the firm, necessitating a much more complex legal and financial structure and raising the need for regulation and because they are long-term contracts that are vulnerable to incompleteness.

1.7 Methodology

The thesis employs both quantitative and qualitative methodologies. Quantitative methods allow me to establish, first, the significance of institutional variables in the prevalence of PSP in the water sector for a large sample of developing countries. However, cross-country comparative data on institutions have considerable limitations when it comes to identifying the relevance of particular institutional features or combinations of features in an individual country, or clarifying the mechanisms through which institutions influence behaviour in public-private contracts. The comparative case

study approach that I adopt in the latter part of the thesis provides for a rich understanding of the nature of these institutions and the mechanisms through which they affect outcomes. This section summarises the methodological approaches adopted.

1.7.1 Quantitative Analysis

First, I examine the factors influencing the number of PSP projects in a country, focusing on whether institutions are a significant factor. In order to do this, I build a new dataset of water PSP projects in developing countries, WATSUP (Water and Sanitation Urban Projects Database). This database improves on existing data sets in its coverage of smaller projects and draws on private sources of information in addition to public ones to give better coverage in particular countries. I use this dataset to carry out a regression analysis using a count outcome model. The nature of the question allows for cross-country quantitative analysis, looking at the impact of institutions at the country level on frequency of PSP.

The assumption in this section of the analysis is that national level institutions are significant. This might seem surprising, as the water sector in most countries is the responsibility of local governments, and local governments have the power to engage in PSP contracts and to regulate them. However, many of the institutional attributes that have been identified as having an impact on economic regulation are generally measured at the national level and may be relatively consistent across a country, such as the rule of law or the quality of the judicial system. The use of national level institutional indicators is discussed further in Chapter 4.

1.7.2 Theoretical Framework

Secondly, I develop a theoretical framework for the analysis of implementation which takes into account the issues mentioned above:

- Multiple time periods and shifts in discount rates
- Multiple government actors, including regulators
- Planned and unplanned contract incompleteness

The framework offers a systematic way of considering the behaviour of the agents in complex contractual relationships. The framework generates hypotheses which are considered in the light of the case studies.

1.7.3 Qualitative Analysis

Chapters 6 and 7 present specific case histories of government and firm interaction under long-term contracts. These cases provided ample evidence of incomplete

contracts – contractually mandated and shock-induced – and incomplete institutions and so provide rich material for the application of the analytical framework.

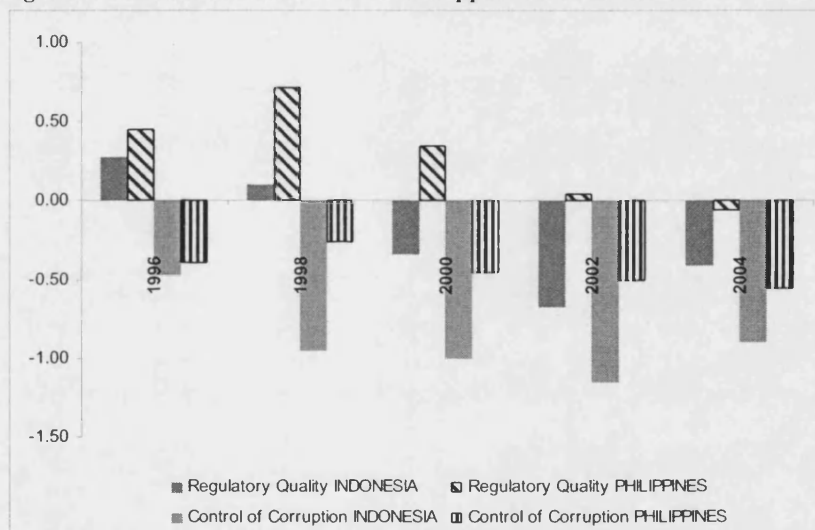
Chapter 6 focuses on the concession contracts awarded for water services in Manila (Philippines), and Chapter 7 on the concessions in Jakarta (Indonesia). These two cases share many attributes: they both concern large, high profile contracts for the capital cities of their respective countries. As such, they attracted considerable attention from the political leadership and the media. It also meant that they attracted the attention of foreign companies, and all four of the contracts that were awarded involved both local and foreign investors. Both countries have incomplete institutional environments and experienced political and macroeconomic shocks in the period in which the contracts have been implemented. Figure 1.3 shows how institutions in the two countries have deteriorated since the award of the contracts in 1997.

The countries have been running for the same length of time and have all been through one round of contractually mandated renegotiation, in addition to shock-induced renegotiation. In other respects, the concessions are rather different: the Manila contracts were held up by international institutions for their ‘best practice’ design and the successful competitive tender which reduced tariffs substantially. The Jakarta contracts were considered corrupt and badly drafted. In Manila, foreign institutions have played a role at two important junctures, initially in the design of the contract and later in an international arbitration case. In Jakarta, the advice of foreign experts on the rate rebasing was resoundingly ignored. Table 1.1 summarises some of the relevant contractual features.

Table 1.1: Attributes of Manila and Jakarta Contracts

	Manila	Jakarta
Timing	Contracts agreed 1997	
Structure	Service area divided into two	
Contract award	Transparent competitive tender	Bilateral negotiation
Contract Provisions	Contain clear requirements for provision and verification of financial and operating information by the firm	Require extensive reporting by firms but no mechanism for verification of information
Rate rebasing	Contains clear principles and procedures for RRB every 5 years	Contains provision for RRB every 5 years but no clear principles or procedures to follow
Regulator	Regulatory agency with powers to monitor and enforce the contract	Regulatory agency with weak monitoring powers created in renegotiated contract

Figure 1.3: Institutional Indicators for Philippines and Indonesia



Source: World Bank Governance Data (Higher values indicate better regulatory quality and lower corruption levels)

These two case studies share a number of common attributes, many of which also apply to other concession contracts in developing countries, allowing me to draw wider implications from the analysis. For example, capital cities are often the first (and only) places where water PSP contracts are awarded; macroeconomic and political shocks are more likely than not over the course of a long-term contract; the majority of water contracts are renegotiated. Incomplete institutions, including low regulatory quality and pervasive corruption, are very widespread. Thus the findings of the case study analysis have broad application.

The decision to focus on case studies from East and South-East Asia was informed by the characteristics of the region, as well as by the relative paucity of research, particularly in comparison to Latin America. The region is distinctive because it has attracted large volumes of private capital into its water sector, and in recent years, a large majority of new contracts have been signed in the region (Izaguirre and Hunt 2005). Yet, compared to Latin America, which has also received significant private investment flows, the development of regulation in the region has been very slow.

Information for the case studies was collected over the course of nine months of field research in 2004 in Asia, and a further visit to the region in 2006. I conducted more than 100 personal semi-structured interviews in this period with managers of private firms engaged in water concessions, government officials, regulators, financiers, legal advisors and other stakeholders involved in the negotiation, implementation and renegotiation of the private sector contracts. I carried out more than 25 interviews each in Manila and Jakarta, and interviewed several individuals from each of the key parties – the concession companies, government officials and the regulatory agencies – to allow for the cross-referencing of information. A full list of the interviews conducted and the roles of the individuals concerned is given in the annexes.

I also collected financial and performance information for the periods before and after private sector involvement where available. In some cases, this information is confidential or not independently audited. In these cases, I sought to verify information through other sources, but note the concerns in the text. In addition, I draw on contracts and other legal documents, loan documents and reports from multilateral agencies, regulatory review documents and reports, papers and presentations by the private companies and extensive media searches.

The hypotheses developed in Chapter 5 are considered in the light of the case study evidence. While they provide interesting insights, the complexity of the cases means that inevitably the framework captures only some of the important elements in explaining the behaviour of the parties.

1.8 Key Findings

The findings of this research deepen our understanding of the link between institutions and economic regulation. The first step in the analysis demonstrates the significant effect of institutions on the likely number of PSP in the water sector.

(1) Incomplete Institutions

Institutions play a significant role in many aspects of government and firm behaviour under public-private contracts. They influence the decision of governments and firms to choose to engage in a PSP contract, as well as the decisions of the parties to cooperate – or not – in the implementation of the contract. The quantitative analysis shows that institutions have a significant affect on the extent of water PSP in a country.⁴ The institutional indicators that emerge as most significant are those that reflect the quality of administration, including government effectiveness and regulatory quality. More general institutional indicators like the rule of law have a lower level of significance. The nature of institutional indicators raises challenges for refining the interpretation, but the results of the regression show a convincing link between institutions and the amount of PSP.

The impact of incomplete institutions on contract implementation is also significant, particularly during renegotiations – either contractually mandated or shock-induced. Uncertainty about whether the contract will be enforced creates incentives for the parties to engage in strategic behaviour and low regulatory quality will make it easier for parties to disguise opportunistic behaviour under contractually mandated adjustments. In the absence of principles and procedures on which to base contract amendments, contracting parties will engage in long, often acrimonious negotiations, characterised by strategic behaviour, with deleterious effects on the operations of the concessions.

Multiple government actors tend to be involved in the negotiation and renegotiation of contracts. This offers advantages, as it constrains the ability of any one actor to make arbitrary decisions; however, multiple actors are more likely to initiate renegotiations, and it will be more time-consuming and difficult to conclude these renegotiations. The case studies provide strong evidence of delay or failure to agree a contract amendment due to the competing interests of government parties.

The time preference or discount rates of governments and firms fluctuate over time, creating shifts in the set of mutually acceptable contract agreements. For governments, the main drivers of discount rates are the electoral cycle and macroeconomic conditions.

⁴ This part of the thesis was published by the World Bank as part of its Policy Working Paper Series (Jensen and Blanc-Brude 2006).

For concessionaires, discount rates will be influenced by the performance of the parent companies and their corporate strategies. Strong institutions help to dampen the effect of shifting discount rates, but some volatility is probably inevitable in the implementation of long-term contracts.

Close links between politicians and businesses and other forms of corruption undermine successful contract implementation in several ways. Corruption during contract award can lead to a backlash from the public or a new government, casting into doubt the legitimacy of the contract and possibly justifying the amendment of the contract. The case studies provide ample evidence that companies which rely on links with politicians as a form of security in a weak institutional environment may face higher risks in the long-term. Corruption in the public utility before privatisation creates other problems, as the public sector managers, employees and contractors can form a strong bloc of resistance to the success of the PSP contract.

(2) Role of the Regulator

The regulatory agency can play a significant role in constraining the opportunism of the parties in situations in which contracts are not enforced by the parties themselves. A regulator with a statutory responsibility to monitor the implementation of the contract can monitor the behaviour of both government and firm, not in terms of its direct benefits to the parties at any one time, but in terms of compliance with the original contract. Stronger regulators may have powers to bring legal actions or impose penalties on the parties in the event of non-compliance. A regulator with this responsibility will also have an interest in ensuring that any renegotiations are concluded efficiently and unambiguously.

Even a regulatory agency with few powers can contribute to cooperative outcomes. An agency of this kind may have an incentive to encourage public participation through information dissemination, public hearings etc, to increase its own effective powers in relation to other branches of government or the regulated firms. The regulator can also play a role in adjudicating between the parties in the case of a dispute or a change in the operating environment requiring the amendment of the contract. In countries where judicial remedies for disputes are not effective, the regulator offers an alternative dispute resolution mechanism and is an intermediary step before going to international arbitration. Finally, the regulator can enhance the legitimacy of a contract signed by one

government, after a change in the political leadership. This is particularly important in countries where corruption levels and political turnover levels are high.

The implications of the research for policy include:

- Ensure agreement between the parties on financial and operating data and financial models used in contract reviews;
- Include clear processes and procedures for the review of tariffs and performance requirements in contracts;
- Define principles and procedures to amend the contract in the event of shocks, allocating responsibility for negotiating and approving any amendments to named government bodies;
- Create and strengthen contract-based regulatory agencies, matching their responsibilities with oversight and a process of appeal.

1.9 Thesis Outline

The next chapter provides a review of the empirical literature on private sector involvement in infrastructure, public-private contracts and regulation, with particular reference to the water sector. The review covers both large sample quantitative analyses and case studies which contribute to our knowledge of the sector. The literature points to the importance of institutions, regulation and factors like reputation in influencing the behaviour of governments and firms.

Chapter 3 introduces the relevant branches of theoretical literature. It reviews the contributions of agency theory, law and economics and contract theory to our understanding of public-private contracting.

Chapter 4 presents descriptive statistics and the results of the count outcome regression analysis of factors influencing the number of PSP projects in the water sector. Chapter 5 presents the framework and the hypotheses that emerge. The following two chapters are devoted to the qualitative research. Chapters 6 and 7 present the stories and analysis of the concession contracts in Manila and Jakarta. In each case, I present the history of the concession from its award, and consider the hypotheses in light of this evidence.

The final chapter summarises the conclusions of the research and identifies policy recommendations and directions for future research.

2 Water Sector Reforms: Review of the Empirical Literature

2.1 Overview of the Chapter

This chapter reviews the empirical literature on water privatisation and the privatisation of other utilities and addresses four inter-related questions: Firstly, what are the motivating factors behind liberalising the water sector to PSP, and what drives firms to engage in a PP contract? Second, is PSP a significant phenomenon within the water and sanitation sector as a whole? Thirdly, how extensive is economic regulation in the water sector in developing countries and what forms does it take? What is the relationship between regulation and outcomes? Finally, the chapter reviews the state of knowledge on behaviour and welfare outcomes for firms and governments of PP contracts in water and asks, what are the likely pay-offs to the contracting parties and third parties?

The review shows the wide range of experience in the extent of PSP in the water sector, in regulatory systems and in outcomes. In many respects, the performance of the water sector has been worse than other infrastructure sectors: fewer fiscal benefits for the government, low returns for firms, lower rates of investment and service improvement than expected and higher rates of renegotiation. At the same time, regulation is less well developed than in other sectors. Yet, in comparison to other infrastructure sectors, water remains less well researched.

This is largely the result of limitations in the availability of data. A distinctive characteristic of the water sector is that it often a local responsibility and PSP contracts may be agreed at the local level. As a result, there can be considerable variation in the nature of PSP and regulatory structures within a single country. In cases where regulation is contract-based, the regulatory regime will be specific to the city or region covered by the contract. This sector structure also means that data on the number and size of contracts, their operating and financial performance and regulatory structures are often not collected and analysed at the national level, let alone the international level, making empirical analysis much more difficult.

2.2 Motivating Factors Behind PSP

The first step in the engagement of governments and firms in public-private contracts is the decision of the government to open the sector, and the decision of the firm to get involved. This section reviews literature on motivating factors which is used to inform the selection of the independent variables in the regression analysis presented in Chapter

4. Poor performance in terms of coverage and quality of services is demonstrated in the data below and well documented in the 2006 Human Development Report (UNDP 2006). The WHO/UNICEF Joint Monitoring Program has identified countries where coverage is particularly low and where coverage rates are declining, as particular targets of efforts to meet the MDGs, but these data are subject to considerable limitations and uncertainty. Among these ‘lagging’ countries are four in Asia, China, the Philippines, Myanmar and Vietnam. The low rates of coverage suggest that the public sector does not have the incentives or the resources to provide better water and sanitation services.

Table 2.1: Water and Sanitation Coverage Rates by Region 2002

	Population without access to an improved water source (%)	Population without access to improved sanitation (%)
East Asia	22	55
SE Asia	21	39
South Asia	16	63
Western Asia	12	21
SS Africa	42	64
Northern Africa	10	27
LAC	11	25
Oceania	48	45
Developed countries	2	2

Source: WHO/UNICEF JMP 2004

Savedoff & Spiller (1999) offer an explanation for why this might be the case. They characterise the situation of many public utilities as a ‘low level equilibrium’ of low tariffs, low investment rates and low coverage and quality of service and provide evidence for low level equilibrium in the water sector of a sample of Latin American countries. Low level equilibrium is due to the combination of large sunk costs and low marginal costs, which mean that a utility company will still operate even if revenues only cover the marginal cost of operating the service and not the cost of maintaining or replacing assets. Assets will be run down and the quality of service will fall, but these effects will take time to show through. People not connected to the network – the potential customers of the utility, who would benefit from investment in the extension of the network – tend not to constitute an effective lobbying group compared to those already connected to the network, who can organise more easily to oppose tariff increases which creates incentives for politicians to suppress tariffs. These characteristics are shared to some extent by all utilities, but are particularly acute in the water sector because of the long life of assets and the slow pace of technology change. In the telecoms sector, the decline in service quality caused by underinvestment would become clear much more quickly. These characteristics mean that the incentives of

politicians or the constraints on their behaviour need to be changed before water services improve.

Evidence of poor operational and financial performance for Asian cities has been gathered by the Asian Development Bank and is shown below. The data show a very small positive change in coverage but declining real tariffs and declining financial performance, shown in the working ratio of more than 1. Of the cities included in the comparison, only two, Manila and Jakarta, are under private concession contracts, too few to allow for statistical comparison between PSP and non-PSP utilities.

Table 2.2: Performance Indicators for 15 Asian Utilities 1995 and 2001

	1995	2001
Water production (m3/day)	1,675,420	1,823,360
Number of connections	665,830	886,250
Water Coverage (% pop)	77.3	78.0
Domestic consumption (lcd)	145	164
Average tariffs (US\$/m3)	0.195	0.175
Staff numbers	5,030	5,270
Non revenue water (% of production)	43.5	35.8
Working Ratio (O&M cost/ revenues)	0.93	1.12

Source: ADB Water in Asian Cities 2004

As water is usually structured as a municipal service, data on efficiency and financial indicators of water service providers and on tariffs is rarely collated at the national level in developing countries. Recently, a few benchmarking schemes have been set up at the national level, as in Indonesia and Vietnam.⁵ Efforts have begun to collate these data into an international dataset under the Water Research Centre's International Benchmarking Review (2001)⁶ and recently under the World Bank's programme IBNET (World Bank 2006).⁷ However, these international datasets are only beginning to be used as the basis for analysis and should provide interesting avenues for research in the future as more countries are included.

Poor performance does not by itself motivate reform. In practice, low-level equilibria can last for long periods, as the cases presented by Savedoff & Spiller show. Under what circumstances is reform of the water sector likely to take place? Reform will only take place where there is a confluence of factors strengthening the interest groups in favour of reform, and the influence of those opposed to reform can be overcome. Estache (2005) notes how politically vocal middle-class users became increasingly

⁵ For Indonesia, see: http://www.perpamsi.org/benchmarking_eng.htm and for Vietnam, (World Bank 2002))

⁶ International Benchmarking Review ((Water Research Centre UK 2001) See <http://www.wrcibr.com>)

⁷ See <http://www.ib-net.org/>

dissatisfied with service quality in the 1990s, tipping the balance in favour of reform. Poorer groups who were not connected to the network had not had sufficient voice to set reform in motion before. In addition to a strong demand for reform, reform must also be feasible (sources of resistance to policy change can be overcome) and credible (actors expected to participate in the restructured sector must believe that the reform will be implemented and sustained). This framework for considering policy change is fruitfully employed by Alcazar (2000), Menard & Clarke (2000a & 2000b), Shirley (2000) and others and fits well with the experience in utility reform in developing countries. From the point of view of the firm, credibility is the critical factor.⁸

This same group of case studies points to the involvement of external actors, like international financial institutions, as significant in the decision to liberalise the water sector. This relationship is investigated in the empirical analysis of Chapter 4.

2.3 Significance of PSP in the Water Sector

As we saw in the previous chapter, the number of countries with PSP in the sector is comparable to that of the electricity distribution or rail transport sectors. Yet, the number of people who receive water services from a formal private provider is relatively small. This section sets water PSP in the context of water provision as a whole.

Water services are provided by the large-scale private sector to an estimated 5 percent of the global population (Hall and Lobina 2006) but the quality of the data available on service coverage and the classification of private cast doubt on the reliability of any global estimate. As mentioned in the previous chapter, 35 percent of developing countries have some large-scale private investment in the water sector. Private sector involvement is unsurprisingly concentrated in urban areas (WATSUP Database), but again the quality of data makes it difficult to estimate the proportion or the urban population served by the private sector.

Small-scale private provision of water services is also significant but its coverage is difficult to estimate. In a review of the water and electricity sectors, Kariuki and Schwartz (2005) estimate that there are 10,000 small-scale private water service providers (SPSP) in the 44 developing countries reviewed, but note that this is likely to

⁸ For example, Alcazar et al (2000) for Buenos Aires, where water was part of a wide-ranging economic reform programme; Guinea, where the privatisation took place under the Structural Adjustment Programme (Menard & Clarke, 2000), or Manila where electricity privatisation preceded PSP in water (Dumol 2000).

represent only a fraction of the total population of SPSPs, given the scarcity of documentation on this type of provision. SPSPs are active where utilities do not provide adequate service and have made significant investments to serve areas that are out of reach of formal networks. They are especially prevalent in low income and conflict-affected regions.

During the 1990s, countries liberalised infrastructure sectors rapidly, with water usually the last utility sector to be opened up (Estache 2005), although PSP for water has a longer history in a handful of places.⁹ Among developing countries, Cote d'Ivoire was one of the first to have a concession contract, which was awarded in 1959 (Ménard and Clarke 2000) while the first concession contract for water services in Asia was signed for Macau in 1985. This was soon followed by other countries in the region.¹⁰ However, the pace of change of institutional reform in the water sector has since slowed down. In 2001, 11 countries closed their first contract for PSP in the water sector. This figure declined in 2002, when four countries signed their first project, then to 1 in 2003 and none in 2004 (Izaguirre and Hunt 2005). Trends in private investment are examined in more detail in Chapter 4.

The total amount of private investment in the water sector is difficult to estimate because the available figures relate to commitments rather than disbursements. Izaguirre and Hunt, drawing on the World Bank's PPI Database, estimate annual investment commitments to the sector averaged US\$1.9 billion in 2001-04, compared to an average commitment of US\$4.2 billion in the period 1995 to 2000 (Izaguirre and Hunt 2005). Again, bearing in mind the poor quality of data on volume of investment in water and sanitation, it appears that private finance has overtaken development assistance as the second largest source of finance for the sector after public finance, constituting approximately 20 percent of overall financing to the sector (Estache 2004).

These figures of private sector involvement in the water sector consider only formal private providers, but many poor customers in urban areas are currently served by

⁹ Among the developed countries, France has a long tradition of PSP through 'delegated management' contracts (Bezancon 2004). French companies have operated for long periods in Spain and some French colonies (World Bank and PPIAF 2006). In the US and Canada, municipalities awarded contracts to private companies in the 19th Century, but many of these utilities were subsequently brought under public ownership (Gómez-Ibáñez 2003; Palast, Oppenheim et al. 2003). The UK introduced water privatisation in the 1980s, at the beginning of a new wave of privatisation (Bakker 2001).

¹⁰ Malaysia announced its policy to liberalise the sector in 1985, followed by Thailand, Indonesia and the Philippines. In Latin America, the first countries to experiment with PSP were Argentina, Colombia and Mexico from 1991 (Foster 2005).

informal private providers (See UN Task Force on Water and Sanitation 2005 for descriptions of common water service structures pp.47-54). Other alternatives to piped networks are self-provisioning from wells or surface water sources.

2.4 Economic Regulation in the Water Sector

Regulatory frameworks – the principles, procedures and formal institutions for setting tariffs – in the water sector are generally less developed than those for telecoms or power in both developed and developing countries. However, the basic principles behind economic regulation are well understood. Ideally, the regulator's objective should be to maintain the alignment between a company's rate of return and its cost of capital. A ROR in excess of the cost of capital inappropriately penalizes consumers, while a ROR beneath the cost of capital discourages further investment. But the practical application of this balance is often difficult to achieve.

The cost of capital is one of the most important factors that regulators have to estimate. The method for calculating it is well established: regulators first estimate the risk free rate, the company specific debt premium (straightforward when companies have existing quoted debt); the equity risk premium, and the beta coefficient. Again, however, this has proved more controversial in practice than in theory. In UK for example, the estimation of the beta has tended towards 1 even though there are good reasons to think that utility stocks are much less risky than the average company (Jenkinson 2006).

Regulators are also concerned with quality under price-cap variants, as firms have incentives to cut costs, potentially at the expense of service quality. The key concern for utilities will be the reliability of service, and there is a strong link between the level of investment by the utility in the maintenance of the network and interruptions to service. If quality incentives are too strong, on the other hand, the regulated company will have an incentive to 'gold plate' its service. Regulators have introduced quality incentives using a range of mechanisms including legally binding targets for specific service levels, league tables and the way in which maintenance expenditure is capitalised in to the company's regulatory asset base. Of these, empirical work suggests that reputational effects may be the most effective (Elliott 2006).

In practice, the practical application of regulatory economics theory on incentive regulation has been limited by the commitment problem. Regulators have not been able

to commit not to expropriate the gains of the firm: “No regulator can even admit that it allows the firm to retain information rents let alone commit to such a practice” (Crew and Kleindorfer 2006: 71). Regulators have instead tended toward performance-based regulation (PBR), a hybrid under which the regulator sets an allowed ROR and a small dead band around this rate, within which no change in rates is triggered. Outside the band, changes result in sharing the excess between customers and the company. “PBR has the potential for increased efficiency, while accommodating both sides of the process.” (Crew and Kleindorfer 2006: 73)

In the absence of a full-proof solution, regulators rely on other methods to reduce the information asymmetry between themselves and the companies, such as benchmarking. Shleifer (1985) showed that a firm’s revenue needs could be assessed by looking at cost in comparable firms or industries, thereby reducing the effect of the company’s own costs on its prices. This grounds the widespread use of benchmarking by utility regulators. However, it has proved difficult in practice for regulators to let firms go bankrupt, and restrictions on data availability – too many variables and too few companies – have limited the application of benchmarking. Questions also remain about whether operating and capital expenditure should be handled together or separately.

Despite these challenges in implementing economic regulation, there is general agreement on these principles and theoretical and practical experience in this area has built up. Yet, the development of regulation in the water sectors has lagged behind other infrastructure sectors.

Estache and Goicoechea (2005) provides a first-brush assessment of the extent of PSP and regulation by region and income group. The data cover two indicators, whether there is ‘significant PSP’ and whether there is an ‘independent regulator’ based on expert opinion. In each case, they use a binary ‘yes or no’ indicator. In the sample of countries covered, only 21 percent have an independent regulatory agency for the water sector.¹¹ For water regulation, differences between income groups are relatively small.¹² The results by region show other interesting variations: the Middle East & North Africa region and South Asia have no independent regulators, while only 12 percent of the sub-Saharan African countries do. By far the highest score for regulation is in Latin America

¹¹ This compares with 51 percent for electricity and 66 percent for telecoms.

¹² 21 percent of all developing countries have such an agency, against 20 percent for developed countries, and only 11 percent for low income countries.

where half the countries in the sample have an independent regulatory agency of some kind. The authors indicate a figure of 25 percent for East Asia but note that the Asian sample, which only contains information for eight countries, is too small to allow for robust conclusions.

Foster provides a more detailed picture of regulation in a sample of six Latin American countries (2005). She finds that regulation is more widespread than private sector provision in the region as restructuring of the sector has occurred in some cases without liberalisation to PSP.¹³ Foster estimates that 41 per cent of urban consumers benefit from regulation, while only 15 per cent are served by private operators.¹⁴ Overall, Latin America has proceeded much further with water sector reforms than other regions, but has encountered tensions between the centralised nature of regulation and the highly decentralised structure of service provision. In sharp contrast to Latin America, water sector restructuring and the development of regulation in Asia has been limited. A 1998 NERA study found that overall the development of regulation was limited across utility sectors in Asian countries, and particularly in the water sector (National Economic Research Associates 1998). Estache (2005) also notes the limited nature of regulatory reform in Asia, which contrasts with the region's success in attracting foreign investment in infrastructure. Only one country in the region, Laos, has an established independent regulatory authority (Mosley, Arriens et al. 2004).¹⁵ In most Asian countries, regulatory responsibilities are shared between national and municipal governments. Local utilities are usually largely self-regulating, reporting periodically to the municipal government. The municipal government will usually have final control over tariff-setting, within a framework of guidance set by the central government (McIntosh 2003; Mosley, Arriens et al. 2004).

The limitations in the data have restricted empirical analysis on the effects of economic regulation specifically for the water sector, but some cross-sector studies have been

¹³ In Chile, reform preceded PSP by almost a decade, while in Bolivia and Colombia, reform has been nationwide, but PSP has been confined to a small number of cities.

¹⁴ Regulation is generally organised at the national level but in Argentina, regulators have been created by about half of the provinces in addition to the national level regulator, and in Brazil regulation takes place at the State rather than the Federal level. In several Latin American countries, regulators make recommendations on tariff-setting, but municipalities have the final power to approve tariff adjustments, as in Peru and Bolivia.

¹⁵ The Philippines has a national agency with responsibility for economic regulation but it has only taken on these functions very recently, and they do not apply to the country's private utility providers (Interview: Alikpala). In early 2006, Malaysia passed legislation to create a national regulator which begins functioning in 2007 (Interview: Kapparawi, 2006).

conducted which raise interesting and sometime surprising conclusions about the relationship between regulation and investment. Overall, the literature suggests that good regulation is associated with better welfare outcomes (Estache 2004), but more independence is not necessarily related to more investment.

Wallsten (2002) examines the relationship between sector regulation and private investment in the electricity sector, and in particular the existence of a separate regulatory agency not directly under control of the Ministry. He finds that countries with a regulator have more private sector investment and that regulation has a positive impact on the prices investors are prepared to pay for privatised assets. Looking at the sequencing of reform and privatisation, Wallsten finds that the establishment of a regulator prior to privatisation is significantly and positively correlated with infrastructure penetration and investment levels. But his analysis also generates the surprising result that regulatory independence has a robust negative correlation with investment. He suggests that 'too much independence from political influence may be harmful' to the firm's interests (Wallsten: 13). In the absence of political control over the regulator, the regulator might either engage in arbitrary behaviour, or might interpret its role as protecting the interest of the consumer, at the expense of the firm.

Pargal's work on cross-sector data from Latin American countries, Pargal (2003), finds that the passage of legislation liberalising the investment regime is a significant determinant of investment volumes. These results show that the existence of a regulatory body loses its significance when legislation is controlled for, and imply that the legal basis for reform is more important than specific aspects of the institutional framework for PSP. However, when Pargal breaks the results down by sector, she finds that the relationship between legislation and investment does not hold for the water sector. She suggests that the powerful natural monopoly characteristics of the sector and the 'essential' nature of the service make the water sector riskier than others. Investors may require more than just a sector law to reassure them of a fair and consistent regulatory regime. Furthermore, the ad hoc nature of PSP contracting in the water sector means that sectoral legislation is neither necessary nor sufficient for private investment. Another explanation is that water sector laws may address water resource issues (i.e. the allocation of water resources between agricultural, industrial and household use, establishment of a water rights trading regime), rather than the competitive structure of

water service provision and economic regulation, which would be the issue of most concern to potential investors.

The work of Keefer and Stasavage (2000) on the impact of political stability demonstrates its importance through a more indirect channel of commitment. They show that the relationship between an independent central bank and lower inflation rates, which has been found in some studies, falls away when political stability is included in the regression and that it is the interaction effect between central bank independence and political stability that has a significant impact on inflation rates. A similar relationship may exist with regard to private investment in utilities: governments are only able to overcome the commitment problem associated with long-term investments by the private sector if the underlying institutional characteristics constrain the government's and future governments' ability to expropriate these investments. This work also supports the selection of institutional variables as potential determinants of the decision of the private sector to engage in a PSP contract.

Andres et al (2007) consider regulation from a different angle, developing an index of regulatory quality based on its independence from government, and test this against the profitability of firms. They find support for their argument that good regulation will be associated with alignment of firm profitability and the cost of capital, but that regulators seem to be more focused on keeping tariffs low for consumers than in ensuring the ROR for firms.

2.5 Cooperation and Opportunism under Public-Private Contracts

This section considers the findings of research in the water and other sectors on the welfare impact of PSP. There is a wide degree of variation in the outcomes of PSP contracts in the water sector, making it difficult to generalise. Differences are due to the provisions of the contract and contract award process, the extent to which the contract is enforced, and existing conditions in the water sector at the time of contract award. There is some evidence on the impact on tariffs and on extensions in coverage, but it does not show a clear pattern for non-competitive sectors. One of the areas of greatest interest – whether investment rises under private control – is also one of the areas in which data are poorest. The findings of a small number of case studies in the water sector are presented here, but more research is needed before more general claims can be made. I take up both these issues in the case studies in Chapters 6 and 7. In terms of implementation, the available evidence suggests that a majority of PP contracts in the

water sector are renegotiated, due both to contract-specific and general institutional factors. At the same time, the existing case study literature points to the complexity of renegotiations, suggesting that a nuanced, case-specific approach to implementation may be necessary to supplement the large sample analysis.

2.5.1 Tariffs

The impact of PSP on tariffs depends on the process of contract award, the quality of economic regulation (whether the regulator ensures that cost savings made by the firm are shared with consumers) and the existing situation in the utility at the time of contract award (Estache, Gomez-Lobo et al. 2000). Average tariffs may rise as part of an effort to improve cost recovery and make the utility financially self-sufficient and to allow the private firm to earn an appropriate return on its investment, although the degree to which these increases are actually implemented depends on the degree of commitment of the government to the private firm's financial viability. Tariffs may also rise if the government prioritises the reduction in the fiscal effect and therefore selects a contract award process based on the sale value of the company. If the contract award is based on the lowest price, then tariffs may – at least initially – go down, or may rise at a lower rate because of greater efficiency.¹⁶ Evidence from Latin America shows that tariffs have, on average, risen after PSP (McKenzie and Mookherjee 2005).

Evidence from other utility sectors, including electricity and telecoms, shows very significant tariff reductions after sector restructuring. However, the downward trend in tariffs is associated with the introduction of competition and increased uptake of new technologies, rather than just to the shift in ownership (Estache, Gomez-Lobo et al. 2000). In addition to changes in the level of the average tariff, PSP has often been associated with rebalancing of tariffs and withdrawal of grants or cross-subsidies. Depending on local conditions, the restructuring of tariffs has been either regressive or progressive (Estache, Gomez-Lobo et al. 2000).

Several studies have considered the overall welfare effects of PSP. For a sample of projects in Argentina, Chisari et al find that the government was the main winner from privatisation in welfare terms (Chisari, Estache et al. 1999). A subsequent review of the literature for utility sectors in Latin America by McKenzie and Mookherjee (2005) finds

¹⁶ Two examples of competitive bidding based on lowest tariffs resulting in tariff reductions are Manila (Dumol 2000) and Buenos Aires (Abdala 1996). However, in both cases, tariffs were raised substantially in the period leading up to contract award and tariffs were raised as a result of renegotiation after contract award.

that overall privatisation has been neutral in welfare terms but that there has been a net welfare gain for consumers. This gain is largely due to positive effects from increases in coverage after privatisation, which outweigh the negative distributional impact of increases in tariffs.

2.5.2 Efficiency, Investment & Returns

There is an extensive literature on the impact of PSP on efficiency which finds a positive effect on efficiency in competitive sectors (Megginson and Netter 2001) and when taking both competitive and non-competitive industries together (Estache, Guasch et al. 2003; Andres, Foster et al. 2005; Birdsall and Nellis 2005; Kikeri and Kolo 2005). On the other hand, in infrastructure sectors, where competition may be restricted, privatisation is associated with efficiency only under certain conditions. Reviewing the literature, Hall & Lobina (2005) find that there is little evidence in favour of the superior performance of private performance for utilities overall (For example, Wilner and Parker 2002; Estache, Perelman et al. 2005). Of the studies that focus specifically on the water sector, Estache and Rossi (2002) find no significant difference between public and private utilities in terms of efficiency using data for a sample of Asian utilities, while Kirkpatrick et al (2004), similarly, find no significant differences in efficiency for a sample of utilities in Africa. An exception is a study by Estache, Guasch and Trujillo (2003), which finds a positive efficiency effect from PSP in Argentina. Estache et al (Estache, Goicoechea et al. 2006) examine the links between sector reform (including PSP), performance outcomes and corruption for infrastructure sectors. For the water sector, they find that reform does not have a significant effect on access; nor does corruption. Across sectors, they do not find support for the contention that PSP is associated with a reduction in corruption. For telecoms and water, the interaction term between coverage and corruption is also not significant, suggesting that PPI did not have the desired effect of addressing the effect of corruption in these sectors on access. They were unable to test for affordability and other performance outcomes for the water sector because of limitations in the data.

The paucity of data on investment by private and public entities in the water sector has already been noted. The evidence from case studies, meanwhile, is mixed. Abdala's study of the first few years of the Buenos Aires concession contract, for example, finds annual investment by the private sector to be five times higher than investment under public management, leading to higher rates of coverage, and lower NRW (Abdala 1996). However, a later study of the Buenos Aires contract finds that private investment

was lower than specified in the contract (Aspiazu and Forcinito 2002:23-28).¹⁷ Similarly, investment was lower than required in Cordoba and Sante Fe (Argentina), Campo Grande (Brazil) and Siza Water in Dolphin Coast, South Africa (Lobina and Hall 2003), but this does not tell us how investment after privatisation compared with investment before.

2.5.3 Regulation & Institutions

In other infrastructure sectors, where the quality of data is better, some papers have analysed the relationship between investment and institutional factors. Levy & Spiller (1994) consider investment in the telecoms sector in five countries over several decades. They find that for the one country, Jamaica, that experimented with fully discretionary regulation, investment rates were lower in that period than in other periods when discretion was constrained with contracts. However, it is difficult for them to demonstrate their case with these five examples, because the regulatory systems used were mostly hybrids of statutory and contract-based regulation, in both the Presidential and Parliamentary systems. Levy & Spiller's supposition that regulatory regimes will be more difficult to change in Presidential systems is not supported by these cases, either, as changes in the regulatory regime occur as often in the Presidential systems as in the Parliamentary ones (Gómez-Ibáñez 2003: 52-3). While the underlying link between credibility and investment rates is certainly worthy of further investigation, the core idea of Levy & Spiller – that contracts offer more credibility than primary law in political systems where constraints on the executive are weak – does not seem to be borne out by the evidence presented, or the case studies documented in the literature or carried out for this research.

Later papers have attempted to test the underlying insight of Levy & Spiller using large sample quantitative studies. Two studies use long-term historical data for the power and telecoms sectors respectively in regression analysis to demonstrate the effect of political constraints on investment rates (Henisz and Zelner 2001; Henisz 2002). In both cases, the political constraints variable constructed specifically for the research is found to be significant. However, the drawback of these studies is that coverage rates are used as a proxy for capital investment. This is problematic because it does not distinguish between public and private investment and so does not tell us anything specifically

¹⁷ 45% of projected investments were not implemented in the first three years of the concession, amounting to a total of about US\$ 300m (Aspiazu and Forcinito 2002). A further study has estimated that from May 1993 to December 1998, Aguas Argentinas failed to realise 57.9% of the originally agreed investments for a total of US\$ 746.39m." (Lobina and Hall 2003:11)

about the impact of government stability on the decision of the firm; further it assumes that the efficiency of capital investment is constant across time. This literature provides support for the link between political institutions and investment but further analysis is required to demonstrate the link with the decision of the private firm to engage in long-term capital investments.

Several studies find links between investment and corruption. Laffont (2005) finds a U-shaped relationship between corruption and privatisation, such that very high levels of corruption and very low levels are associated with low rates of privatisation. The relationship between corruption and private investment is investigated further by Everhart and Sumlinski (2001). They find that the mechanism driving the negative effect of corruption on private investment levels is due to the detrimental impact of corruption on the quality of public investment. Guasch et al (2003, 2006) find corruption is significant in their analysis of renegotiation. Interestingly, corruption has opposite effects on the probability of renegotiation led by the firm (where more corruption is associated with more renegotiation) and renegotiation led by the government (where more corruption is associated with a lower probability of renegotiation).

Several papers have considered the outcomes of PSP from the point of view of the firm. Both Estache and Pinglo (2004) and Sirtaine et al (2004) find that returns to infrastructure investments in developing countries have not been commensurate with risks. Estache & Pinglo find that for a sample of 120 PSP projects in developing countries from 1998-2002, the cost of equity (COE) exceeded the return on equity (ROE) for private investors in all years, for all sectors and all country-income groups. For the water sector, ROE were negative in two years (1999 and 2002) while COE stayed close to 10 percent throughout the period. Using a smaller sample, Sirtaine et al find that ROE rates in the water sector have been highly volatile from 1990-2001 and are lower on average over this period than in the transport, telecoms and energy sectors. Of the four infrastructure sectors considered, water performed the worst in terms of the returns to firms. However, Estache and Pinglo note that their estimates of returns are lower-bound estimates based only on dividend payments. In fact, firms may extract profits from concessions through management fees and internal subcontracting. Profits

from these sources are not made public and are very difficult to estimate.¹⁸ Sirtaine et al do attempt to estimate these figures and find that returns in the water sector are still not commensurate with risks incurred in most of the estimation forms considered.

2.5.4 Implementation

The complexities of contract implementation make it extremely difficult to develop an indicator of contract implementation. One way around this is to follow a case study method, which makes it possible to take these complexities into account. Another avenue is to look at the stability of the contract itself as a striking feature of the anecdotal evidence on water and other infrastructure contracts in developing countries is precisely how unstable these contracts are. A series of papers based on a large dataset of concessions in Latin America have addressed this issue by looking at contract renegotiation (Guasch 2004). Guasch finds that renegotiation is extremely common in the water sector, with 74 percent of contracts being renegotiated.¹⁹ On average, water projects were renegotiated within the first two years of the contract. Most of these renegotiations were preferential to firms, perhaps suggesting opportunism on their part (Guasch 2004: 12).²⁰ Guasch argues that this demonstrates opportunism by the firm and that governments have been unable to resist requests from firms to renegotiate.

Guasch's analysis of the factors influencing the probability of renegotiation provide confirmation of the role of institutions in the implementation of contracts. First, he finds that some attributes of the political and institutional environment raised the probability of renegotiation: the absence of a regulatory agency in place when the contract was signed, elections, corruption and low bureaucratic efficiency. Secondly, he tests a number of contract specific variables and finds that some significantly raised the incidence of renegotiation. These were competitive bidding, price-cap regulation, contract award based on tariff, contracts specifying investment requirements. These results are discussed in more detail in Chapter 5.

¹⁸ A few contracts explicitly allow for internal subcontracting, as in Szeged, Hungary (Lobina and Hall 2003:15, 24) Management fees may be specified in the contract, and may be as much as 5 percent of operating income, as in Jakarta.

¹⁹ This compares to rates of renegotiation of 55 percent for transport, 10 percent for electricity and 30 percent for all sectors.

²⁰ The most common outcomes of a renegotiation were preferential to the firm, including delays in investment obligations (69 percent) or decreases in investment targets (63 percent), tariff increases (62 percent) and increase in the number of cost categories for automatic pass through to tariffs (59 percent). Many fewer renegotiations resulted in an acceleration of investment targets (18 percent) or tariff decreases (19 percent).

There are also a number of documented cases of contract cancellation, although it seems to be much less common than renegotiation (Dalton 2001; Lobina and Hall 2003).²¹ Overall, the World Bank PPI database identifies 20 projects that were either cancelled or have become ‘severely distressed,’ accounting for 7 percent of projects and 37 percent of investment commitments in 1990–2004 (Izaguirre and Hunt 2005:2). Most renegotiations examined in case studies involve compromises by both parties, rather than being a one-sided exploitation of a shift in bargaining power (Aspiazu and Forcinito 2002 on Buenos Aires; Lobina and Hall 2003 on Santa Fe). A common resolution is for the government to make concessions to the firm in the form of delays or reductions in investment obligations or performance requirements and for firms to acquiesce to tariff freezes or more modest tariff increases than those set out in the original contract (Hall, Lobina et al. 2003: 11, on Tallinn, Estonia).²²

This evidence prompts many further questions about cooperation and opportunism under long-term contracts. Under what conditions do governments and firms decide to engage in renegotiations? What determines the outcomes? What are the incentives and constraints facing governments and firms over the life of a PSP contract which would encourage or discourage renegotiation? These questions are framed in Chapter 5 and considered in the light of evidence from the case studies.

2.6 Conclusion

This review of the literature has raised several issues for further research but has also acknowledged the limitations on research strategies imposed by the lack of high quality data for the water sector. For this thesis, original quantitative and qualitative data has been collected, including quantitative data on the extent and nature of PSP in the water sector, and on tariffs and investment after contract award; and qualitative data on the

²¹ Examples of cancelled concession contracts include Cochabamba and La Paz-El Alto, where contracts were terminated by the national government of Bolivia, the former after only 6 months, the latter after 3 years. In Argentina, the private investor withdrew from the Buenos Aires Province contract, while the Santa Fe and Buenos Aires cities concessions were eventually terminated by the firm after long negotiations. In Tucuman (Argentina), the contract was terminated by the provincial government after consumers had stopped paying their bills (Lobina and Hall 2003: 14). In Nkonkobe (South Africa) the contract was terminated by the municipal government claiming that the contract, signed by the previous government, was invalid. The municipality had been unable to pay the management fee to the company. A contract for water services in Puerto Rico was awarded to one multinational water company, then re-awarded to its main rival after seven years and finally cancelled in 2003. Trinidad’s water utility has also been returned to the public sector and in Malaysia, the national sewerage company was renationalised in 2001 and a concession project in Kelantan was cancelled.

²² Other examples include Buenos Aires, where there have been several rounds of renegotiation, the first initiated by the government, the second round by the firm. A further interesting point to note in the Buenos Aires concession is that the executive intervened on behalf of the company to over-rule the regulator and during the renegotiations, the regulator was side-lined and discussions took place directly with the government (Alcázar, Abdala et al. 2000: 32)

behaviour of the contracting parties, the implementation of contracts and the role of the regulatory agency.

Several different strands of the literature reviewed here point to the significance of institutions in shaping the outcomes of PSP. Institutions were found to be relevant factors in investment and coverage levels for utility sectors and in the probability of contract renegotiation. Sector-specific institutions, including the regulatory system and the existence of a sector law, were seen to be significant determinants of asset sale prices and investment volumes. There are also some surprising results, notably that regulatory independence is associated with lower investment volumes. The mechanisms at work here need to be investigated further.

The following chapter reviews the theoretical literature, which provides the basis for the identification of the mechanisms connecting institutions, regulation and government and firm decisions. The significance of these relationships and the mechanisms are then investigated using original data and information in Chapter 5 onwards.

3 Theoretical Approaches to Utility Regulation

3.1 Introduction

This chapter reviews the theoretical literature on economic regulation, highlighting work that relates to the interaction of governments and firms under long-term public-private contracts. I cover literature drawn from several branches of economics: agency theory, contract theory, law and economics and economic theories of policy credibility and the behaviour of public agencies. I draw on this literature to develop the analytical framework in Chapter 5.

All of these fields share certain common assumptions. They approach the analysis at the level of the organisation and identify the key actors as the government, or agency of government, and the firm. They view these agents as rational, utility-maximisers, but consider both benevolent and non-benevolent governments.

Some of the key works that form the foundations of this thesis have already been introduced, notably Laffont's work on regulation and development (Laffont 2005), and Levy & Spiller's work on the relationship between the institutional framework and investment by regulated firms (Levy and Spiller 1994). From these two works, I draw the key insights that the institutional environment affects the behaviour of regulated firms, and that the institutional environments of developing countries pose particular challenges for public-private contracting. I pursue this line of investigation in the following chapters by trying to identify particular institutional attributes and mechanisms linking institutions to the behaviour of the agents. In this chapter, I set these key works in the context of their respective fields of research and look at how these fields contribute to our overall understanding of government and firm behaviour.

Several branches of economic theory introduced in this chapter identify the crucial influence of timing on the behaviour of agents. Contract theory focuses on private-private contracts, but can also be applied to contracts between firms and governments. It shows how firms' incentives to invest will be dampened if contracts are incomplete, and the government cannot make a credible commitment not to make changes in the regulatory regime (Williamson 1979). Later work in the field considers ways in which contractual incompleteness can be overcome, and I consider how these might be applied in the particular context of long-term water contracts in developing countries. The

policy credibility literature also emphasises how a welfare-maximising government may have incentives to reverse its own policies.

The origins of the economic analysis of regulation lie in welfare economics, which shows that government intervention may be necessary to overcome the market failure of natural monopoly. However, early work in this field of economics assumes a benevolent government maximising total welfare with perfect information. It does not interrogate the incentives or constraints for the firm or regulator, so does not provide the basis for a deep investigation of economic regulation. More pertinent here is agency theory, which waives the assumption of perfect information and looks at how the regulator can shape the incentives of the firm to operate and invest efficiently. Laffont's work on regulation and development is based in this theoretical school, but he takes it further by looking at the effects of institutions on incentive schemes. Extensions of the principal-agent framework to cover multiple principals are very relevant to the issues that I am considering, and I review some of the key papers in this area.

The fields of law and economics and public choice theory analyse government behaviour through the same framework of incentives and constraints that is applied to private agents and so provide a useful perspective for questions of political economy. Key works relevant to my research include Demsetz's work on 'regulation by contract,' Stigler and Peltzman's work on the incentives of the regulator, and several papers in the policy credibility literature which draw attention to the problem of time inconsistency in economic regulation, and the possible solution offered by delegation to an independent regulatory agency. Together, these papers inform my perspective on the behaviour of governments and regulators. I retain Stigler/Peltzman's framework in which the government faces a trade-off between negative utility from higher tariffs, and positive utility from the performance of the firm (although I model this as the level of investment by the firm rather than its returns). The assumptions made in this work are consistent with cases examined in the course of this research. Levy & Spiller's work fits in to the law and economics tradition, but was the first to examine the institution-regulation link. Although the authors did not focus on the development/developing country dichotomy in their analysis, their central insight – that the political system would have an effect on the implementation of economic regulation, and on the behaviour of regulated firms – is highly relevant to an analysis of regulation in developing countries.

The legal literature on relational contracts and extra-contractual norms provides a different view on how problems of contractual incompleteness can be and, in fact, are addressed in long-term contracts between firms. In this view, the legal contract is one element in a package of social-legal norms and reputational effects that arise from repeated interaction. When changes occur in the operating environment that are not addressed explicitly in the contract, norms and reputation will provide the basis for readjusting the contract. However, this literature has not specifically addressed the complexities of relational contracting between government and private firms, although the concepts can usefully be translated to this new context.

3.2 Information & Incentives in Regulatory Economics

The agency literature focuses on the asymmetry of information between the government – the principal – and the regulated firm – the agent – and analyses the incentives of the firm under different regulatory structures. A large number of papers in this literature examine the design of selection procedures for the private operator (looking at the different properties of competitive bids, auctions etc.) and the design of the regulatory incentive regime under conditions of two types of asymmetric information: adverse selection²³ and moral hazard.²⁴

The optimal design for contract award mechanisms is based on the revelation principle by which efficient (low cost) and inefficient (high-cost) firms can be induced to reveal their true type; the optimal design of contract incentives provides the operator with incentives to cut costs (Laffont and Tirole 1986). Agency theory is the theoretical foundation for incentive regulation which is associated with the use of ‘price-cap.’ Incentive regulation, which became widespread around the world in the 1990s, in theory provides the firm with stronger incentives to operate efficiently as it benefits from its efficiency gains.

From the perspective of agency theory, the regulator faces a trade-off between strengthening the efficiency incentives for effort on the part of the firm (implying a shift from ROR to price-cap) and transferring a higher information rent to the efficient-type firm, both of which constitute a loss of utility for the regulator. The government, in the

²³ A transaction in which the principal is unable to verify the agent’s efficiency or ability, resulting in the selection of less efficient or less able agents and in some cases the collapse of the market.

²⁴ A transaction in which the principal is unable to verify the agent’s level of effort, resulting in sub-optimal effort levels on the part of the agent.

role of the principal, must therefore choose between ‘high-powered’ incentive schemes like price-cap, in which the agent has strong incentives for efficiency but faces greater risks and earns a high rent, and ‘low-powered’ schemes, where the transfer of rents is limited but the efficiency incentives for the firm are weaker.

Applying agency theory to utility regulation, we can see that there are several layers of principal-agent interactions in a typical regulatory scenario: the electorate tries to exercise control over its agent, the government; the government in turn deals with the regulator as an agent; finally, the regulator is the principal in relation to the regulated firm. The latter relationship, between the regulator and the firm, has generated an extensive literature in the field of economics (Laffont and Tirole 1993). This work has examined in detail the trade-offs between high- and low-powered incentive schemes (price-cap and rate of return schemes respectively). In practice, these two approaches may differ less than might be expected (Alexander and Irwin 1996).²⁵

Later papers in agency theory cover dynamic settings, including the effects of weak enforcement on the optimal regulatory contract (Laffont and Tirole 1988; Aubert and Laffont 2002). This has implications for developing countries where enforcement might be weaker. But the ‘Ratchet Effect’ - whether the possibility of government-led renegotiation in later periods will cause the efficient firm to mimic the behaviour of the inefficient firm in the first period has first been identified by Weitzman (1980). The anticipation of opportunistic behaviour by governments will lead firms to hide information about their efficiency to protect future rents. In this case, the efficiency incentives of the regulatory system will be dampened or lost.

A further branch of the agency literature has considered the implications of having more than one principal. These models take a more realistic view of government, viewing it as multiple actors with interests that may compete. Multi-principal models have

²⁵ The weakening of efficiency incentives under price-cap occur because the price-cap is periodically reviewed, and during a review the regulator will usually take into account the level of returns that firms have been earning in the intervening period, lowering prices if the ROR is below the estimated cost-of-capital to the firm. In the run-up to the review, the firm has an incentive to influence the efficiency saving requirement by not operating at maximum efficiency. This has been documented empirically in several papers (Guasch 2004; Ballance and Shugart 2005; Foster 2005). It seems that the incentives acting on firms to increase efficiency between periodic reviews are eclipsed by the incentives to inflate costs as the price review approaches in order to secure a larger price increase for the next period. Regulators have also found it impossible in practice not to consider past profit levels when setting tariffs for future periods, known as ‘clawing back’ profits (Bakker 2001). In the expectation that this will occur, firms’ efficiency incentives are dampened. Over time, price-cap systems have been modified to allow for cost pass through for certain categories of expenditure to reduce risks to firms, leading to hybrid systems (Guasch 2004).

approached the question from several different angles. Shleifer (1985) argues that multiple regulatory agencies allow the ultimate political principle to apply 'yardstick' competition to regulatory agencies. Each regulator may have private information, but the government can reduce the information rents extracted by the regulators if there are several non-cooperative agencies. Martimort (1999) develops a model of multiple benevolent regulators with imperfect commitment and shows that division of responsibilities between non-cooperative regulators makes it more difficult to renegotiate the contract and so acts as a commitment device. The role of multiple principles during non-opportunistic renegotiations has not been considered.

Laffont and Martimort (1999) present a third model of the benefits of multiple regulators, focusing on non-benevolent, non-cooperative regulators with imperfect commitment. They find that the presence of multiple regulators reduces the likelihood of regulatory capture. However, they recognise that there are significant transactions costs in creating a new agency. Laffont (2005) considers the question of multiple regulators with reference to developing countries and concludes that the benefits of separation of regulators are greater in countries with weaker institutions but that the costs of setting up these regulatory agencies is also higher in developing countries because of the cost of public funds, and the limited 'stock' of institutions in these countries. Common to all these approaches, however, is the view that separation of powers between multiple principals contributes to the quality of the institutional environment.

Within this field, the paper closest to this research is Laffont (2005), which examines the optimal contract in the institutional environment of developing countries. In many ways, this is an exploratory work which examines some implications of institutions for regulation, but because so many aspects of the institutional environment are potentially significant, and because there are multiple mechanisms through which institutions will act on the incentives of the parties, Laffont 2005 does not provide a unified approach that could allow us to say from any one country, what the implications of institutions are for that country. My research comes at this problem from the opposite direction, working from qualitative material in contract-level case studies to identify the mechanisms through which institutions affect economic regulation.

3.3 Law and Economics

Within the field of law and economics, the policy credibility literature is relevant to this research both for the problem it identifies and for the solution that it proposes. The problem is this: a government with a long-term objective to provide a utility service at the efficient price and quantity creates a regulation to this effect, and the firm invests on this basis. Yet, once the firm has made a sunk investment, the government can change the rules to achieve a lower price with the same level of service. The firm knows that the government will do this, which undermines the credibility of the original regulation. Firms may also behave strategically in situations of weak commitment. This is considered further in Chapter 5. In this section, I present the development of this theory, which originally focused on central bank independence, and its extension to utility regulation.

Barro & Gordon (1983a), building on earlier work by Kydland & Prescott (1977), set out the time consistency problem as a complete information game between the government and private actors: A government (represented by a single actor) which makes an initial announcement of low-inflation monetary policy will have an incentive to create ‘surprise inflation’ to lower unemployment once private sector actors (also represented by a single actors) have formed their inflationary expectations and signed contracts accordingly. However, when people understand the government’s objectives, they readjust their expectations and build this inflation bias into their contracts. As a result, higher inflation rates are sustained. The term ‘time-inconsistent’ refers to the government’s incentive to deviate from the rule when private agents expect it to be followed (Barro and Gordon 1983a: 599).

Barro & Gordon (1983b) propose that the time consistency problem can be overcome through reputational effects, but in order to be effective, policy-makers must have a sufficiently low discount rate (in other words, they must set a high value on future losses caused by higher inflation). Where government discount rates are high, as would be expected in polities with frequent leadership turnover, the reputational equilibrium cannot be sustained. A second strategy is to constrain the actions of the policy-maker with rules; “The model stresses the importance of monetary institutions, which determine the underlying rules of the game... The rule of law or equivalent commitments about future governmental behaviour are important for inflation, just as they are for other areas that are influenced by possibly shifting public policies.” (Barro

and Gordon 1983a: 608) Vlaicu and Keefer (2005) examine the choices available to politicians to overcome their credibility deficit in the context of young democracies: politicians can either build up their reputation directly with voters or they can use intermediaries (patrons). They show how building reputation with voters is costly but leads to better public good provision.

Time inconsistency theories have been subject to empirical testing. Rogoff (1985) demonstrates how the delegation of policy to an independent central bank(er) will lead to lower average inflation (but higher output variability). This finding prompted many governments to delegate monetary policy, with varying degrees of success.

However, breaking down the analysis by national income level, they found that the relationship does not hold for developing countries. Keefer & Stasavage (2000) develop a plausible argument for why this might be the case. They model the effect of weak governance on credibility. In their model, they allow for the possibility that a government may reverse a policy commitment to central bank independence or may over-ride the independent bank's authority. In cases where constraints on policy reversals are weak, the creation of an independent agency does not allow the government to overcome the perverse consequences of the time inconsistency problem. They test the model empirically and demonstrate that the effects of delegation to an independent agency are very sensitive to the institutional rules and in particular to the number of veto players in the government.

Policy credibility is a concept with broad application: it has been shown to undermine structural adjustment programmes and trade liberalisation efforts, encourage capital flight and depress savings (Murphy, Shleifer et al. 1991; Rodrik 1992; Rodrik 1993). Credibility and delegation also have a clear parallel to utility regulation where the optimal output/tariff combination can only be reached if the private sector finds the government's regulatory commitments credible and invests accordingly (Stern and Trillas 2001). Levine, Stern & Trillas set out the parallel thus:

For utility services like telecoms there is a classic time inconsistency problem: these services require large volumes of investment which, once installed become 'sunk assets' in the sense that most or all of them cannot be removed and used elsewhere or sold on second-hand markets at their original cost. In consequence, private investors are at risk of opportunistic behaviour by Governments, particularly over prices, once the investments have been installed; and awareness by private investors of this regulatory risk drives up the required rate of return and the cost of capital. (Levine, Stern et al. 2005: 449)

Applying the work on credibility and delegation provides a useful frame to analyse the decision of governments to use reputational mechanisms or delegate regulatory authority for utilities to independent agencies. In both cases, reputational solutions are possible provided that the policymaker is sufficiently far-sighted. However, Levine et al (2005) find that the hold-up problem is more serious for utility regulation than for central banking. In their model, a benevolent regulator sets the tariff for the firm to maximise total welfare. If the initial tariff meets the firm's participation constraint, it will carry out investment. After the firm has invested, the regulator can raise welfare by reducing the tariff. The firm will not invest further, but if capital depreciates slowly and consumer demand rises slowly, there will be a period during which the regulator will be 'tempted' to suppress tariffs. At the end of this period, when demand has risen and the original capital invested must be replaced, the regulator will be 'punished' for suppressing tariffs. In some sectors, this temptation period might be very short, or absent, as in telecoms for example, where demand and technology change rapidly, but in the water industry, which fits the two criteria of slow changes in demand and slow depreciation, this regulatory period would be long, and so a reputational equilibrium could not be sustained.

The credibility approach retains the assumption of government benevolence and shows how even under these conditions it may still be worthwhile for the government to create an independent regulator with a clear objective to balance producer and consumer interests. This literature does not question what happens if either the government is not benevolent, or the regulator does not fulfil its theoretical role as a rational implementor of regulatory rules.

In terms of this research, I carry over the critical role played by timing in the policy credibility literature to the development of the model and to my case study analysis, although I do not assume a benevolent government seeking to maximise welfare even in the long-run.

From other strands of the law and economics literature, which covers a disparate range of topics, I highlight here two particular themes: rational choice and utility maximisation by government agencies (public choice theory), which provides a framework in which to consider the disparate goals of public sector actors; and

collective action, which can be used to explain why some groups are more influential with the regulator – or directly with the government – than others. I then look in more detail at the analysis of Stigler and Peltzman which I draw on extensively in my approach to the behaviour of the government. The work of Levy and Spiller (1994), which was introduced in Chapter 1, also falls within the field of law and economics and is of great relevance to my research.

The public choice literature characterises governments not as benevolent maximisers of the public interest, but instead as agents with their own private interests (Niskanen 1971; Buchanan and Tollison 1972; Buchanan 1975). These are shaped by political institutions, and diverge more or less widely from the public interest depending on the nature of those institutions. As bureaucratic agencies, regulators fit closely into the model of bureaucratic departments described in the public choice literature or Wilson (1989). This work envisages that bureaucrats seek to maximise their utility through factors like the prestige of the department; the scope of the department's activity; or the size of the department (reflected in staffing or budget).

The public choice perspective implies a disaggregated view of the state, breaking it down into the executive, legislature, bureaucracy, courts and so on, or further, into the different departments and agencies of government. Each may have different goals and incentives from the others. Thus, whether the regulator is located within a government department or is an autonomous agency will affect its incentives and so may be important to its susceptibility to capture.

The collective action literature seeks to explain why some interest groups are more active and influential than others within the political system. The work of Downs (1957) and Olson (1965) demonstrates how collective action can be more easily achieved when the group of agents is small and its members stand to gain or lose a great deal from regulation. Where the group is large, monitoring costs are high and the group members do not have incentives to incur costs in monitoring each other, and when the benefit to any one member of the group is small, each individual will have an incentive to free-ride on the efforts of the others. Together, these factors help to explain why general interests, like the interests of utility consumers, may lose out to particular interests in democratic systems.

Applying the theories of collective action to economic regulation, we can see that a small group of regulated firms will be better able to organise collectively to influence the regulator, a phenomenon known as regulatory capture. Regulatory capture is not exclusive to economic regulators, of course. It follows “patterns not peculiar to commissions but common to a whole range of bureaucratic interdependency between government agencies and organized interest groups whether in labor, agriculture, defense or other private interests able to use the power of the state for their own benefit.” (McCraw 1975 : 180).

The early literature on regulators developed in the US, which has a long history of private ownership in network industries. In the first half of the 20th Century, regulatory agencies were seen as agents of the public interest, protecting consumers from exploitation by monopolists (See McCraw 1975 for a review). Over time, however, critiques of economic regulation developed. Stigler (1971) argues that the demand for regulation comes from industries and that regulation is designed and operated for their benefit. Regulatory agencies are ‘captured,’ in the sense that they regulate in the interests of the industries that they are intended to control. Posner (1972) refined the critique, arguing that capture by other groups was also possible. Peltzman (1976) formalised these ideas in a model of regulation that took into account the influence of both consumer and producer interests. In Peltzman’s model, the government’s utility is a negative function of consumer tariffs and a positive function of the profits of the regulated firm.²⁶ The model assumes that increases in tariffs are unpopular with the public, and so reduce electoral or financial support for the government. Thus the government chooses a tariffs which reflects the optimal trade-off between these two. I adopt the broad parameters of this model for my analysis, modifying it to reflect factors emerging from the empirical work.

Concerns about regulatory capture fed into Demsetz’s influential paper, which showed how natural monopoly market failures could be addressed through ‘regulation by contract’ (Demsetz 1968). He argued that ‘competition for the market’ could be created by periodically re-bidding short-term monopoly contracts for service. If the incumbent firm did not win, it would be compensated for the investment in sunk assets made in the

²⁶ Government here refers to the political leadership rather than the bureaucracy. In Peltzman’s model, the politician maximises power (M) where $M(p,\Pi)$ where p is price and Π is profit. M decreases with high prices and increases with high profits. The politician will choose the level of regulation that maximises M .

previous period. Competitive tendering would ensure that prices were set at competitive levels. Although this solution is theoretically satisfying, it has rarely been implemented in practice due to two main concerns: competition for contracts may be ineffective because of collusion or incumbency advantages; and under-investment, depending on the observability and transferability of investment. In any case, the government will have a continuing role in contract administration (monitoring, enforcing and bargaining over unspecified contingencies) (Vickers and Yarrow 1991).

In a developing country context, regulation by contract will be associated with implementation problems. When there is a clear breach of contract, the contract will need to be enforced to change the non-compliant behaviour or to compensate the losing party. Enforcement mechanisms centre on contract law and the judicial system but these may be less effective in developing countries. Where the quality of the judicial system and the confidence of the parties in the ability of judges to deliver fair and informed judgements is lower, and corruption is more pervasive, efficiency incentives based on contract provisions will be ineffective (Laffont 2005). Further, more asymmetric information and higher transaction costs in developing countries will reduce the effectiveness of the contract monitoring body.

Developing countries have invested less in enforcement mechanisms over time. In order to overcome this, they would have to make a massive short-term effort to improve the quality of enforcement institutions in order to ensure effective enforcement, but these resources are rarely available. On the other end of the spectrum, developed countries benefit from the fact that high quality enforcement mechanisms with demonstrated effectiveness can also act as a deterrent. If the parties do not have confidence in the enforcement mechanism, they are more likely to try to cheat. If they perceive that are likely to be caught, then they are less likely to cheat, which reduces the deadweight costs of monitoring and enforcement.

Closely related to the law and economics literature is the legal literature on relational contracts. This draws attention to concerns about reputation, which I build into the PPC model and also emerge as an important explanatory factor in some of the case studies.

Based on empirical observation, this body of work points to the fact that contracts may be deliberately incomplete *relational* contracts: they are long-term, continuing and

interactive relationships in which the contract is only one parameter shaping the relationship, distinct from *contingent* contracts in which all relevant parameters are defined in the contract (Goetz and Scott 1981). Relational contracts are those in which the parties are unable to, or choose not to, specify important terms of the arrangement in well defined, formal obligations. They depend on norms or extra-contractual conditions like influential third parties, sources of competition, access to information etc to achieve stability and these factors that constrain the outcomes of bargaining between the parties. These contracts are in fact extremely common in relationships between firms (Baker, Gibbons et al. 2002), and in places where legal institutions are weaker, they may be the predominant form of contractual assurance (Johnson, McMillan et al. 2002). These empirical studies have examined contracts between private parties, but there is a close parallel between long-term private-private contracts and contracts between government and private firms: both sides may have incentives to build a relationship with the other contracting party rather than just relying on the terms of the contract. In some cases, a 'relational contract' which provides a structure for but does not determine the pattern of interaction between the parties may work better than a conventional contract (Shugart 1998).

Contract enforcement is both costly and risky. Even where they exist, contracts are often not referred to when disputes arise between firms (Macaulay 1963), either for reputational reasons or because the risks of pursuing legal remedies are too high. This trade-off is illustrated in the experience of international creditors to developing countries after a macroeconomic crisis.²⁷ An extra-contractual approach may be motivated by concerns for reputation, when expectations of a continuing relationship with that party or potential relationships with third parties raises the cost of legal action.

Are long-term PSP arrangements relational contracts? Shugart (1998) argues that such contracts are widely used in French municipal services. However, the successful employment of relational contracts depends on the existence of special monitoring or bonding mechanisms (Goetz and Scott 1981), and it is precisely these norms and extra-contractual influences that are often absent in PSP projects in developing countries.

²⁷ One of many examples is Indonesia after the fall of Suharto. Banks initially took their debtors to court, but failed to secure judgements in their favour, or were unable to track down assets to enforce the judgement (Robison and Hadiz 2004: 191). A further example is the high profile case of a Japanese company building an expressway in Bangkok which refused to use the arbitration mechanism provided for in the contract, even when the government expropriated the expressway (Gómez-Ibáñez 2003: 352).

3.4 Contract Theory

The focus of my research is on regulation based on contract, so it is natural to consider the implications of contract theory for the specific case of public-private contracting. Contract theory considers the extent and implications of contractual incompleteness and the remedies for its undesirable effects and ways in which they can be mitigated. This theory can usefully be applied to the developing country context, where contractual incompleteness is likely to be pervasive.

The central insight of Williamson (1975) is that, in principle, it would be possible for two firms to sign a 'complete' contract specifying their terms of exchange in every future state of the world. A complete contract may be defined as one that, "describes all possible future states of the world and the rights and obligations of the contracting parties in those states of the world precisely enough that any competent adjudicator would come to the same conclusion about the application of the contract, based solely on the assessment of what the parties had actually agreed in the contract."²⁸ With complete contracts, the contracting firms are able to achieve optimal efficiency, whichever state of the world is realised. The second key implication is that there will be no difference to total welfare between a situation in which two firms sign a long-term contract, and one in which the two firms are integrated. With complete contracting asymmetric information between principal and agent becomes irrelevant, as the principle does not need to monitor the behaviour of the agent, just the delivery of output agreed under the contract. This leads to the irrelevance result of Sappington and Stiglitz (1987): *With complete contracts, ownership does not matter, despite asymmetric information.*

In the real world, however, as Williamson describes, long-term contracts are always incomplete. This is due to the bounded rationality of the contracting parties and the impossibility of describing future states of the world in all relevant detail so that an external adjudicator would be able to apply the contract without the need for interpretation or reference to extra-contractual principles. The problem of hold-up then arises because contracts are based on consent (Barnett 1992) and can always be renegotiated if both parties agree.

²⁸ This definition is used by Shugart (1998) drawing on the concept developed by Williamson.

Complete contracts are *ex ante* optimal in the sense that the parties agree to the utility-maximizing terms of exchange for every future state of the world. In Williamson's model, it is assumed that the parties will always have a choice about whether to trade, and so they will only trade if this is welfare-enhancing. Neither party can be coerced into an agreement, but must decide together *ex ante* how the gains from trade will be divided between the parties. Once the contract has been signed, the contracting parties will decide how much to invest and will carry out their investments. After the firms have made their investments, one party may be able to 'hold up' the other party by renegotiating the contract and expropriating its rent. As there are no restrictions on renegotiation in the model, the other firm will be forced to renegotiate and will lose some or all of its gains from trade to the first firm. As long as the second firm's reservation utility is met, he will still trade, but on less advantageous terms. If the firm has invested in assets that cannot be transferred to other uses, known as relationship-specific assets, his reservation utility will be close to zero and the other firm will be able to expropriate all the gains from trade.

This gives rise to the key problem under incompleteness: knowing that there is a possibility of expropriation, firms will invest less than the optimal amount in relationship-specific assets and so the gains from trade will be reduced. The first-best utility outcome cannot be achieved in a long-term contract because of this hold-up problem (Hart and Moore 1988). To take an example, in a water services contract, almost all the firm's capital expenditure will be in the pipe network, which cannot be transferred to other uses, making it a typical 'relationship-specific asset'. Under incompleteness the firm will under-invest in the pipe network, leading to lower rates of coverage than would be achieved under completeness. The dampening effect on investment of incomplete contracts will therefore be a serious cause for concern for water PSP.

Some models integrating enforcement of the contract by a third party have demonstrated how an incomplete contract may nevertheless allow for optimal levels of relationship-specific investment if the parties agree a rule for renegotiation as part of the contract so that when new information becomes available, either party may choose to enforce the status quo or agree a welfare-improving renegotiation (Chung 1992). But, where enforcement is imperfect, as it usually will be, there will still be a tendency towards under-investment.

In practice, contracts imply a degree of coercion and renegotiation is not costless, as in Williamson's theory. The judicial system plays a role in enforcing the original terms of the contract and contract law implies costs on parties that do not comply with their contractual obligations, so there are costs associated with expropriation, and this should reduce the asset-specific investment dampening effect.. In addition to the costs of formal external enforcement, other mechanisms support compliance with contracts, like informal institutions. But enforcement is imperfect, and is likely to be more costly and difficult in developing countries where there has been less historic investment in enforcement institutions.

Contract theory originally addressed contracts between private firms but its insights may equally be applied to contracts between governments and private enterprises. Where contracts are complete, a benevolent government can sign a contract for the provision of any good or service by a private firm on terms that maximise public welfare. Equally, the government can sign a contract with the manager of a public enterprise to provide the good or service on the same welfare-maximising terms. However, there are greater enforcement problems associated specifically with the role of the government as one of the contracting parties. The government may play a role as regulator in addition to its contracting role, which does not have a parallel in the private sector. This allows the government to impose conditions on private firms that are not part of a mutually agreed contract. Secondly, the government has special powers to modify and terminate contracts which private firms do not have, making third-party enforcement solutions to hold-up problems less effective and, as a result, reducing asset-specific investment. As Hart writes, "What ensures that the government respects an agreed-on allocation of property rights? The government, unlike a private agent, can always change its mind: it can nationalize assets it has privatized or privatize assets it has nationalized." (Hart 1995).

How can the investment dampening effect of incomplete contracts be overcome? Grossman & Hart (1986) develop the theory that the problem of hold-up can be resolved through the allocation of residual rights. In the 'residual claimant' model, all residual rights and associated rents will accrue to the owner of the asset in states of the world not covered by the contract. The owner therefore will be able to internalise all the gains from trade and will invest in relationship-specific assets up to the optimal level,

resolving the under-investment problem of incomplete contracts. Residual rights should therefore be allocated to the party that needs to make the bulk of the relationship-specific investment. Williamson (1985) finds that integration will be preferable in cases where the assets are highly specific, where there is high uncertainty about future conditions and where the type of transaction is likely to be recurrent.

The allocation of the residual has two potential drawbacks in the context of PSP: If both parties need to make relationship-specific investments, only the owner will invest at the optimal level, while the other party will under-invest; secondly, where the rents accruing to the owner are high, the other party will have a powerful incentive to renegotiate the terms of the contract to change the ownership structure, intensifying the hold-up problem. In a private-private contracting situation, institutional constraints may make expropriation costly, but the government still has the power to expropriate private property, and may decide to do so if the perceived benefits are high enough. Hart, Shleifer and Vishny (1997) (HSV) develop a modified model of public-private contracting which identifies a trade-off between two types of effort by the firm: innovation, which increases efficiency or improves quality; and cost-reduction, which reduces quality.²⁹

The contracting literature emphasises the pervasiveness of incomplete contracts. Incompleteness will be particularly likely where market characteristics, including demand, supply and available technologies are difficult to predict. Would we expect contracts in the water sector to have problems with incompleteness? As contracts are usually long-term, lasting 25-30 years, there will inevitably be changes in the operating environment over the life of the contract. Technologies for water treatment and distribution do not change rapidly – compared to the information technology or telecommunications sectors, for example – but demand may be difficult to forecast.³⁰ Even more difficult is verifying data about the initial operating environment. There is often a severe lack of accurate information about the extent of network assets and their condition and about the customer base. Operating conditions have frequently turned out

²⁹ In the HSV model, the private firm will have stronger incentives to engage in innovation compared to the public enterprise if the increased residual accrues to managers, but the private firm will also have a stronger incentive to cut costs by reducing quality, if quality is difficult to monitor.

³⁰ This was the case for the BOT project in Chengdu, China, for example, where demand in the pre-project period rose 150% over 8 years, but demand fell by 5% in the first year of the project's operations and then stayed steady. (Zhou Xu 2004)

to be different from those established in the contract, again leading to contract renegotiation, as we will see in the case studies.³¹

In addition to the allocation of ownership rights, there are other possible ways to deal with contractual incompleteness. One way could be to make contracts more complete, by providing provisions for more possible future scenarios, but given the range of parameters that would need to be covered, and the high transactions costs involved in drafting such a contract, efforts to write complete contracts are likely to be futile. There will always be a trade-off between detail and flexibility to deal with new operating conditions (Ballance and Shugart 2005).

In addition, increasing the detail and level of complexity of contracts raises the transactions costs associated with the agreement and puts a greater burden on the enforcement of the contract. In developing countries, where enforcement is more likely to be weak, a more detailed and complex contract may actually be counter-productive when dealing with shocks to the operating environment as it reduces flexibility and makes the adjustment process more costly. Enforcement is also less reliable for contracts in which the government is one of the contracting parties, in comparison to private-private contracts; making the contract more complete does not contribute to the government's commitment capacity. Another option is to include a general clause in the contract that can be applied to unforeseen situations. However, it will not be possible to write a contingency clause that is sufficiently clear and unambiguous to be enforced (Hart and Moore 1988).

The implication of this theory –reduced relationship-specific investment – applies to the water sector to explain lower than expected investment following PSP. The resolution to the hold-up problem in the literature – vertical integration between the contracting parties – has been tried by most governments in the past for the water sector, with little success in terms of performance. This prompts two questions for further research: what external constraints act upon the parties to abide by contracts, even when they could achieve preferential provisions in a renegotiation, and what other resolutions can be found to the hold-up problem?

³¹ Private operators in Manila, for example, claimed that the information that had been provided in the tender had not been accurate (Dumol, 2000).

Contract theory offers a striking theoretical argument against relying on a contract to deliver optimal outcomes that can easily be applied to an economic regulation situation where the firm is expected to undertake large relationship-specific investments. However, contractual incompleteness does not mean that governments and firms necessarily fail to cooperate. One of explanation may be the existence of relational contracts, discussed above. Another may be that the parties have long-term incentives for mutual compliance even in the absence of enforcement. I investigate the circumstances where these incentives might exist through the model and case studies.

3.5 Conclusion

This chapter brings together several strands of literature, mostly based on a common broad set of assumptions of rational utility-maximising behaviour by both governments and firms, within a set of incentives and constraints imposed by the contract, contract enforcement institutions, and the wider institutional environment. Several strands of the literature have highlighted the time inconsistency problem and the resulting strategic behaviour on the part of both governments and firms. This turns out to be very relevant to long-term public-private contracts where both parties make upfront relationship-specific ‘investments’ – financial in the case of the firm, political in the case of the government – in the expectation of positive pay-offs in later years. This makes both parties vulnerable to ‘hold-up’ and makes the contractual arrangement sensitive to changes in the parties’ pay-off functions over time.

Within the principal-agent literature, multiple-principal models have particularly interesting implications for the concession contracts that I am interested in. In Chapter 1, I mapped out the institutional structure of concessions, which demonstrated clearly the multiple government actors that have a stake in the concession. The models reviewed here emphasise the advantages of the separation of powers. However, in the context of the deliberately incomplete contracts that are used for water concessions, the role of multiple principals may also have some negative consequences. I explore these in the following chapters.

4 Empirical Analysis of Trends and Determinants of PSP Projects

4.1 Introduction

This chapter presents an empirical analysis of public-private contracts in the water and sanitation sector in developing countries using an original dataset, WASTUP³² that was developed for the purposes of this research. Descriptive statistics on projects by country, type of contract, origin of investor and trends over time are presented and discussed for a sample of developing countries. The data show that private investors are active in the sector, but regional companies are becoming more important and investment is flowing towards a small number of host countries.

The dataset is employed for a regression analysis of the determinants of the number of projects by country. I develop hypotheses on drivers of the ‘hand-shake’: a short-hand term that refers to the agreement of public and private sector agents or ‘partners’ to engage in a PSP contract. The hypotheses are tested on data for a sample of 460 signed PSP projects in water and sanitation in 60 developing countries in 1990-2004. Building on the literature discussed in the previous two chapters, indicators of institutional, macroeconomic and demand characteristics of countries are tested. The analysis reveals that national-level institutions are a significant determinant of the number of deals signed in each country in addition to measures of market size.

This chapter focuses on the first stage in the PSP cooperation: the initial agreement between the parties. This stage in the life-cycle of projects has not yet been addressed in the quantitative literature and allows me to make full use of the WASTUP dataset. The determinants of investment volumes are not addressed directly in this chapter because of concerns about the quality of the data. Subsequent chapters treat the firm’s investment decision from a theoretical and empirical angle, through the development of a model and case studies. The findings of this chapter in relation to institutional determinants feed into the structure of the model and the selection of case studies.

Section 2 presents descriptive statistics from the dataset by year, region, income group, type of investor and type of project contract. In Section 3, I derive the model of drivers

³² In this thesis, the term ‘project’ is used to refer to an individual case of PSP. Project is applied equally to arrangements in which the private sector takes over the management of an existing utility or facility, such as a water treatment plant, or when a new company or facility is set up. In most cases, the nature and scope of the project will be defined under a legal contract and so contract is broadly synonymous with project and is used in this sense in the thesis. However, divestitures do not necessarily involve a legal contract of this kind so project is used as the encompassing term.

of contract agreements or the ‘hand-shake,’ explain the selection of independent variables and discuss the count outcome methodology that is employed. In Section 4, the existing data on PSP and its limitations are discussed. The WATSUP database is presented and the extra value offered by the database is considered. Section 5 presents the results of the negative binomial count regression model. Section 6 concludes and relates these results to the rest of this research.

4.2 Descriptive Statistics

Recent discussions between private firms and donors, such as the ‘Operators’ Roundtable Initiative, organised by the World Bank, have referred to an ‘impasse’ in private participation in the water market in which private investment in the sector has dried up (Janssens and Mandri-Perrott 1 March 2005). The ‘impasse’ is understood to be due to risks in the sector in developing countries being too high for equity investment by private companies and the proposals generated by the Operators’ Roundtable group were for private companies to take on only management and not financing responsibility. This description of the impasse rests on two assumptions: that private investment in water overall has fallen since the Asian crisis and has not recovered; and that the number of PSP projects in which private companies take on financing risk (divestitures and concessions) has fallen to a low level.

4.2.1 Investment Trends

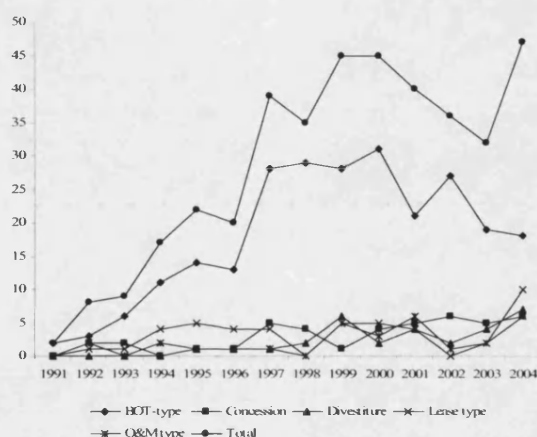
Figure 4.1 and Table 4.1 show the number of contracts signed by year and by type. This shows a downturn from 2000 to 2003, followed by an upturn in 2004. 2004 is the strongest year yet in terms of number of deals signed: WATSUP reports 60 new projects in 14 countries in 2004, driven by very high levels of activity in the Chinese market. This compares to the findings of the World Bank PPI Database, which records 28 projects agreed in the water sector in 9 countries in 2004.³³

³³ The World Bank’s PPI (Private Participation in Infrastructure) Database collects data on private sector investment in infrastructure sectors in low- and middle-income countries. It is updated annually using commercial news databases, industry publications and internet resources. However, the World Bank recognises that the database is not complete, especially in its coverage of the water sector where project size tends to be smaller: “The Private Participation in Infrastructure (PPI) Project Database lacks good coverage of small-scale providers of water and sewerage services because projects involving such providers usually are not reported by the sources it uses.” (Izaguire and Hunt 2005). A further concern with the PPI Database is the divergence between investment commitments and disbursements, discussed in the main text. Two other databases of PSP projects have been assembled: the Water and Sanitation Sector Public Private Partnerships Database maintained by Institute of Water and Environment, Cranfield and a database of companies involved in the private provision of public services maintained by the Public Services International Research Unit, University of Greenwich. These databases are not in the public domain. The former database contains information on 1,300 PPP contracts announced up to 2003 using a broad definition of PPP that includes providers in the informal sector but it has not been consistently updated; the latter focuses on the activity of multinational firms.

See <http://www.silsoe.cranfield.ac.uk/iwe/cws/pppdatabase/pppdatabase.htm> and www.psiru.org.

Previous highs were recorded in 1998 and 1999. The high level of investment in these years just after the Asian Crisis may seem surprising. However, there is a lag between the firm's decision to make the investment and the signing of the contract, so the effects of the Asian Crisis may account for the downturn in 2000-2003.³⁴

Figure 4.1: Water and Sanitation Contracts Awarded by Year and Project Type (1991-2004)



Source: WATSUP Database

Table 4.1: Water and Sanitation Contracts Awarded (1991-2004) by Project Type (424 observations)

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
No. contracts signed	2	8	9	17	22	20	39	35	45	45	40	36	32	47	27
BOT-type	2	3	6	11	14	13	28	29	28	31	21	27	19	18	20
Concession	0	2	2	0	1	1	5	4	1	4	5	6	5	6	5
Divestiture	0	0	0	0	1	1	1	2	6	2	4	2	4	7	0
Lease type	0	1	1	4	5	4	4	0	5	5	4	0	2	10	2
O&M type	0	2	0	2	1	1	1	0	5	3	6	1	2	6	0

Source: WATSUP Database

4.2.2 Contract Types

Using a 60-country sample from the WATSUP database to examine the frequency of contract types³⁵, it is evident that the proportion of new BOT projects signed out of total projects has recently fallen back towards the levels of the mid-1990s (Table 4.1 & Figure 4.2). The falling popularity of BOT projects may be explained by the experience that many countries, particularly in the Asian region, have had with this structure.³⁶ BOTs imply equity risk for the investor, so one explanation for the downward trend

³⁴ The author would like to thank Antonio Estache for drawing attention to this point.

³⁵ The differences between contract types were explained in Chapter 1. Under divestitures and concessions, firms take on all financing risk; under lease contracts, firms take on some financing risk while under management contracts, the firm does not take any responsibility for financing capital investment.

³⁶ High tariffs paid to BOT suppliers for treated water near to or exceeding retail tariffs have undermined the financial viability of public water utilities, rendering some projects unsustainable. See case studies of Selangor and Johor in Chapter 9 and reference to Chengdu (China) project in Chapter 8.

could be that private players are no longer willing to act as investors and finance the capital expenditure of projects. However, this view is contradicted by the evidence on concessions, which also involve financing risk. Figure 4.1 shows the number of new concessions signed each year has been higher in the 2001-2005 than all years in the preceding period, with the exception of 1997 which saw a high level of activity.

The data also show that there is no clear upward trend in the number of new lease and management contracts signed in more recent years over the pre-1997 period, contradicting the view that investors are becoming overall more risk-averse in the sector. China is an example of the risks that investors are willing to take when expected returns are high where there have been several large equity deals in recent years, involving high levels of debt and equity investment.³⁷ In 2004, Chile and Mexico also attracted substantial new investments. Together, these three countries accounted for 90 percent of investment flows and 70 percent of projects in that year (Izaguirre and Hunt 2005).

4.2.3 Regional Trends

Table 4.1 shows the number of new concessions signed in Figure 4.2. Asia has seen a significant

Source: WATSUP Database

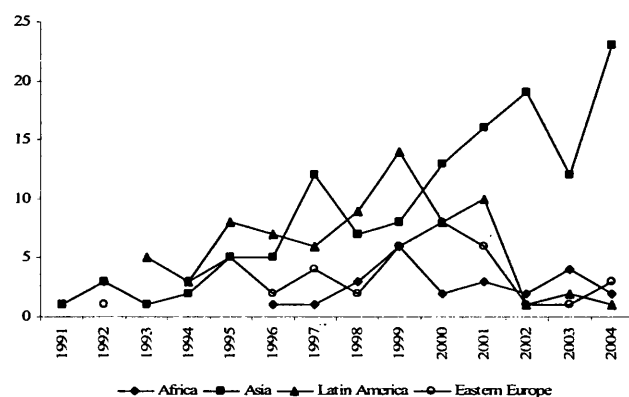
Looking at the distribution of contract types across regions and income groups shows that there have been no divestitures among low income countries, but divestitures are the second most frequent model in the upper middle income group. Concessions appear to be most common in the lower middle income group. Across regions, concessions have been very rare in Europe and most frequent in Asia. Divestitures are concentrated in the Latin American region, although there are also some examples in Europe. These figures are consistent with the view that investors are more willing to take equity risk (in BOTs, divestitures and concessions) in higher income countries.

4.2.4 International and Local Investors

There is much anecdotal evidence for the withdrawal of international private investors from the developing world.³⁸ The WATSUP database records 28 terminated projects or 4 percent of the total number. This compares with the World Bank PPI database which identifies 20 projects that were either cancelled or have become ‘severely distressed,’ accounting for 7 percent of projects and 37 percent of investment commitments in 1990–2004 (Izaguirre and Hunt 2005:2).

However, these well publicised views of a few high profile international investors do not tell the whole story. As Figures 4.3 and 4.4 demonstrate, private water investment is booming in some regions, notably Asia, where China is driving the trend (Blanc-Brude and Jensen 2004), with investment by both international and local investors.

Figure 4.3: Number of Projects Announced with Foreign Investors by Region and Year (1991-2004)

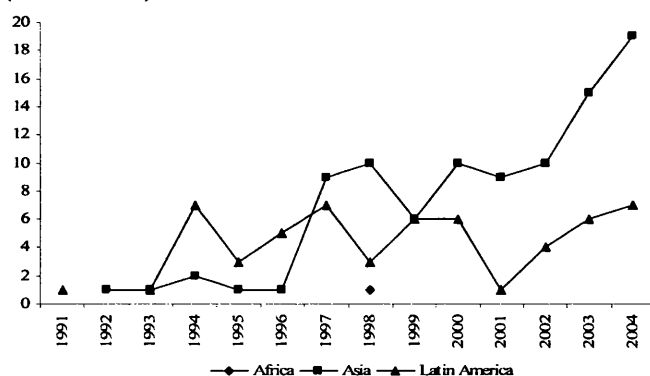


Source: WATSUP Database

³⁸ For example, in 2005, Suez (Ondeo), one of the world’s two largest water service companies, announced that it was withdrawing from two major projects, in La Paz-El Alto (Bolivia) and Buenos Aires (Argentina).

Elsewhere in Asia and in Latin America, regional and national companies are increasingly active. Local investors seem willing to take on financial risks that the largest international water companies are not, and are expanding rapidly into new markets. Figure 4.4 shows the increasing role of local investors in these regions, who are taking the place of international companies, which contrasts with the established view that the water sector is dominated by a small group of European companies. This trend is also confirmed by anecdotal evidence: projects without international involvement constitute the majority of projects in Malaysia and China and local companies won deals in Latin America (Chile and Peru) in 2004-5 (WATSUP). However, in Europe there are no projects without international involvement and there is only one project of this kind in Africa. Figure 4.3 also provides a comparison with the level of foreign investment. It shows that in Latin America the level of international involvement in the region has collapsed. In contrast, in Asia, the growth in project numbers is due to both domestic and foreign investors. Moreover, the latter include many regional investors such as Malaysian companies investing in China.

Figure 4.4: Number of Projects Announced with Local Investors by Region and Year (1991-2004)



Source: WATSUP Database

This review of the descriptive statistics has demonstrated the recovery in investment levels in 2004 and their high degree of concentration in a handful of countries. The WATSUP data also show that the common belief that investors are no longer engaging in concession-type contracts is not accurate and that local private corporations are increasingly important players in the water and sanitation markets. In the next section, I review the literature pertinent to the analysis of PSP in the water sector, before developing and testing the model of PSP with WATSUP data.

Stylised facts:

- Investment in the water sector in developing countries has recovered but this is driven by investment in a small number of countries (Chile, China, Mexico).
- Investment by large international companies has seen a sharp drop in some developing regions (Latin America) but is rising in other areas (China).
- Local companies are growing in importance in Latin America and Asia but do not have a significant presence in Africa or the transition countries.
- The BOT contract type has declined but concessions, leases and management contracts do not show a discernible upward (or downward) trend in the period under study.

4.3 Context

From the investor's point of view, the fundamental calculation is whether the expected return on the investment is commensurate with the risks. In a portfolio of investment projects, we would expect investors to balance high risk-high return projects with low risk-low return projects. On the returns side of this equation, important factors are the number of people currently served and unserved, and the average and expected tariff levels for water services. The FDI literature finds these host-country characteristics significant in attracting investors, as one of the three elements (ownership, location and internalisation) of the eclectic paradigm (Vernon 1966; Dunning 1993).

Many of the factors determining the level of risk will be project-specific. However, others will be associated with country-level characteristics for which indicators are available. The firm will take into account macroeconomic risk, political risk, regulatory risk at the country level, as well as the management and operational risks associated with the particular project. For this analysis, I focus on measures of country-level political and regulatory risks that have been identified in the literature but also include a composite measure of macroeconomic risk in the model (the ICRG Index of economic risk). As we saw in the literature reviewed in the previous chapter, the government's 'commitment' not to renegotiate the terms of a contract or change regulatory arrangements *ex post* may influence the decision of the firm to invest.

The government's ability to demonstrate this commitment will be affected by the country's institutions. This has been explored in empirical papers, which have used a variety of indicators of institutional quality. Henisz and Zelner (Henisz and Zelner 2001; Henisz 2002) use an index of political stability based on the number of veto points in the political system and the degree of political contestation (the 'Political

Constraints Index’) constructed specifically for the research. (Their choice of dependent variable is discussed below).

The previous chapter also referred to a pair of papers in the economic growth literature are of particular interest here as they begin to break down the black box of ‘institutions’ into specific institutional attributes. Here, I provide more details on the data and identification strategies used by the authors. Acemoglu and Johnson (2003) identify the protection of property rights (those institutions that protect private parties from expropriation by government) as being significant for economic growth, private investment and financial development, while contracting institutions (institutions that enable private parties to contract with each other) were not significant. The authors use Political Risk Services’ assessment of the risk of government expropriation in a country, and Polity IV’s indicator of executive constraints as indicators of property rights institutions, and an indicator of legal formalism as an indicator for contracting institutions as a proxy for the measurement of costs of enforcing private contracts. They then employ an instrumental variables strategy to test the effects on economic outcomes.

Second, Rigobon and Rodrik find that the rule of law has a significant impact on economic performance, using an ‘Identification through heteroskedasticity’ strategy to examine the relationships between four endogenous variables: democracy, rule of law, openness and income. The authors find that rule of law and democracy both have a positive effect on income but that the magnitude of the rule of law effect is much larger. The authors use the World Bank Governance Indicators ‘rule of law’ index (Kaufmann, Kraay et al. 2005) as the rule of law indicator; democracy is measured with the Polity index and the executive constraints index from Polity IV that Acemoglu and Johnson use as an indicator of rule of law.

The review of the literature in Chapter 2 also noted the significance of the sector regulator variable in some empirical studies in interaction with other institutional characteristics in relation to central bank independence and renegotiation of concession contracts respectively (Keefer and Stasavage 2000; Guasch, Laffont et al. 2003; 2006). The work on renegotiation is discussed in more depth in the following chapter.

The literature demonstrates links between institutions and economic outcomes which suggest a promising avenue for research on the determinants of PSP projects. I include a selection of institutional variables in the analysis which have been found significant in existing studies.

It would be interesting to consider how these contract specific characteristics affect the propensity of the parties to engage in PSP, either on their own or as interaction terms with institutional variables, but limitations in the data and difficulties created by endogeneity mean that the effects of sector-level characteristics are not tested here. However, I include an indicator of political stability in the regression to test whether this has an independent effect.

Empirical analysis of the impact of institutions raises the problem of endogeneity because private investment could be driving regulatory reform. Saleth and Dinar (2004) emphasise these feedback effects between institutions and outcomes in their work on the water sector. The water sector seems particularly susceptible to this error as PSP has frequently preceded sectoral restructuring legislation. In these circumstances, the private partner may exert a direct influence on the kind of regulatory regime created and the nature and powers of any regulatory agencies created. Indeed, the regulator may be created at the behest of the private partner as a condition for their involvement. It is not possible therefore to maintain the assumption that causation runs exclusively from the regulatory arrangements to the level of private investment. To deal with the problem of endogeneity, I use institutional variables that are not affected by private investment in the water sector. I choose institutional variables that are sufficiently general, such as the 'rule of law', that I can be confident that the direction of causation runs from the institutions to outcomes in the water sector. Thus it is possible to isolate the effect of institutions on private investment.

From the government's point of view, there will be other relevant determinants to consider. A common theme, echoed in many case studies, is strained public finances. Infrastructure investment tends to be cut more severely and sooner when governments are undertaking programmes of fiscal retrenchment than other types of expenditure (Calderon, Easterly et al. 2003). In their review of the Latin American experience with economic stabilisation programmes, Easterly and Serven show that governments expect privatisation to improve the fiscal balance by: generating revenues in the short-term

through asset sales; reducing government expenditure on operating and capital expenditures; raising tax revenues (Calderon, Easterly et al. 2003). This view is also backed up by case studies (Ménard and Clarke 2000a, and others).

In the water sector, divestitures are comparatively rare and most governments do not expect to generate funds from this. Exceptions to this pattern are Chile and China (WATSUP Database). Generally, the impact on the public finances will instead be felt through the reduced burden on the government to fund operating or capital expenditure requirements for the sector. Where the municipality takes the decision to engage in PSP, it will be motivated by the state of municipal financing. Here, there will be a trade-off for the municipality between profits earned by the water utility and reduced long-term investment obligations, or a cash injection from the sale of assets.³⁹ Autonomous, self-financing utilities may consider privatisation if their financial position deteriorates so they can no longer borrow in the financial market (see Alcázar, Xu et al. 2000 on Lima, Peru).

Case studies and reviews point to the active role that the World Bank has historically played in promoting PSP.⁴⁰ For example, in Guinea, a loan for a capital investment programme was conditional on the involvement of the private sector in management of the utility (Clarke, Ménard et al. 2000: 7-8). In Cote d'Ivoire, water sector reform was part of the country's Structural Adjustment Program (Ménard and Clarke 2000) and in Lima, PSP was considered (although finally rejected) in the course of negotiations with the Bank for a project loan (Alcázar, Xu et al. 2000: 6, 45).⁴¹ In Argentina, the role of the World Bank came after the initiation of the privatisation process, but subsequently became a condition of a loan from the Bank (Hill and Abdala 1993: 13).

A review of World Bank and IMF loans shows that PSP or cost recovery conditions were included as conditions in water and sanitation loans in many countries. (Grusky

³⁹ Dividend revenues are an important constituent of municipal financing in Indonesia, where municipalities take dividends from the water utility whether or not the utility is generating a profit. The political economy of the Indonesian water sector is presented in the context of the Jakarta case study in Chapter 7. Selling assets to generate short-term revenues has been a common phenomenon in mainland China. This is discussed further in Chapter 8.

⁴⁰ The World Bank's position on PSP has been modified. The Bank now officially recommends a 'case by case' approach. A recent policy review states, "The fact that state ownership is flawed does not mean that privatization is appropriate for all infrastructure activities and all countries. Before state ownership is supplanted by another institutional setup, it is essential to assess the properties and requirements of the proposed alternative—taking into account the sector's features (its underlying economic attributes and the technological conditions of its production) and the country's economic, institutional, social, and political characteristics." (Kessides 2004)

⁴¹ In Lima, the loan was conditional on sector reform rather than PSP specifically and the loan went ahead despite plans for PSP being abandoned.

2001, quoted in Lobina and Hall 2003: 34). Grusky also notes that in countries where IMF loan conditions include water privatization or cost recovery requirements, there are usually corresponding World Bank loan conditions for water projects which specify the details of sector restructuring. Further evidence for this influence is provided by my case studies.⁴²

However, if we consider the decision of the government to engage in PSP, we should not assume that governments choose to reform the sector directly as a result of poor coverage. In fact, it is common for the water sector to be stuck in a low-level equilibrium of low tariffs, low investment and low service quality (Savedoff and Spiller 1999). Reform will be the result of a confluence of factors strengthening the interest groups in favour of reform (Estache 2005).

On the basis of this literature, the following key hypotheses emerge which will be tested using the WATSUP data:

- H1: Private investors will be more likely to engage in PSP where institutions support government commitment to upholding contracts or implementing established regulatory rules. Institutions of possible significance are: the rule of law; contract enforcement, bureaucratic quality; political stability; corruption.
- H2: Private water companies will be more likely to enter countries where there is a large market for services.
- H3: Developing country governments will engage in PSP when implementing fiscal retrenchment.
- H4: IFI involvement makes PSP more likely.

4.4 Data

4.4.1 The WATSUP Database

The data currently available on global private investments in the water sector has drawbacks for statistical analysis. The best existing source of data was the World Bank's PPI Database, but WATSUP captures a broader range of projects. The difference between the two is due to (1) inclusion of data on projects from private data sources; (2) better coverage of China in the WATSUP database. Chinese projects account for 52% of the total signed in 2004; (3) the inclusion of dual desalination and

⁴² Field research in Malaysia (Johor State) and Indonesia (Jakarta) revealed a common pattern: the water utility in each case received a loan from a donor or development bank to carry out service improvements which was linked to considering models for private sector participation in water service delivery.

power projects in the WATSUP database, which make up 8% of projects recorded in 2004 and (4) higher minimum investment cut-off for the World Bank database. Small projects accounts for 17% of the new contracts awarded in 2004 recorded in WATSUP. The exclusion of small projects might have little impact on the observation of PSP in the power or telecom sectors, smaller projects without international involvement constitute a significant proportion of projects in the water sector and small capital investments (below US\$20m) often are enough to lead to significant changes in sector performance at the municipal level.

The limitations of the existing data prompted the development of a new dataset. The WATSUP PSP dataset covers both water and sanitation projects in lower and middle income countries for the period 1990-2005. The data has been collected from multiple sources and cross-checked.⁴³ As previously noted, data collection on PSP in water is complicated by the municipal structure of the sector. As a result, information on PSP projects is not necessarily collected at the national level and multiple data sources need to be used to fill in the gaps. Data was collected on the extent and nature of private involvement, the origin of private partners, investment volumes and contract type from public and private sources and confirmed where possible in interviews. This information was not available for all projects. Despite the distinctions that are often drawn between types of divestitures, concessions, leases and management contracts, in practice these distinctions may often be blurred. For the purpose of this research, I classify the contracts into broad categories.⁴⁴

A subset of the data, including only signed projects from a sample of 60 developing countries is used for the analysis. It contains 460 project observations in 45 countries and a group of 15 other developing countries where PSP has been considered or experimented with but where there are no active PSP projects in the water and sanitation sector. The countries included in the control group have all indicated a willingness to consider PSP in the water and sanitation sector, either by introducing a national policy to that effect or engaging in negotiations with one or more private investors for a project

⁴³ The sources of data are: World Bank, Thomson Financial, Global Water Intelligence, Water Market China (Blanc-Brude and Jensen 2004), Water Market Asia (Blanc-Brude and Jensen, 2006) and numerous media and company releases. These data are cross-checked in interviews with operators, financiers, legal advisers and international institutions.

⁴⁴ 'BOT-type' includes BROT, BOOT, ROT and DBO contracts. Lease-type contracts include TOT and DBL. O&M type includes all contracts that do not require the private party to make any capital investment. See section 2 for a discussion of PSP contract acronyms and their limitations as proper economic concepts.

in the sector. Countries in which PSP in the water sector is ruled out by policy or forbidden by law or policy are not included.⁴⁵

4.4.2 The Dependent Variable

The dependent variable in the regression analysis is the count of PSP contracts agreed per country. This distinguishes this paper from others which employ either (a) investment volumes; or (b) sector outcomes as the dependent variable. Both of these offer certain advantages for use as the dependent variable, especially linearity, but I choose to use the count of projects because of several concerns, described here.

Firstly, there are concerns about the quality of the data available on private investment volumes in the water sector. A first problem arises in the way that the figures are collected. For divestitures, the recorded investment figures refer to the purchase price of equity. For concessions, the figures refer to the investment commitments made by the concessionaire under the contract. In the World Bank PPI Database, equity sales are recorded in the year of the transaction, while investment commitments for concessions are recorded in the year of financial closure, or in the year of the transaction, where the investments are phased and only if this information is known. However, after the initial transaction, information on realised investments is often not made available publicly. Even where this information is known, it can be very difficult to verify. Where information is available, it seems that the actual level of investment by the private firm may not meet commitments made in the contract, by a wide margin. Additionally, a large proportion of PSP contracts in the water sector are renegotiated and it is common for the revised contract to include the rescheduling of investment commitments (Guasch 2004).⁴⁶

Investment figures are only available for a subset of projects, dramatically reducing the sample size. These tend to be the largest transactions, those involving international investors, and divestitures rather than concessions, generating a biased sample of the population of water PSP contracts. For many projects, this information is considered confidential and is not announced publicly.

⁴⁵ Uruguay introduced a constitutional amendment in 2004 to prevent private provision of water services. However, as this decision was made only at the end of the period that we are considering (1990 and 2004), we include Uruguay in the dataset.

⁴⁶ Field interviews conducted in Manila and Jakarta further substantiate this point.

Henisz and Zelner use service outcomes (the number of lines per capita) as the dependent variable in their analysis of the telecoms sector (Henisz and Zelner 2001). This approach allows the authors to deal with the problem of unproductive investments, but would not allow us to isolate the effect of institutional variables on private investment, rather than public investment. In the water sector, private sector involvement is often relatively recent, and covers only a small section of the population. We would therefore expect the relationship between the level of private sector involvement and infrastructure penetration to be weak and we do not pursue the use of outcomes as a dependent variable. Furthermore, insufficient data are available on the production volumes or population served by projects and those data available come from multiple sources and may be inconsistent and unreliable.

While reliable data on investment volumes (both public and private) or the number of users served by public or private would undeniably yield interesting results and allow for OLS-type regression analysis, this information does not exist on a reliable basis. Anecdotal evidence collected in Asia by the Authors indicates that concessionaires sometimes ignore how many people they are serving, while regulators ignore how much concessionaires have invested.

Thus, while the count of projects awarded does not reflect the importance of the private sector in providing water and sanitation services in a particular country, in the context of the present research, it will help explaining the decision of the government and the firm to engage in a partnership, what we have labelled “the handshake”.

A final remark is needed on the difference between signed and active projects. Looking at the data, a small number of projects have been *officially* terminated, yielding different figures for the number of contracts signed and the number of projects that are currently active. This does not, however, account for the many shades of grey between truly active projects and those that, once signed, have stalled, or are being renegotiated, arbitrated. In this chapter, I analyse only the number of projects signed, on the grounds that the determinants of termination will be very different from the determinants that get firms or governments to engage in PSP in the first place. I then go on to investigate the implementation stages of concession contracts separately in the following chapter.

4.4.3 The Independent Variables

A cross section of independent variables (IV) for the sample of 60 countries is used. Since the DV is the cumulative number of PSP projects awarded over a 15-year period, mean values are used to build the cross-section of IVs:

Table 4.2: Independent Variables and Indicators

IV	Indicator
Market size	Population
	GDP per capita
Macroeconomic risk	ICRG Economic Risk Index
Public finances	Debt/ GNI
IFI influence	World Bank lending to the sector
Institutions	
Rule of law	World Bank Governance Indicators 'rule of law' Polity IV 'executive constraints' indicator
Contract enforcement	Number of days to enforce a contract ICRG investment profile index (average for 1989-2003)
Government effectiveness	World Bank Governance Indicators 'government effectiveness'
Corruption	World Bank Governance Indicators 'control of corruption'
Regulatory quality	World Bank Governance Indicators 'regulatory quality'
Political stability	World Bank Governance Indicators 'political stability'

Annex 4-C describes the variables and their sources in greater detail. While classic quantitative variables such as population or GDP per capita are available for 1990-2004, institutional and risk indices are not. Indeed, most of these indices were created during the latter part of the period under study. Henisz's Political Constraints could not be

indicators often capture only one aspect of the underlying institutional phenomenon that is of interest to the researcher. For example, data on the number of days that it takes to enforce a contract can be used as an indicator of the quality of legal and judicial institutions. However, this is only one of several relevant features of those institutions. Others could include corruption or arbitrariness in the system, which may be more important from the investor's point of view. Furthermore, objective indicators often do not capture the implementation of regulation or policy. On the other hand, perceptions indicators are subject to measurement error of a different kind: non-specificity and halo effects, where respondents' answers are affected by the general level of prosperity in a country (Kaufmann, Kraay et al. 2005). For the purposes of this research, I employ indices which combine objective with perceptions indicators. I am nevertheless well aware of the difficulty of finding indicators that reflect adequately underlying institutional attributes.

The analysis is also restricted by the absence of reliable, comparable data on sector-level institutions.⁴⁷ Efforts are currently being made to put together data on regulatory institutions in the water sector (Estache and Goicoechea 2005; Foster 2005)⁴⁸, but as yet there is not enough data to include this in the regression. The addition of sector-specific regulatory variables would be an interesting extension to the analysis, although it would pose challenges in dealing with endogeneity, as noted above.

4.5 The Model & Methodology

Market size, market risk, and public finance are assumed to have nonlinear relationship with the predicted mean of project count (i.e. the predicted occurrence of PSP contract signature⁴⁹). I assume that these relationships are best described by the natural log function: beyond a certain threshold, the effect of the variable tends to wear off. For instance, I hypothesise that the ability to pay for service will partly determine the extent of private sector involvement, but beyond a certain level of wealth, this is unlikely to make a difference.

The model to be tested is: $X_i = \alpha + \beta_1 Y_i + \beta_2 R_i + \beta_3 D_i + \beta_4 F_i + \beta_5 N_i + \varepsilon$

Where:

X = Number of PSP contracts signed in country *i*

Y = Market Size (Country GDP, GDP per capita)

⁴⁷ The typical structure of the water sector was discussed in Chapter 2, where I noted that regulation is frequently contract-specific. Structural reform of the water sector and the establishment of national regulatory agencies is much rarer than in the telecoms and power sectors.

⁴⁸ See Chapter 2 for a summary of Estache and Goicoechea's findings.

⁴⁹ See section 5 and annex D for a detailed explanation of count models and of the regression model used here.

R = Market Risk (Country risk)

D = Public sector indebtedness

F = IFI influence

N = Institutions

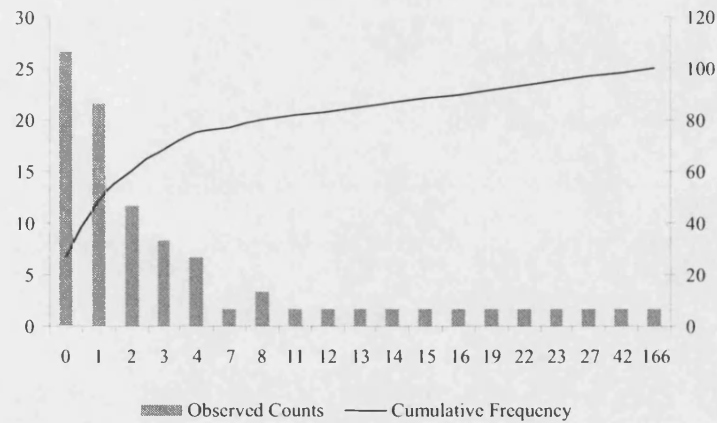
Annex 4-A shows the correlation matrix for the variables used in the regression. It demonstrates that many of the institutional variables (mainly those drawn from the World Bank Governance indicators) are highly correlated. To avoid multicollinearity and loss of explanatory power, these colinear institutional variables are tested separately. This colinearity weakens the interpretative power of the individual institutional variables, compounding the measurement difficulties associated with institutional variables notes earlier. Any conclusions about the relative importance of different institutions must therefore be treated as tentative. However, the use of several different measures can be thought of as multiple robustness checks for the underlying relationship between institutions and the probability of a signing a PSP contract.

4.6 Count Outcome Regression

Count variables indicate the number of times an event has occurred, and the model estimates the probability of the event occurring a certain number of times. The use of regression models for counts is relatively recent but has wide ranging applications in social sciences and, in this case, in investment decision analysis. Figure 4.5 describes the counts of signed water PSP contracts in my sample.

While the linear regression model has often been applied to count outcomes, this can result in inefficient, inconsistent, and biased estimates. Moreover, count distributions are rarely statistically normal. Even though there are situations in which the linear models provide reasonable results, findings can be more robust with models specifically designed for count outcomes.

Figure 4.5: Frequency of WATSUP PSP project counts



The univariate Poisson distribution is the foundation of regression models for counts. The Poisson regression model (PRM) extends the Poisson distribution by allowing each observation to have a different value of μ , the unique value of the mean and variance of the Poisson distribution. In practice the PRM rarely fits due to *over-dispersion*. That is, the model underestimates the amount of dispersion in the outcome. The negative binomial regression model (NBRM) addresses the failure of the PRM by adding a parameter α that reflects *unobserved* heterogeneity among observations.

The PRM and the NBRM have the same mean structure. That is, if the assumptions of the NBRM are correct, the expected rate for a given level of the independent variables will be the same in both models. However, the standard errors in the PRM will be biased downward, resulting in spuriously large z -values and spuriously small p -values (Cameron and Trivedi, 1998). The NBRM is a generalization of the PRM. It

results for all the models, in percentage change in expected project count for one standard deviation change in the independent variable.

Table 4.3: Estimation of the NBRM model (i)

IV	Coefficient	SE
Population (ln)	0.6401178 ***	0.161664
GDP per capita (ln)	0.9059531 ***	0.2590604
Debt/GNI (ln)	0.6422056 ***	0.3190996
ICRG Economic Risk Index (ln)	3.126164 *	1.850731
Contract enforcement	-0.0016892 **	0.0007807
Polity Executive constraints	0.0320531 **	0.0160026
World Bank lending	0.0010961 ***	0.0003794

Table 4.4: Results Summary

Percentage change in expected count for one standard deviation increase in IV							
IV	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Population	147.7***	151.6***	134.4***	152***	171***	171.6***	156.4***
GDP per capita	150.4***	118.2***	100.5***	109.2***	92.5***	130.6***	129.9***
Debt/GNI	48.2***	52.1**	55.3***	50.9**	50.1**	50.4**	54**
Economic Risk Index	37.6*	33.9*	28.1	34.9*	45**	34.3*	32.4
Contract enforcement	-32.3**	-27.8*	-23.6	-26.2	-28.3*	-29.3*	-29.1*
Executive constraints	3.3**	2.7	2.7	2.8*	2.6*	2.8	2.5
World Bank lending	50***	53.8***	57***	53.4***	47.3***	42.1***	57.2***
Rule of Law		30.2*					
Government Effectiveness			52.1***				
Control of Corruption				33.4**			
Regulatory Quality					54.1***		
Political Stability						22.2	
ICRG Investment Profile							15.2*

Observed SD = 23.624

*** Significant at 1%; ** significant at 5%; * significant at 10%

To take one example, the results should be read (looking at the first cell for the model (i)): an increase of one standard deviation of the log of the population variable increases the expected mean of project signature count by 148% with 99% confidence. An increase of one SD in the amount of World Bank lending increases expected project count by 50% with 99% confidence. Likewise, looking at model (ii), an increase of one SD of the rule of law index (which corresponds, for example, to the difference between the scores of Angola and Argentina) increases the expected mean of projects agreed by 30% with 90% confidence.

Overall, the results of the regression provide strong support for the hypotheses. The basic components of demand for water services, the size of the population and its ability to pay (reflected in GDP per capita) are significant at the 1% and take the expected positive sign in all the models. The dimensions of these two effects on the number of projects are comparable.

Turning next to the factors which drive government demand for the involvement of the private sector, the level of indebtedness of a country is significant in all the models, at the 1% or 5% level. The sign of the effect is positive, suggesting a mechanism of the following kind: governments of more highly indebted countries find it more difficult to access credit, putting pressure on the government to engage in fiscal stabilisation. Governments then reduce their investment expenditure on infrastructure and compensate for this reduction in infrastructure expenditure by seeking private financing for investment in the sector.

A second possible mechanism would be that countries with high levels of indebtedness are more likely to come under pressure from international financial institutions. However, the World Bank lending variable indicator remains significant in all the models, even when controlling for indebtedness. This suggests that the influence of the IFIs has a powerful effect even in countries that are not that heavily indebted.

A third mechanism linking debt to PSP is the effect on macroeconomic risk faced by investors. However, this risk effect should be captured by the ICRG Economic Risk variable. This indicator is designed to capture precisely the aspects of the macroeconomic environment of concern to investors, so it could be surprising that it does not show greater significance. The inclusion of the debt variable in the regression could explain why the significance of the economic risk variable is weak. An alternative explanation for the absence of significance of the risk variable is that project due diligence can be poor and some macro risks badly evaluated *ex ante*. This last point is supported by field interviews with practitioners and legal counsels (McCormack, Hartley).

The role of World Bank sector lending comes out as very significant in all the models, even when controlling for the country's level of indebtedness. This provides strong empirical support for the view suggested by the case studies, that IFIs play an important role. This role could be exercised through one of two channels: on the one hand, the involvement of IFIs in a country may give investors more confidence in investing there; or IFIs may encourage governments to introduce PSP by linking it to access to concessionary finance. The significant relationship found here does not allow us to distinguish between these two effects.

Turning to the institutional characteristics of countries, the significance of many of the indicators provides support for the hypothesis. The indicators that perform best are government effectiveness and regulatory quality. Contract enforcement and executive constraints are significant at 5% in model (i), but lose their significance in some of the other regressions. This suggests that some of the underlying institutional characteristics reflected in these indicators are being picked up by the multiple-component indices, like the World Bank Governance Indicators. Rule of law and the ICRG investment profile, which is an indicator of investor protection from enforcement, are less significant, which may be surprising given theoretical considerations and the significant relationships found in other empirical work. However, the variables are still significant at 10%, so the explanation may lie in the ‘hazy’ nature of institutional indicators. The rule of law indicator, which captures the quality of the judiciary, as emphasised by Levy and Spiller (1994), also captures aspects of the rule of law that are less directly relevant to investors in the infrastructure sector, like the costs of common and organised crime and the quality of the police. A similar argument for the dilution of the effect of the variable may be made for political stability, which does not appear as significant, as this indicator encompasses armed conflict and the risk of terrorism as well as the more directly relevant aspects of stability such as frequent or violent regime change or the extent of civil unrest. Unfortunately, it was not possible to test an interaction term between political stability and independent regulation because of constraints in the data. If the mechanism connecting political stability with investment outcomes is largely through the interaction with sector-specific institutions, this would account for the lack of significance of this indicator in these regressions.

As the World Bank governance indicators have the same format (see Annex 4-C), their effects are directly comparable. Government effectiveness and regulatory quality have the largest positive effects, followed by the control of corruption and then by the rule of law.

The very positive effect of the control of corruption can be surprising at first in a sector (construction) that is very prone to corruption and where competitive bidding has not always been the norm. This finding is however consistent with studies of the link between investment and corruption mentioned above.

However, we must be cautious in interpreting the significance of the different institutional indicators. Some of the indicators exhibit multicollinearity, which suggests that the indicators are capturing some of the same underlying institutional attributes for which I do not have more direct indicators (See Correlation Matrix in Annex 4-A). In the absence of better indicators that would allow us to ‘unpack’ institutions, the key finding is that the institutional indicators as a group do appear as significant. In order to pursue the analysis of the impact of institutions on infrastructure investment flows, qualitative analysis would be a promising approach.

4.8 Conclusion

Quantitative research on private participation involvement in the water sector has been held back until now by limitations in the data. The poor quality of the data is in turn due to the relatively lower levels of investment in water and sanitation and the smaller average project size, compared to other infrastructure sectors. International data on infrastructure penetration and the operating and financial performance of water utilities that can be used for cross-country analysis is very limited because of the highly fragmented structure of the sector and the fact that many national governments do not collect information from municipal and regional providers.

The development of the WATSUP PSP database is a first step towards closing this gap. This new database includes well over twice the number of projects covered by the best existing source, the World Bank PPI Database. This information makes it possible to carry out a count regression model as a first analysis of the factors affecting the number of PSP contracts agreed for water and sanitation. In keeping with expectations, the size of the market and the level of indebtedness of the government are linked with more PSP. Institutions emerge as significant in the regression, for a variety of different indicators. Institutions that reflect the effectiveness of the bureaucracy – government effectiveness and regulatory quality – emerge as more significant than more general institutional indicators like the rule of law. Contract enforcement and executive constraints, which should reflect the ability of the government to demonstrate commitment, are also significant, giving support to the theory on commitment and investment. However, the indirect measures of institutional characteristics provided by the existing indicators do not allow us to identify precisely the underlying institutional attributes that are significant to PSP rates, or to capture the interactions between institutions that shape the overall environment for PSP. This points to the need for qualitative analysis to help identify these underlying attributes and the mechanisms

through which they affect investment. This qualitative investigation is pursued in the following chapters.

This analysis of the determinants of water PSP has informed the methodology of the qualitative approach used in the following chapters, which seeks to identify relevant institutions and the patterns of interaction between these institutions for a sample of countries in Asia. The data collected on sector-specific institutions for these countries will also contribute to the broader effort of closing the data gaps that are currently pervasive in the water sector. The cases studied are all concession-type contracts, which involve both foreign and local investors, situated in different institutional settings, which makes it possible to compare the decisions of governments and firms in PSP contracts and to move towards a deeper understanding of what drives their behaviour over the life of the contract.

Given data limitations, it has so far been difficult to test hypotheses about the link between commitment and private investment suggested by the theory and by anecdotal evidence. Previous efforts to analyse this quantitatively were not able to separate out the impact of institutions on private investment and public investment. This chapter is a first step towards a more focused analysis of the role of institutions on PSP, which takes advantage of the count outcome regression approach to overcome limited availability of data for continuous variables, notably private investment. The specific characteristics of the sector, its political economy, the type of investors involved and the financing of PSP are all worthy of further exploration to better characterise private sector participation in the water sector.

Annex 4-A : Correlation Matrix and Regression Results

Table 4.5: Correlation Matrix

	Population (ln)	GDP per Capita (ln)	ICRG Eco Risk (ln)	Debt/GNI (ln)	Rule of Law	Gov. Effectiveness	Political Stability	Control of Corruption	Contract Enforcement	ICRG Invest Profile (ln)	Polity Index	Political Constraint Index	World Bank lending
Population (ln)	1.000												
GDP per Capita (ln)	-0.299	1.000											
ICRG Economic Risk (ln)	-0.031	0.537	1.000										
Debt/GNI (ln)	-0.002	-0.514	-0.318	1.000									
Rule of Law	-0.318	0.639	0.324	-0.379	1.000								
Government Effectiveness	-0.197	0.648	0.418	-0.411	0.947	1.000							
Political Stability	-0.525	0.633	0.331	-0.271	0.870	0.803	1.000						
Control of Corruption	-0.332	0.696	0.361	-0.423	0.945	0.937	0.805	1.000					
Contract Enforcement	0.158	0.021	-0.124	0.037	-0.249	-0.265	-0.191	-0.246	1.000				
ICRG Investment Profile (ln)	-0.333	0.551	0.323	-0.429	0.736	0.696	0.713	0.731	-0.040	1.000			
Polity	-0.266	0.313	0.044	-0.084	0.367	0.289	0.382	0.336	-0.025	0.335	1.000		
Political Constraints	-0.088	0.194	0.029	-0.067	0.095	0.084	0.090	0.039	0.076	0.126	0.220	1.000	
World Bank sector lending	0.725	-0.046	0.092	-0.071	-0.227	-0.136	-0.287	-0.207	0.158	-0.256	-0.154	-0.190	1.000

Table 4.6: Negative Binomial Count Model for WATSUP PSP in Developing Countries

	I	II	III	IV	V	VI	VII
Variable	Coef (robust se)	Coef (robust se)	Coef (robust se)	Coef (robust se)	Coef (robust se)	Coef (robust se)	Coef (robust se)
Population (ln)	0.6401178 (0.161664)***	0.6510467 (0.1614632)***	0.6012549 (0.158587)***	0.652314 (0.1587678)***	0.7035565 (0.1516604)***	0.7051175 (0.1582122)***	0.6592852 (0.1655563)***
GDP per capita (ln)	0.9059531 (0.2590604)***	0.7699297 (0.2554892)***	0.6865003 (0.2313121)***	0.7288011 (0.2626125)***	0.6462586 (0.2296129)***	0.8245413 (0.2636084)***	0.8150445 (0.2476036)***
Debt/GNI (ln)	0.6422056 (0.3190996)***	0.6847874 (0.3145965)**	0.7187215 (0.3151888)***	0.6717487 (0.3088039)**	0.6631996 (0.2965911)**	0.6663853 (0.3034328)**	0.7295128 (0.3149679)**
ICRG Economic Risk Index (ln)	3.126164 (1.850731)*	2.858871 (1.758522)*	2.422189 (1.612671)	0.9313167 (1.67124)*	3.641314 (1.688005)**	2.888209 (1.720636)*	2.98888 (1.871354)
Contract enforcement	-0.0016892 (0.0007807)**	-0.0014092 (0.0008783)*	-0.0011655 (0.0008862)	-0.0013161 (0.0008646)	-0.0014374 (0.0007904)*	-0.0015033 (0.0008424)*	-0.0015777 (0.0008475)*
Polity Executive constraints	0.0320531 (0.0160026)**	0.0269645 (0.017197)	0.0270374 (0.0158612)*	0.0279345 (0.0167588)*	0.0254278 (0.0141415)*	0.0276616 (0.0180508)	0.0251349 (0.0158307)
World Bank lending	0.0010961 (0.0003794)***	0.0011648 (0.0003686)***	0.0012209 (0.0003446)***	0.0011572 (0.0003623)***	0.0010468 (0.0003462)***	0.0009501 (0.0003612)***	0.0012157 (0.0003726)***
Rule of Law		0.4229404 (0.2622483)*					
Government Effectiveness			0.6851326 (0.2284185)***				
Control of Corruption				0.5125145 (0.2498874)**			
Regulatory Quality					0.6192486 (0.1794388)***		
Political Stability						0.2607609 (0.2439377)	
ICRG Investment Profile (ln)							0.1410888 (0.0879054)*
Constant	-27.82285 (5.612792)***	-26.19556 (5.342247)***	-23.83543 (4.963354)***	-26.12597 (5.228714)***	-28.59693 (5.374369)***	-2707901 (5.24084)***	-28.51399 (6.072471)***
Observations	53	53	53	53	53	53	52
Log pseudo likelihood ratio	-113.61	-112.59106	-111.3235	-112.52739	-110.78109	-112.85509	-112.38421
Pseudo-R2	0.2227	0.2296	0.2383	0.2301	0.242	0.2278	0.2272
Wald Chi square	130.71***	157.61***	194.74***	152.06***	157.07***	160.66***	143.7***

Exposure variable: years since first infrastructure PSP project

*** Significant at 1%, ** significant at 5%, * significant at 10%

LIC	LMC	UMC	Latin America	Africa	Asia	Eastern Europe
20	23	17	16	19	13	12
50	241	168	132	28	253	47
2.50	10.48	9.88	8.25	1.47	19.46	3.92
43	225	165	130	26	230	47
8	16	3	2	2	23	0
86%	93%	98%	98%	93%	91%	100%
16%	7%	2%	2%	7%	9%	0%

6, SD (outliers correction): 9.34

icipation – 460 Observations

LIC	LMC	UMC	LatAm	Africa	Asia	Eastern Europe
29	138	105	73	27	127	45
22	103	63	59	1	126	2
58%	57%	63%	55%	96%	50%	96%

430 Observations

LIC	LMC	UMC	LatAm	Africa	Asia	Eastern Europe
24	153	96	92	13	154	14
5	30	12	10	3	32	2
0	4	26	20	0	5	5
12	15	22	6	7	15	21
10	9	12	4	5	17	5

ution

4	7	8	11	12	13	14	15	16	19	22	23	27	42	166
4	1	2	1	1	1	1	1	1	1	1	1	1	1	1
6.7	1.67	3.3	1.67	1.67	1.7	1.67	1.67	1.7	1.67	1.67	1.7	1.67	1.67	1.7
75	76.7	80	81.7	83.3	85	86.7	88.3	90	91.7	93.3	95	96.7	98.3	100

s: World Bank PPI Database, Thomson Financial, Global Water
ter Market China. Cross-checked through interview with practitioners

inflation, budget balance and current account balance. The economic risk

[spx?page=icrgmethods](#)

st recorded private investment in infrastructure recorded in the database
ives a score of 1. A first investment in 1990 receives a score of 15.

ve confidence in and abide by the rules of society". Includes: incidence of
y of the judiciary, and the enforceability of contracts. Scores are normalized

[overnance/govdata/](#)

ovision, the quality of the bureaucracy, the competence of civil servants,
n political pressures, and the credibility of the government's commitment to

[overnance/govdata/](#)

at the government in power will be destabilized or overthrown by possibly
cluding domestic violence and terrorism. Scores are normalized around 0.

[overnance/govdata/](#)

ned as "the exercise of public power for private gain." Includes small-scale
lized around 0.

[overnance/govdata/](#)

tract

ility, profits repatriation and payments delays. Scores range from 0-15, with
stment profile

[spx?page=icrgmethods](#)

r of the chief executive. Index ranges from 1-7 with 1 representing a polity
; on the actions of the executive" and 7 representing a polity in which
hority equal to or greater than the executive in most areas of activity."

[lity/index.htm](#)

ed funds. US\$ millions. See: World Bank OED Report 26443 (2003)

Annex 4-D: Count Outcome Models

This Annex describes how count outcome models can serve the purpose of testing the determinants of the PSP projects identified in my database. It borrows heavily from Long and Freese (2001).

The Poisson Distribution

The univariate Poisson distribution is the foundation of regression models for counts. Let y be a random variable indicating the number of times an event has occurred. If y has a Poisson distribution, then:

$$\Pr(y | \mu) = (e^{-\mu} * \mu^y) / y! \quad \text{for } y = 0, 1, 2, \dots \quad (1)$$

where $\mu > 0$ is the sole parameter defining the distribution

μ is the mean of the Poisson distribution. μ is also the variance. Thus, $\text{Var}(y) = \mu$, which is known as *equidispersion*. With most datasets, many count variables have a variance greater than their mean, which is called *overdispersion*. As μ increases, the probability of a zero count decreases. Thus, for many count variables, there will be observed zeros than predicted by the Poisson distribution.

The Poisson Regression Model

The Poisson regression model (PRM) extends the Poisson distribution by allowing each observation to have a different value of μ . More formally, the PRM assumes that the observed count for observation i is drawn from a Poisson distribution with mean μ_i , where μ_i is estimated from observed characteristics. This is sometimes referred to as incorporating *observed heterogeneity*, and leads to the structural equation:

$$\mu_i = E(y_i | x_i) = \exp(x_i\beta) \quad (2)$$

Using the exponential of $x\beta$ forces μ to be positive; this is necessary since counts can only be zero or positive. For each value of μ , the distribution around the mean represents the probability of each count. Interpretation of the model involves assessing how changes in the independent variables affect the conditional mean and the probabilities of various counts.

Exposure time

In my sample, not all countries introduce PSP in the water sector at the same time. Statistically, different observations will have different *exposure* times i.e. each observation is 'at risk' of having a positive count for a different amount of time. In my example, each country will have been 'at risk' of having a positive count of private project for as long as a country's legal framework allows private participation in the water sector. Before that date the probability of counting zero projects is by definition equal to unity, and the probability to count more than zero projects is nil.

I create an exposure variable (FIRSTPSP) which measures the number of years since the first private infrastructure project (not just in the water sector) was signed in country i . For most countries this signals the beginning of reform of public utilities and the point after which a private water project becomes possible. The data for FIRSTPSP is drawn from the World Bank's PPI database.

Exposure times can be incorporated quite simply into count models. Let t_i be the amount of time that observation i is at risk. If the rate (i.e., the expected number of observations for a single unit of time) for that case is μ_i , then we would expect $t_i * \mu_i$ to be the

expected count over a period of length t_i . Then, assuming only two independent variables for simplicity, the count equation becomes:

$$\mu_i * t_i = [\exp(\beta_0 + \beta_1 x_1 + \beta_2 x_2)] \times t_i \quad (3)$$

Since $t = \exp(\ln t)$ we have $\mu_i * t_i = \exp(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ln t_i)$

This shows that the effect of different exposure times can be included as the log of the exposure time with a regression coefficient constrained to equal unity.

The Negative Binomial Regression Model

I now address over-dispersion in the sample. The PRM accounts for observed heterogeneity (i.e., observed differences among sample members) by specifying the rate μ_i as a function of observed x_k 's. In practice the PRM rarely fits due to *over-dispersion*⁵⁰. That is, the model underestimates the amount of dispersion in the outcome. The negative binomial regression model (NBRM) addresses the failure of the PRM by adding a parameter α that reflects *unobserved* heterogeneity among observations. For example, with three independent variables, the PRM is:

$$\mu_i = \exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3}) \quad (4)$$

The NBRM adds an error ε that is assumed to be uncorrelated with the x 's,

$$\begin{aligned} \mu_i &= \exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3} + \varepsilon_i) \\ &= \exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3}) \exp(\varepsilon_i) \\ &= \exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3}) \delta_i \end{aligned}$$

where the second step follows by basic algebra, and the last step simply defines $\delta \equiv \exp(\varepsilon)$. To identify the model, I assume that $E(\delta) = 1$ which corresponds to the assumption $E(\varepsilon) = 0$ in the PRM. With this assumption, it is easy to show that:

$$E(\mu) = \mu E(\delta) = \mu$$

Thus, *the PRM and the NBRM have the same mean structure*. That is, if the assumptions of the NBRM are correct, the expected rate for a given level of the independent variables will be the same in both models. However, the standard errors in the PRM will be biased downward, resulting in spuriously large z-values and spuriously small p-values (Cameron and Trivedi 1998).

The distribution of observations given both the values of the x 's *and* δ is still Poisson in the NBRM. That is,

$$\Pr(y_i | \mathbf{x}_i, \delta_i) = (e^{-\mu_i} * \mu_i^{y_i}) / y_i! \quad (5)$$

Since δ is unknown, I cannot compute $\Pr(y | \mathbf{x})$. This is resolved by assuming that δ is drawn from a gamma distribution (see Long (1997: 231-232) or Cameron and Trivedi (1998:70-79) for details). Then I can compute $\Pr(y | \mathbf{x})$ as a weighted combination of \Pr

⁵⁰ Using STATA 8.2 SE, I fit the Poisson regression for our basic model. As with most Poisson regressions applied to real-world data, we find a poor fit. Various measures of pseudo and adjusted R-squared are suspiciously high and the Chi-Square test for the goodness of fit of the regression forces us to reject the null hypothesis that our distribution is a Poisson distribution. The bad fit of the PRM is not a surprise since the standard deviation of our distribution is about three times the mean. This is partly due to the very high number of PSP projects in China. Even after for correcting for outliers (China), the SD of the distribution (9.34) is still almost twice the mean (5.6) – See Annex B for detailed descriptive statistics.

$(y | \mathbf{x}, \delta)$ for all values of δ , where the weights are determined by $\Pr(\delta)$. This leads to the negative binomial distribution:

$$\Pr(y | \mathbf{x}) = [\Gamma(y + \alpha^{-1}) / y! * \Gamma(\alpha^{-1})] * [\alpha^{-1} / (\alpha^{-1} + \mu)]^{\alpha^{-1}} * [\mu / (\alpha^{-1} + \mu)]^y$$

where Γ is the gamma function. (6)

The larger value of α , the greater spread in the data; indeed, if $\alpha = 0$, the NBRM reduces to the PRM, which turns out to be the key to testing for over-dispersion.

I estimate the basic model (without the institutional variables) with the NBRM using STATA 8.2.

```

Negative binomial regression          Number of obs =    56
                                LR chi2(5) =    62.83
                                Prob > chi2 =    0.0000
Log likelihood = -122.88584          Pseudo R2   =    0.2036

```

PSPSIGNED	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
LOGPOPMEAN	.5880215	.1261757	4.66	0.000	.3407216	.8353213
LOGGDPCAPM~N	.9950203	.2148994	4.63	0.000	.5738251	1.416215
LOGICRGECO	3.25384	1.808789	1.80	0.072	-.2913212	6.799002
COVERAGEGAP	.0000794	.0000312	2.54	0.011	.0000181	.0001406
LOGDBEBTGNI	.5546001	.3261312	1.70	0.089	-.0846054	1.193806
_cons	-28.54979	6.39603	-4.46	0.000	-41.08578	-16.01381
FIRSTPPP (exposure)						
/lnalpha	-.8124094	.3793467			-1.555915	-.0689036
alpha	.4437875	.1683493			.2109962	.9334167

Likelihood-ratio test of alpha=0: $\chi^2(01) = 36.43$ Prob>= $\chi^2 = 0.000$

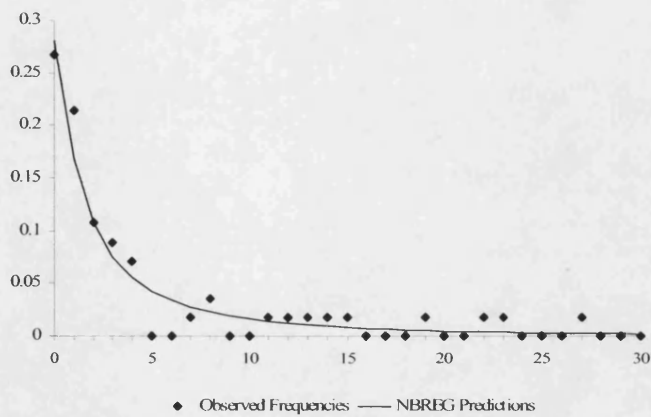
Measures of Fit for nbreg of PSPSIGNED

```

Log-Lik Intercept Only: -154.302  Log-Lik Full Model: -122.886
D(49):                245.772  LR(5):                62.833
                        Prob > LR:                0.000
McFadden's R2:        0.204  McFadden's Adj R2:    0.158
Maximum Likelihood R2: 0.674  Cragg & Uhler's R2:    0.677
AIC:                   4.639  AIC*n:                259.772
BIC:                   48.529  BIC':                 -42.706

```

Figure 4.6: Observed and Predicted Frequencies of PSP Counts



The LR test for $H_0: \alpha = 0$ is highly significant and I can reject the null hypothesis and conclude that there is significant evidence of over-dispersion. From this and the Bayesian Information Criterion (BIC) we can see that the NBRM is to be preferred to the PRM.

Figure 4.6 plots the observed and predicted frequencies using the NBRM-fitted model. We can see that the model fits the data correctly even though it tends to slightly over estimate the number of zeros⁵¹. Having determined that the NBRM fits my data best, this can be used to test the different versions of the model.

⁵¹ The PRM fitted with the same data tends to underestimate zero counts.

5 Government & Firm Behaviour Under Public-Private Contracts: An Analytical Framework

5.1 Introduction

This chapter takes forward the analysis of the interaction between contracts and institutions with the development of a theoretical framework for the analysis of contract implementation. This implementation phase encompasses contract compliance, renegotiation and – in some cases – termination. The framework specifically addresses situations, like those to be found in many developing countries, in which both contracts and institutions are incomplete.

Contractual incompleteness takes two familiar forms: it may be deliberately built into the contract in the form of a periodic review or rate rebasing process, which allows the parties to take account of new information following a contractually specified procedure, or it may be the result of shocks that require a contract adjustment to restore the balance of pay-offs between the parties or the financial viability of the arrangement. Institutional incompleteness, meanwhile, takes a plethora of forms, many of which are likely to be worse in developing countries. Theoretical work on this topic has tended to focus on the two extreme cases of perfect contract enforcement and no contract enforcement. The reality is likely to be somewhere in between. In this chapter, I consider how these two types of incompleteness might interact, and ask, What are the consequences of institutional incompleteness for deliberate contractual incompleteness, and on the ability to adjust the contract after a shock?

One relevant aspect of the institutional environment is the relationship between different public sector actors, and the degree to which they constrain each other's discretionary powers. The 'separation of powers' is a feature of many forms of government, and is associated with more complete institutional environments. In addition to the division of powers between the executive, legislative, bureaucratic and judicial branches of government, sector regulatory agencies add another layer of complexity to institutional arrangements. This raises several questions: Do these multiple principal environments imply that the contract is more likely to be enforced, or are there potential disadvantages to the division of powers between the different bodies? If a new regulatory agency is created to monitor and implement the contract, does this make institutions more complete, and the contract more likely to be enforced?

In the first section of this chapter, I consider why contract adjustments or renegotiations occur, and why they might be a problem. Second, I review the empirical literature linking institutional attributes to contract implementation. The work of Guasch, Laffont and Straub on renegotiations provides the basis for this discussion. The third section brings together these elements in the analytical framework, while the concluding section presents the hypotheses that emerge.

The framework presented here is used to analyse the case studies in the following two chapters. It is not intended to explain all aspects of the complex interaction between governments and firms, but instead provides a lens through which to consider the complex events recounted in the case studies.

5.2 *Time Inconsistency in Concession Contracts*

Chapter 3 introduced the puzzle of time inconsistency in long-term contracts and its effects on the incentives of the contracting parties. In the practical context of a concession contract, the story might go like this: the Government and Firm agree a contract under which the Government commits to raise tariffs and the Firm commits to carry out a capital investment programme. In the long-run, both parties would expect positive returns from the contract; the Government benefits from increased political support as a result of better service quality and higher coverage, and the Firm gains a stream of returns on its investment. But in the short-term, it is costly for both parties to implement, as tariff increases are unpopular and reduce the political support of the Government, and the investment programme increases the Firm's liabilities. Figure 5.1 below shows a typical distribution of pay-offs to the parties over time. Figure 5.2 shows an empirical example of planned returns to the Manila concessionaire, which follows the J-curve. Unfortunately, no simple indicator of pay-offs to government is available for comparison.

Figure 5.1: Returns to Firm & Government under a Concession Contract

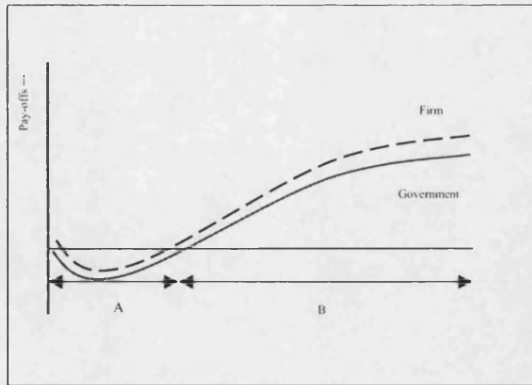


Figure 5.2: Manila West Planned Net Income



Source: MWSS RO

In an incomplete institutional environment, renegotiation will usually be possible, though not costless. Bearing this in mind, the parties engage in strategic behaviour to reduce their exposure to renegotiation: the firm will invest less than it would under a complete contracting case to avoid ‘government hold-up’ or opportunism, and the government will allow fewer tariff increases to reduce its exposure to ‘firm hold-up’.

Government hold-up is referred to both in the empirical literature (Levy and Spiller 1996) and in the theoretical literature (Hart 1995; Levine, Stern et al. 2005). It occurs when firms make long-term investments in sunk assets (assets with no alternative uses). When the private firm has carried out its capital investment, the government forces the firm to renegotiate the contract, reducing the revenue stream to the firm. As long as the firm can cover its operating costs, it will minimise losses by continuing to operate the service and the government can extract the firm’s rents. The rational expectation of hold-up by the government will lead the firm to decrease its relationship-specific capital investment and lower total benefits from the contract (Hart 1995). This foregone investment is difficult to demonstrate empirically; Levy and Spiller (1996) find some evidence in support of this for the telecoms sector, but it is not conclusive.

An alternative scenario is *firm hold-up*. This fits with a perception of powerful companies negotiating with inexperienced governments. In this scenario, the government stages a tender and awards a long-term contract to a company. Before carrying out any capital investment, the firm then forces the government to renegotiate the contract to make the terms more preferential to the firm. The renegotiation could involve reducing the size of the concession fee payable to the government by the firm, increasing the tariff or reducing the investment obligations of the firm. Any of these would increase the firm's revenue stream over the life of the project. Governments agree to this because of the high transactions cost of terminating and then rebidding the contract. In the expectation that the firm might try to secure a preferential adjustment to the contract, the government might delay tariff increases until after investments have been sunk.

Linked to this type of renegotiation is the phenomenon of 'dive-bidding' or 'low ball bidding' in weak institutional environments when a firm deliberately puts in a bid that is not financially viable for the firm, in the expectation that the contract can be renegotiated after it has been awarded. Evidence of this phenomenon is provided by Guasch (2004: 36) and is found in the Manila case study in Chapter 6.

Common to these two stories is the idea that the party with most to lose from contract termination is in a weak bargaining position and is vulnerable to opportunism from the other party. This is consistent with the theoretical literature on non-cooperative bargaining theory (Rubinstein 1982). Which party has the most to lose will depend on the specific attributes of the contract and the resulting distribution of pay-offs.

Not all contract adjustments are opportunistic, of course. The literature distinguishes the rent-redistributing negotiations discussed above from welfare-enhancing renegotiations. (Guasch, Laffont et al. 2003; 2006). The latter occur after shocks or when new information becomes available that is relevant to the implementation of the contract. They adjust the terms of the contract with the mutual agreement of the parties, according to common principles, to set a new combination of tariffs and capital investment that delivers higher overall welfare.

Contracting parties will use a variety of mechanisms to allow contract adjustments while restricting the scope for opportunism. As we saw in Chapter 3, these mechanisms may be defined either in the contract or in statute and may include:

- Assigning responsibility for tariff review to an autonomous agency;
- Defined procedures for review tariffs;
- Procedures to challenge the decision of the regulator;
- Principles to set the appropriate return on capital;
- Principles to assess the efficiency of the firm's operating and maintenance costs;
- Principles to set the level of capital expenditure.

However well defined, these mechanisms will almost certainly be difficult to implement in practice, even in well established regulatory regimes and there will always be scope for interpretation and dispute.

5.3 Renegotiation: Empirical Evidence

Empirical research on the link between institutions and contract implementation has focused on formal renegotiations. Guasch (2004) defines his focus thus:

Renegotiation occurs when the original contract and financial impact of a concession contract is significantly altered and such changes were not the result of contingencies spelled out in the contract. For example, stated and standard tariff adjustments resulting from inflation or other stated drivers do not count as renegotiation. Nor do periodic tariff reviews stipulated in a contract, or contingencies (such as significant devaluations) in a contract that induce tariff changes. Only when substantial departures from the original contract occurred and the contract is amended can one say that a renegotiation took place. (Guasch 2004: 34)

For the purposes of quantitative analysis, it is evident that a clear-cut definition is necessary. However, incomplete contracts are a complex and more pervasive phenomenon than this definition takes account of. Looking first at the phrase, "not the result of contingencies spelled out in the contract," we can see that it is not always possible to separate out modifications that are provided for in the contract from those that are not. During a periodic price review, the concession's financial and operating plans may be substantially revised, including the level and timing of investment and performance targets. These reviews may be mandated by the contract, but the revised plans can be very different from those agreed at the bidding stage and may involve significant shifts of rents between the parties.

A further area of ambiguity arises in situations in which both parties fail to comply with the contract but neither party seeks to enforce the contract. In an incomplete institutional environment, no external parties will be able to enforce the contract. This kind of 'informal' renegotiation results in the same strategic behaviour by the parties as the possibility of formal renegotiation.

In the analytical framework developed here, I therefore consider a broader category of cases:

“A contract is considered to have been renegotiated if there is any significant departure from the terms of the original contract. These changes may be formally agreed in a renegotiated contract or amendment, a major modification agreed in the context of a periodic comprehensive review, or ‘informal’ in the sense that they result from extensive non-compliance with non-enforcement of contractual terms.”

Despite the restrictive definition of renegotiation used, Guasch, Laffont and Straub’s analysis of firm-led negotiations (2003, henceforth GLS 2003) and government-led renegotiation (2006, henceforth GLS 2006) provides the best current evidence on contract incompleteness, and the relationship with institutions.⁵²

Before discussing their results, it is worth mentioning briefly some limitations. In their data, it is not possible to distinguish in the data between opportunistic and other negotiations. Furthermore, as the analysis only covers a subset of the renegotiations that concessions undergo, the overall balance between government- and firm-led renegotiations might be different. For example, governments may be more likely to use the context of a periodic review to reduce the firm’s rents and increase its own. On the other hand, firms might be better at disguising their failure to comply with the contract.

A further caveat with these data is that they are drawn from a sample of five Latin American countries. It is not implausible to suggest that the Latin American experience with concessions has been qualitatively different from other developing regions. PSP began earlier in Latin America than in other regions, in the context of severe fiscal constraints, (Calderon, Easterly et al. 2003) and against the background of a particular set of political and economic institutions. In Asia, on the other hand, PSP took place in a period of high growth, in many cases in the context of a government-led development strategy. This could lead us to expect a higher rate of government-led renegotiation in Asia than in Latin America, for example. Care should therefore be taken before extrapolating the GLS results to other regions.

GLS use this data to test a selection of institutional indicators as determinants of both types of renegotiation and find strong evidence to support the contention that

⁵² The studies carry out Probit analysis for panel data of 307 water and transport concessions in five Latin American countries from 1989-2000. They test the impact of macroeconomic variables, institutional indicators and contract-specific variable on the likelihood of renegotiation. Institutional indices (bureaucracy quality, corruption, rule of law) are taken from the International Country Risk Guide (Political Risk Services).

institutions are relevant. In particular, they find that bureaucratic quality and corruption are significant determinants of the likelihood of both government- and firm-led negotiations, and the occurrence of national elections is significant for government-led renegotiations, but not for firm-led renegotiations.⁵³ They find that a less corrupt environment is associated with more government-led renegotiation.

What are the mechanisms behind the relationships that GLS demonstrate?

Bureaucratic Quality. Measures of bureaucratic quality reflect the ability of the bureaucracy to govern without drastic changes in policy or interruptions in government services, despite changes in the political leadership. High bureaucratic quality also implies that the bureaucracy is more autonomous from political interference and that officials develop expertise in policy areas. A strong bureaucracy is clearly important to provide consistency in the implementation of long-term contracts, as the political leadership is likely to change several times over the life of the contract. The capacity of civil servants to implement their functions is also important: in a concession contract, the regulator will need to resolve the complex technical issues involved in setting tariffs and capital investment plans. This requires adequate access to information and the ability to analyse this information. Without this, the contracting parties will not have confidence in the implementation of the contract and will be more likely to engage in strategic bargaining. Institutions outside the bureaucracy, like accountancy standards, auditing procedures, corporate governance regulation and financial reporting requirements will all support the ability of the bureaucracy to implement the contract by improving transparency and reducing information asymmetries.

Corruption, “the exercise of public power for private gain,” may be linked to the implementation of contracts through several channels. On the one hand, small-scale bribes and demands for side-payments create distortions in the operating environment and impose extra costs on the concessionaire. A greater concern for the implementation of long-term contracts is corruption within the political and judicial system that leads to the biased implementation of laws and regulations. This weakens the parties’ confidence in the enforcement of the contract and thus gives rise to more strategic behaviour. Another serious concern is that contracts awarded or implemented in a corrupt way will be vulnerable to further corrupt demands from a new government and challenges to the

⁵³ The two studies use panel data for 307 water and transport concessions in 5 countries from 1989-2000. The authors run a Probit model of the probability of renegotiation with: s.

legitimacy of the contract by a new government or by the public. In highly corrupt institutional environments, private firms will be vulnerable to popular backlash and political instability. Corruption has been associated with privatisation programmes in the eye of the public in many countries, even though it has been widely argued that privatisation should reduce the scope for corruption (Shleifer and Vishny 1993; Kaufmann and Siegelbaum 1996). The public and media will be on the look out for suspicious deals that appear to favour private parties.

The Electoral Cycle. In the run-up to an election, politicians become more sensitive to public opinion and are likely to promise policies that will be popular in the short-term, even if they are not beneficial or sustainable in the long-term. This is not just a feature of democracies – populist autocrats also stage elections to boost the legitimacy of their rule. As a mass consumption good, water can easily become a political issue. We would expect politicians to intervene to suppress tariffs in the run up to an election, even if this came at the expense of improvements in service quality in the medium-term. The degree to which this will affect private utility contracts will depend on the political salience of utility tariffs and service quality and on the level of political contestation. In turn, this will be affected by the proportion of average income spent on utility bills and the existence of alternative forms of provision. Utility tariffs are likely to come to the fore as a political issue in a period of macroeconomic crisis when household incomes fall and vulnerability rises.

Rule of law is not robustly significant across their specifications. GLS do not test the quality of the judicial system in contractual commitment, although this particular institutional attribute has been emphasised by many other authors. However, in the specific context of concession contracts, the parties can use independent international arbitration as a way of getting around the problems associated with local courts. Arbitration awards still have to be enforced locally, of course, but the use of international arbitration may reduce the significance of the judicial system in the implementation of contracts.

GLS also test contract attributes and sector-specific institutional variables, and demonstrate their significance.⁵⁴ Here, they face an endogeneity problem in using

⁵⁴ Competitive bidding has a negative and significant effect (after instrumentation only) on the likelihood of firm-led renegotiations and a positive and significant effect (with and without instrumentation) on government-led renegotiation. Price-cap regulatory incentives and minimum income guarantees are found

contract attributes as explanatory variables, as these attributes are likely to be selected based on the characteristics of the contract. The authors employ an instrumentation strategy to overcome this.⁵⁵

Of particular interest here is the test for a regulatory body (RB). They find that the existence of a RB at the time of concession award has a significant negative impact on the probability of firm-led renegotiation, but only before instrumentation. After instrumentation, the RB loses most of its significance, suggesting that the positive impact of the regulator comes from its role in influencing the design and award of the contract. For government-led renegotiations, the existence of a regulatory body is not consistently significant and changes its sign in both basic and instrumented estimations. After instrumentation, the existence of the regulatory body is negative and significant in only one model.

These results fit with the case studies in which the RB is sidelined in contract renegotiations (for example, Aspiazu and Forcinito 2002 on the renegotiation of the Buenos Aires contract and the Manila case study described in Chapter 6). These results may also underestimate the impact of the regulatory body because the authors have tested only for its existence, and not for its effectiveness. A strong, autonomous regulator might have more of an effect on the implementation of the contract, but this is difficult to test for given insufficient data.

In order to investigate the relationship between contracts and institutional characteristics further, they also test the following interaction terms and find them all to be significant:

- Existence of a regulatory body and corruption;
- Elections and corruption;
- Elections and bureaucratic quality.

This suggests that the existence of the RB plays a particularly important role in weak institutional environments and, as we would expect, that the effects of the political cycle will be exacerbated in these weak institutional environments. The other results are consistent with the explanation of the mechanisms described above, with both lower

to be a positive and significant determinant of renegotiation for both firm-led and government-led; and investment requirements are found to be significant and positive for firm-led renegotiations only.

⁵⁵ For each contract clause, the authors develop a set of two instruments that are correlated with the variables to be instrumented (regulation, the structure of financing, guarantees etc), while not being correlated with the unobserved factors (corruption, the operator's strategic behaviour). GLS 2006: 18.

levels of corruption and greater bureaucratic quality reducing the impact of politicisation.

Finally, and not surprisingly, GLS find that fluctuations in macroeconomic growth rates significantly affect the probability of renegotiations, with recessions increasing it and booms decreasing it. However, they note that not all macroeconomic shocks lead to renegotiations.

5.4 Framework

The framework developed here draws on the work of Stigler (1971), Peltzman (1976) on government incentives, and Martimort (1999) which models multiple principals with competing powers and different objectives.

Basic Framework

To begin, we assume that there are just two players – the Government and the Firm. The players have a discount rate δ and an associated Hurdle Rate, \underline{R}_G for the Government and \underline{R}_F for the Firm. They will engage in a project when its expected pay-offs (R_{eG} for the Government and R_{eF} for the Firm) equal or exceed this hurdle rate. They negotiate a contract (Contract 1) that provides for these pay-offs:

$$\begin{aligned} R_{eG1} &\geq \underline{R}_G \\ R_{eF1} &\geq \underline{R}_F \end{aligned}$$

Pay-offs, or returns, for the Government are both financial and political: on the financial side, the government receives concession fee payments from the firm; on the political side, the government benefits from increased popular support if quality of service and coverage rise. Pay-offs for the Firm are equivalent to the stream of financial returns on investment.

The discount rate and associated Hurdle Rate of the Government is a function of the length of time that the Government expects to remain in power. This, in turn, is affected by the electoral cycle, the nature of political institutions, and the degree of political competition.

The Hurdle Rate of the Firm is determined by its WACC (weighted average cost of capital) and its business strategy, which may become more or less risk averse over time.

The contract between the parties specifies the return to the firm and an implied return to government (through contract provisions specifying the firm's performance requirements and schedule of concession fees) and specifies the structure of these pay-offs over the life of the contract. These would usually be negative in the initial period, as discussed above.

1. Adjustment of Incomplete Contracts with Uncertain Enforcement

The typical contract is explicitly incomplete. As contracts are long-term, new information is expected to become available over the life of the contract and the contract allows for adjustments over time through a specified mechanism, periodic rate rebasing. At the rate rebasing, the contract specifies the principle for the regulator to re-set tariffs, investment and performance requirements so that the return to the firm is equal to R_{eF} specified in the contract. The contract provisions are asymmetric in this respect, as R_G is not specified in the contract and there is no principle or mechanism to restore the government's return over time.

Typical sources of contractual incompleteness include:

- Inaccurate information on the state of the distribution network at the time of transfer;
- Actual rates of demand growth different from those forecast;
- Fluctuations in inflation rates.

The first example might require the firm to make more capital investment than planned, lowering its rate of return; the second might mean a lower stream of revenues, also lowering net returns.

In these examples, actual pay-offs under the original contract (Contract 1) are unchanged for the government, but lower than expected for the firm:

$$R_{G1} \geq \underline{R}_G, R_{F1} < \underline{R}_F$$

After rate rebasing, the pay-offs fulfil the initial conditions and restore the return to the firm to the level specified in the contract. As a result, actual pay-offs for the government may be lower than expected under the original contract but are still above the government's hurdle rate. These conditions can be summarised as:

$$\begin{aligned} R_{G1} &> R_{G2} \geq \underline{R}_G \\ R_{F1} &= R_{F2} \geq \underline{R}_F \end{aligned}$$

where R_{G1} is the pay-off under the original contract and R_{G2} is the pay-off under the adjusted contract.

The second form of contractual incompleteness to consider is exogenous shocks which reduce returns to one or both parties. The contract adjustment mechanism does not cover adjustments to the contract for shocks (shocks are, by definition, unforeseen). For example, a currency devaluation could raise the cost of concession fee payments denominated in foreign currency, while increasing the foreign debt service requirement of the government. In this example both government and firm are worse off:

$$R_{G1} < \underline{R}_G, R_{F1} < \underline{R}_F$$

Other shocks might affect only one of the parties, as in the case of a water resource shortage, which might affect the firm but not the government:

$$R_{G1} = \underline{R}_G, R_{F1} < \underline{R}_F$$

There are three possible outcomes after a shock: the parties may renegotiate successfully; the parties may try to renegotiate but fail to come to agreement; or the original contract may be enforced.

The contract is enforced with probability π . This is a function of the quality of judicial institutions and the quality and transparency of auditing and accounting, and the existence of an independent and competent monitoring agency or agencies. The renegotiation will fail with probability $(1 - \pi) \lambda$, either because of ineffective enforcement or because the parties fail to come to an agreement (λ), which captures a combination of factors, including the size of the shock and the negotiating ability of the parties.

Neither of the parties wants the original contract to be enforced, but are not able to prevent autonomous institutions from trying to enforce it. The parties renegotiate in the spirit of the original contract so both parties now receive lower returns than originally expected but receive returns above their hurdle rates to deliver:

$$\begin{aligned} \underline{R}_G &< R_{G2} < R_{G1} \\ \underline{R}_F &< R_{F2} < R_{F1} \end{aligned}$$

If the parties cannot agree a set of contract requirements that meet these conditions, the renegotiation fails, and the parties decide whether or not to terminate. This might be the case if the shock was severe or if the parties negotiate badly.

Termination imposes a cost on the firm of $-K$ (sunk capital investment) and on the government of $-H$ (the transaction cost of finding an alternative operator for services and lost concession fees).

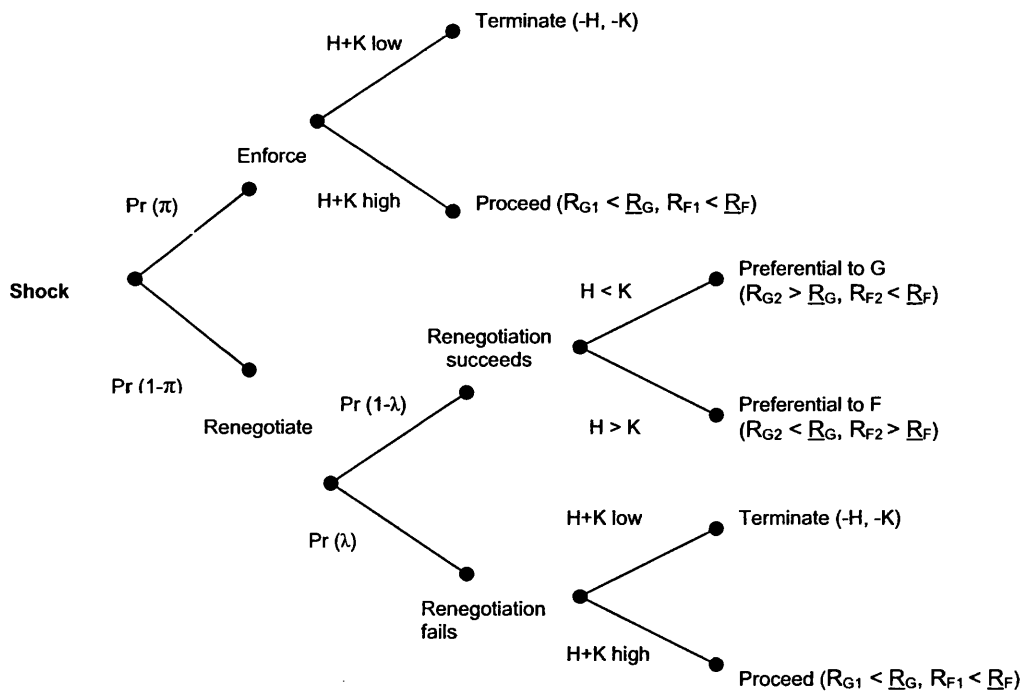
Termination will occur if expected discounted returns to either party after the shock are lower than the loss from termination.

$$R_{G1} < H, R_{F1} < K$$

If $\text{pr}(\pi)$ is low, the parties may act strategically in the event of a shock to seek to capture a larger share of the rents, while meeting the other party's participation constraint.

If the participation constraints can be met, the outcomes of the renegotiation will be determined by the bargaining power of the two parties, which in turn is related to the cost of termination (H and K for the government and firm respectively). Where H and $\text{pr}(1-\pi)$ are high, the firm will have more bargaining power in the renegotiation and is likely to be able to secure preferential renegotiation. Where K is high, the government is likely to be able to do so. Figure 5.3 illustrates this case in the form of a game tree.

Figure 5.3 Contract Implementation After a Shock



2. Changes in Discount Rates

In addition to shocks that affect the stream of returns from the contract, shocks may occur that shift the discount rates of the parties. Shocks that shorten the life expectancy of the government, such as an increase in the likelihood of losing in an election, or, more dramatically, the transition from an autocratic to a democratic system of government, will raise \underline{R}_G . \underline{R}_F may rise as a result of macroeconomic shocks, political shocks or changes in the firm's global strategy, e.g. to reduce debt levels.

Say that a shock causes δ and thus the hurdle rates of the parties to increase in period 2.

$$\begin{aligned}\underline{R}_{G1} &< \underline{R}_{G2} \\ \underline{R}_{F1} &< \underline{R}_{F2}\end{aligned}$$

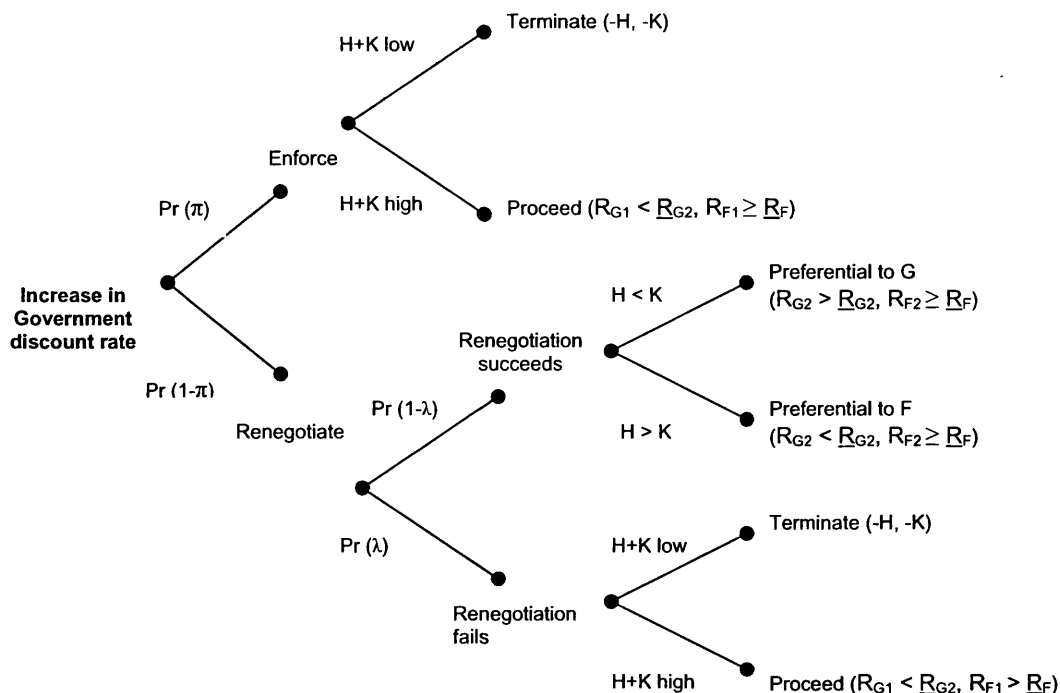
Once again, if the contract is likely to be enforced ($\text{pr}(\pi)$ is high), the parties will decide whether or not to terminate depending on the cost of termination.

If renegotiation is possible, the parties will bargain over the new distribution of pay-offs. Again, the party with the lowest cost of termination will be able to secure a preferential distribution, while meeting the participation constraint of the other party. Where the costs of termination for both parties are very high and balanced, parties will cooperate to agree a new set of pay-offs, under which returns from the contract are below their new hurdle rates but exceed their initial hurdle rates.

$$\begin{aligned}\underline{R}_{G2} &< \underline{R}_{G2} \\ \underline{R}_{F2} &< \underline{R}_{F2}\end{aligned}$$

This result violates the participation constraint of the parties and so it is not a long-term equilibrium. The parties will seek to maximise their short-term revenues from the contract and will terminate when H or K has declined. The Figure below illustrates this case.

Figure 5.4 Contract Implementation With an Increase in Government's Discount Rate



3. Multi-party Games

An interesting extension to the framework is to waive the assumption that government is a unitary actor. In practice, multiple public sector actors will usually be involved in negotiation and implementation of concession contracts.

In the theoretical literature, multiple agencies with competing powers and different objectives improve the government's ability to commit and reduce the likelihood of regulatory capture because it makes renegotiation harder (Martimort 1999).

Consider two government actors, the executive (denoted G) and the bureaucracy (denoted B) which may be the former public utility or government department or agency. One party values political pay-offs more highly, say, the executive, while the other values financial pay-offs more highly. The two parties also have different discount rates and different costs of termination. For example, the executive's termination cost may be higher than that of the public agency for reputational reasons ($H_G > H_B$) or the agency may be obliged to make a termination payment, in which case $H_G < H_B$.

The executive and public agency are independent, in the sense that they cannot force each other to agree to renegotiate or terminate the contract and the agreement of both

parties is needed either to renegotiate or to terminate. Both actors have veto power over any contractual amendments or termination. The parties are usually non-cooperative as their pay-off profiles are different.

When enforcement is perfect, the multi-party nature of government will have no impact on outcomes, although it may raise transactions costs.

When enforcement is imperfect, renegotiation can now be triggered by all three parties, G, B and F. Thus if political pay-offs change but financial pay-offs do not, renegotiation will be triggered, and vice versa. As contrary movements in these two types of pay-offs cannot balance each other out in the way that they can when the government is a single actor, renegotiation is more likely to be triggered.

However, it will also be more difficult to conclude renegotiation because both government parties will only agree to the new contract if it delivers returns that exceed both their hurdle rates. Once again, there is no potential for balancing between political and financial pay-offs.

Is termination more likely when there are multiple government actors? Because the government parties have veto powers but not coercive powers, the party for whom the costs of termination are highest will prevent the termination. However, the parties may also not be able to agree an amended contract, leading to protracted renegotiations.

We can also consider the effect of adding a third principal, a contract monitoring body or regulatory body (RB). The RB has a special status with regard to the concession, as it has its legal basis in the contract and has a single defined objective, to monitor and implement that contract. Like the other government players, the RB has a distinct set of interests defined by the terms of the contract: its pay-offs are reduced during renegotiations, when powers pass to the other two government actors, and a high termination cost, because its powers are based on the contract. The RB therefore has an incentive to encourage the other government parties to conclude renegotiations.

7. Hypotheses

The framework suggests several hypotheses for investigation in the case study chapters which follow.

H1: If the parties cannot agree a mutually satisfactory renegotiation, but termination costs are high, the parties will seek to maximise short-term revenues from the contract and will terminate when the costs of doing so have declined.

H2: When the probability of enforcement is low, the party with the lower cost of termination secures preferential outcomes in both contractually mandated and shock-induced renegotiations.

H3: The involvement of multiple government principals makes it more likely that renegotiation will be triggered, but less likely that renegotiation will be concluded or that the contract will be terminated.

H4: The existence of a contract-specific regulatory agency or contract monitoring agency will increase the probability of concluding a renegotiation.

6 Timing is Everything: The Implementation of the Manila Water Concessions

6.1 Introduction

This chapter describes the history Manila water concession contracts and analyses the hypotheses of the previous chapter in the light of this evidence.

The Manila concessions raise interesting questions. The original concession contracts were detailed and designed with careful attention to the incentives of the parties by the International Finance Corporation (IFC), which advised the government on the privatisation. They contained provisions reflecting international best practice. Initially, investors signalled considerable interest in the concessions and the tender in 1997 attracted bids from leading international water companies. The bids implied a reduction in the average tariff of more than half. However, in the first year of operations, the East area concessionaire secured an unplanned tariff increase and in the third year of operations, the West concessionaire began renegotiations, which ended, after long battles, in the termination of the contract in 2006.

Was the failure of one of the concessions due to the contract design, or to the institutional environment? Existing studies tend to emphasise the impact of particular contract provisions (Fabella 2006), but why was one party able to secure a favourable renegotiation while the other was not? The answer to these puzzles lies in part in the changes of the parties' discount rates over time and partly in the conflicting interests of the different public and private parties involved in the concessions. I consider these issues and others raised by the hypotheses set out in the previous chapter after describing the history of the concessions.

6.2 History

In 1994, when PSP for Manila's water services was first being considered, the public utility, Metropolitan Waterworks and Sewerage System (MWSS), served approximately two-thirds of the population of the metropolitan area of Manila ('Metro Manila') for an average of 16 hours per day. Sanitation coverage was minimal: only 8 per cent of the population was covered by the sewerage network. Non-revenue water stood at 56 per cent and was on an upward trend (ADB 2001). There was therefore broad scope for improvements in service quality. The potential for improved service fitted neatly with the policy orientation of Fidel Ramos' government. Since his election in 1992, President

Ramos had promoted privatisation as part of a far-reaching effort to “bring down the old economic order” associated with the Marcos dictatorship (Hutchcroft 1998) and to bring the public sector budget deficit under control. One of the great successes of Ramos’ Presidential term was the resolution of the Philippines’ power crisis through the rapid roll out of private power stations. Ramos hoped to repeat this success in the water sector and sought to complete the privatisation of Manila’s water services before the end of his term in 1998 (Dumol 2000).

This short window meant that it was not feasible to pass new primary legislation restructuring the water sector, and allowing for the creation of a sector regulator. Ramos faced a further hurdle: under Filipino law, the power to award franchises contracts lies with Congress rather than the Executive, so Ramos had to secure special provision to award the concession for Manila’s water services. He did this through the Water Crisis Act (1995), which contained a provision allowing the President to negotiate contracts with the private sector for water services, and to reorganise the MWSS.⁵⁶ The bill was passed, but the Senate imposed the condition that the Executive powers would become void after six months, putting extra time pressure on the award of the contracts (Dumol 2000).

The concessions were therefore designed to fit within confines of the existing institutional structure: the MWSS was designated as the contract signatory and continues to own the city’s water assets and liabilities for historic debts. The contract monitoring body, the Regulatory Office, was created within the MWSS. It reports to the MWSS’ Board of Trustees (BOT) and its decisions must be approved by the Board before they can be implemented (Interviews: Sakai, Agustin, Cruz). The Chief Regulator and the four other members of the Regulatory Board are appointed by the MWSS BOT. The members of the BOT, in turn, are either appointed directly by the President or in directly, by virtue of their position in government. The RO has a degree of financial autonomy as it is funded through a levy on the concessionaires but changes in its budget beyond inflation adjustment need to be approved by the BOT (Interview: Sakai).

The 60 staff of the RO were transferred over from the MWSS, leaving a rump of 120 in the MWSS responsible for managing the development and maintenance of water

⁵⁶ The Act contained two further provisions of relevance to the successful implementation of the privatisation: it included provisions on the reorganisation of the public utility, the Metropolitan Waterworks and Sewerage System (MWSS) and the criminalisation of water theft.

resources (Interview: Cruz). As in Jakarta, the old public utility had the most to lose from the privatisation, and its management and employees were the main source of resistance to the reforms (Interviews: Sangster; Burrell). Ramos appointed one his friends as the Director of the MWSS in the transition period, Francisco Lazaro, to ease the process (Interview: Lazaro).

Within the constraints imposed, the Executive and its advisers, the IFC, sought to assuage the potential concerns of bidders about political intervention and arbitrary regulatory decisions. The role of the RO was restricted to monitoring and implementation of the contract. In the case of disputes, the contract provided for a minor disputes panel and ultimately international arbitration. Doubts about the capacity of the new regulators to carry out their tasks without specific training were addressed with a provision for the use of external consultants when needed (Interviews: Cases, Sakai). In order to strengthen the regulator's hand, the concessionaires would post a performance bond and to reinstate the bond in each year of the contract. The amount of the West concession's performance bond declined over the life of the concession from US\$120mn in Year 1 to US\$60mn in Year 20, and from US\$70mn to 50mn for the East.

The government's main concerns were to reduce the liabilities which had been incurred by MWSS – US\$1bn in 1997 – and to keep tariffs as low as possible. To address the first, the private companies would pay concession fees to cover the service and repayment of the loans. To address the second, the large capital investments planned during the contract were 'back-ended' (i.e. extension of coverage was delayed until 5-10 years into the concession) (Dumol 2000). Additionally, the service area was split into two, creating scope for benchmark competition between the two concessionaires. However, this division raised other difficult issues: the Western area was more densely populated and had extensive, but older, water infrastructure. The Eastern area contained large areas which had not yet been connected to the network, and so was thought to be less attractive to bidders who would be wary of the large capital investment requirement. The contract designers decided to weight the concession fees to reduce the possible divergence in bids for the two areas. 80 per cent of the debt was allocated to the West concession, amounting to US\$750m in foreign loans and PHP2.2bn in local loans. The remaining much smaller proportion of the debt was allocated to the East concession.⁵⁷ The government consulted with potential bidders before deciding on the

⁵⁷ When the concessions were actually awarded, the balance of debt repayment was closer to 90:10 as some of the loans for the Eastern zone had not yet been disbursed.

weights, and it was agreed that the division was broadly appropriate. But when the Asian Crisis hit, the West concession was to suffer the severe, if unintended, consequences of this weighting.

In keeping with the requirements of the Philippine Constitution, the bidding companies were required to be at least 60 per cent Filipino-owned and managed by Filipinos, and were also required to involve a 'designated international operator' with experience in the water sector.⁵⁸ Ideally, this JV structure would offer potential for mutual benefit between the parties, who would be able to learn from each other about international best practice and local operating conditions. Within each JV, it was envisaged that the international operator would play a leading management role, which opened up potential for clashes with the Filipino majority owner (Interviews: Rivera, Sangster).

With the elements of the contract structure in place, the government proceeded with the bidding, using the consumer tariff as the bid criterion. All the bidders were required to place a bid for both the West and East zones. If one company offered the lowest tariff in both zones, it would be awarded the zone for which it had proposed the lower tariff and the other zone would be awarded to the second lowest bidder for that zone. Great attention was paid to the transparency of the tendering process as the Executive was concerned to avoid any legal challenges from the unsuccessful bidders that could delay the award of the contract (Dumol 2000). At each stage, care was taken to ensure the confidentiality of the bidding documents through elaborate security procedures, with the bid box stored over night in bank vaults to prevent tampering (Interview: Lazaro).

The bidding took place in 1997 in a furore of media activity (Dumol). Four consortia bid; all offered considerable reductions on the prevailing tariff of 30 percent or more.

The bid results are presented in Table 6.1 below.

⁵⁸ Philippines Constitution 1987, Art. XII, Sec. 11 states that Filipino citizens or corporations that are 60 percent owned by Filipinos may receive a franchise to operate a public utility.

Table 6.1: Bids for the Manila Concession

West	Tariff (Peso)	Proportion of MWSS tariff %
Ayala Corp - International Water	2.51	28.63
Benpres Corp -Lyonnaise des Eaux*	4.97	56.59
Aboitiz-Compagnie Generale des Eaux	4.99	56.88
Metro Pacific-Anglian Water	5.87	66.90
East		
Ayala-International Water*	2.32	26.39
Benpres-Lyonnaise des Eaux	5.52	62.88
Aboitiz-Compagnie Generale des Eaux	5.66	64.51
Metro Pacific-Anglian Water	6.13	69.79

*Winning consortia

Source: Dumol (2000)

One consortium, the Manila Water Company, made up of Ayala Corp. and International Water⁵⁹, bid lowest for both zones, and was awarded the East zone, where it offered the lowest absolute tariff. The West zone was awarded to the second lowest bidder, 'Maynilad Water Service Co' (Maynilad), a joint venture between the Benpres Group (the local sponsor), and Suez (France).

The Ayala bid was cause for concern early on because it was so much lower than the others, which indicated possible 'dive-bidding'. The company justified its lower bid with reference to the lower discount rate of 5.2 percent on which the financial model was based, compared with an implied rate of 10.4 percent for the other winning bidder, and its more optimistic assumptions about the cost of finance and future demand (Interview: Rivera). Even so, the financial model in the original bid would not have allowed the company to earn positive profits until the tenth year of the concession (Dumol 2000). The bid design had specifically sought to discourage dive bidding by allowing the regulator to delay the first round of rate rebasing until 2007, so the Ayala bid took the organisers by surprise. The government asked the IFC to review the financial model of the bid and it was deemed acceptable, so the concession contract was awarded, but it raised the possibility that the group would seek to renegotiate the tariff later on. Apart from this concern, the bidding was considered a great success by the government and the media, generating enthusiastic headlines in the Filipino press (Fabella 2006).

The majority owner of the East concession, the Ayala family, is one of the Philippines' old elite families and controls a powerful business empire. The family's wealth has been based in part on ownership and development of Metropolitan Manila's business district, Makati, which is in the zone served by the Manila East water concession. Like the other

⁵⁹ International Water was itself a JV of Utilities (UK) and Bechtel Corporation (US).

elite families in the Philippines, whose influence in politics and business is well documented (see Anderson 1988; McCoy 1993; Sidel 1997), the Ayalas have been involved in politics.⁶⁰ However, they have managed to avoid the dramatic reversals of fortunes experienced by the more politicised business interests. Prior to the water concession, they had no experience in regulated utilities.

The Lopez family, majority partner in the West concession, is at the other end of the spectrum. The family entered business in the 1880s as a sugar producer; by the 1970s, their business had grown into a diversified conglomerate with interests in property, media, telecoms, utilities, finance and agriculture (Roces 2000). One of the major companies in the group is Meralco, the regulated electricity distribution company that service the Manila region. The family has been involved in politics throughout that time, initially at the local level as Mayor and Senator, but rising as far as the Cabinet and Vice Presidency. Its political and business interests are deeply intertwined: the Benpres-owned television network, ABS-CBN, has been used to support political campaigns, and the business have secured monopoly franchises and access to credit through the political connection (Roces 2000: 23). However, the Benpres fortunes have risen and fallen: during the Presidency of Diosdado Macapagal (1962-65), the group was targeted for tax investigations, while in the later years of the Marcos dictatorship, the group's assets were expropriated and family members imprisoned. Its fortunes during the period under consideration have been mixed.

The concessionaires began operations in the second half of 1997, a few months before elections that brought in Josef Estrada as the new President. Shortly after the election, Manila Water petitioned the regulator to adjust its tariff to reflect a higher ADR of 18 percent. The concessionaire argued that this was the appropriate rate based on market comparators, but the regulator refused the petition on the grounds that the bid ADR was intended to be maintained until the first Rate Rebasing. In the contract, the ADR is to be set on two not necessarily compatible grounds: the ADR implied in the concessionaire's financial bid model and the ADR commensurate with returns to operators in concessions internationally with a similar risk profile. In the event, the concessionaire took the dispute to the Appeals Panel, which ruled that the appropriate rate was 9.3

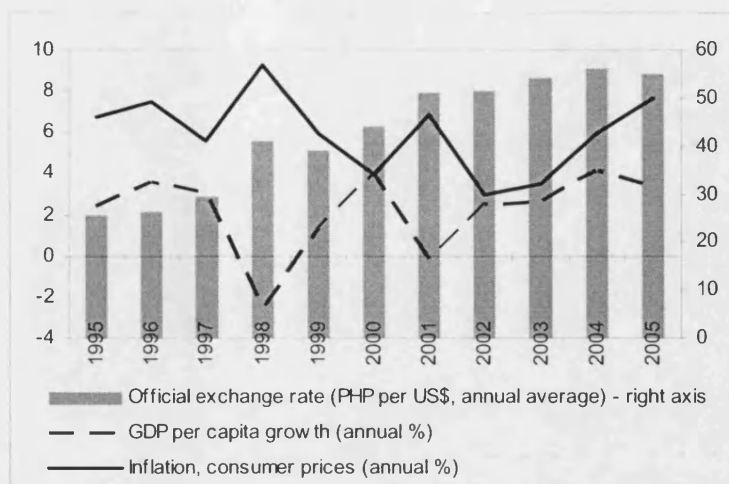
⁶⁰ Jaime Zobel de Ayala, CEO of the Corporation, served as an adviser to President Corazon Aquino (1986-92), a period in which the company's business interests expanded significantly. (Crowell and Lopez)

percent, and ordered that the tariff should be adjusted to reflect this until the next round of rate rebasing (MWSS 2002).

Manila Water's petition was well timed. Estrada had won the 1998 election with a comfortable majority of the votes, especially among low income groups. From this strong position, the implied increase in Manila Water's tariff did not constitute a threat to his popularity, particularly as the adjusted tariff was still below the tariff in the West concession and below the prevailing tariff at the time of the privatisation. Resistance to the adjustment came instead from some members of the Regulatory Board and from those who had been involved in the contract design, including Francisco Lazaro (Interview: Lazaro). They objected that this tariff adjustment cast into doubt the validity of the tendering procedure and considered taking the case to the Supreme Court. However, in doing so they would be undermining the contracts by not following the specified dispute resolution procedure, and ultimately the case was not pursued (Interviews: Sakai, Ortega).

At the same time as these events, the Asian Crisis was unfolding in the Philippines, which would bring much greater challenges for the concessions in its train. The Philippine Peso devalued from US\$1: PHP29 in 1997 to US\$1: PHP51 in 2001 (Figure 6.1 shows macroeconomic trends for this period). As a result, Maynilad announced a foreign exchange loss of PHP2.7bn by the end of 2000 (Esguerra 2003). At this time, the concessionaire was trying to secure long-term loan financing from a consortium of international and local banks to finance its investment commitments under the contract, but the banks were reluctant to agree the loan before the financial viability of the concession was restored and would only agree to a bridging loan to cover expenditure in the short-term (Interviews: Burrell, Tirona).

Figure 6.1 Macroeconomic Trends in the Philippines 1995-2005



The contract did provide for tariffs to be adjusted on an annual basis for fluctuations in the exchange rate and for inflation.⁶¹ However, this mechanism had been designed with incremental devaluation in mind, so tariff adjustments were calculated to deliver compensation over the remaining life of the contract (Interview: Medalla). The devaluation of 1997-2000 was different because of its scale and permanence. Inflation jumped in the short-term, while the currency fell dramatically and settled at the new lower level. The tariff adjustment mechanism in the contract would not raise cash flow sufficiently to reassure the banks and allow the concessionaire to raise medium-term financing (Interviews: Tirona, Medalla). Maynilad therefore approached the regulator to amend the contract in 1998 and proposed a modification in the annual tariff adjustment mechanism that would accelerate the recovery of foreign exchange losses.

Initially, the contract amendment was discussed principally by the Chief Regulator, Rex Tantiongco, and the senior management of Maynilad (Interview: Flor). The Chief Regulator was sympathetic to the company's predicament, but some of the other RO Board members objected, arguing that the RO should not play a role in modifying the contract that they were legally bound to implement. Two board members eventually left the RO as a result of the dispute, but the reasons for their departure is not entirely clear; in some accounts, the members were forced to leave by the MWSS BOT (Interviews: Esguerra, Ortega). This, and other aspects of the renegotiations, attracted considerable attention from the media and non-governmental organisations and triggered the

⁶¹ Under the Extraordinary Price Adjustment (EPA) mechanism, the concessionaires could apply at the end of each year for an adjustment to the tariff to compensate them for losses incurred over the course of the year from currency depreciation.

involvement of the President. The President then nominated a representative, Gloria Tan Climaco, who became the chief negotiator with the company.

The parties came close to concluding the amendment in 2000 but political developments delayed the final agreement. During 2000, Josef Estrada had been impeached on grounds of corruption, and was replaced by the Vice President, Gloria Macapagal-Arroyo, in early 2001. In her new position, Arroyo was politically vulnerable as she had not been elected to the Presidency and did not have a popular mandate to bolster her in relation to the Congress or bureaucracy. Frustrated with slow progress in the negotiations, the concessionaire decided to suspend concession fee payments in March 2001 (Interview: Sangster), leaving the government to cover the MWSS debt service obligations.

Arroyo set up an ad hoc committee in early 2001 to discuss the amendment of the contract, although in public, the President expressed a preference for solutions that did not violate the original contract (Esguerra 2002a). Maynilad's creditors were also actively involved in pushing for the amendment of the contract terms before they would agree to a medium-term loan (Interview: Burrell). A new Chief Regulator, Eduardo Santos, was appointed.

In October 2001, when the political situation was more stable, and the concessionaire's bargaining tactics were making themselves felt, a contract amendment was signed. The amendment introduced new tariff adjustment mechanisms to allow the concessionaires to recoup foreign exchange losses through the FCDA (Foreign Currency Differential Adjustment) mechanism (to recover losses incurred after the Amendment), and through the temporary Accelerated EPA (Extraordinary Price Adjustment) to recoup past losses (MWSS Board of Trustees 2001). Although Manila Water had not participated in the negotiations, it nevertheless benefited from the new Amendment.

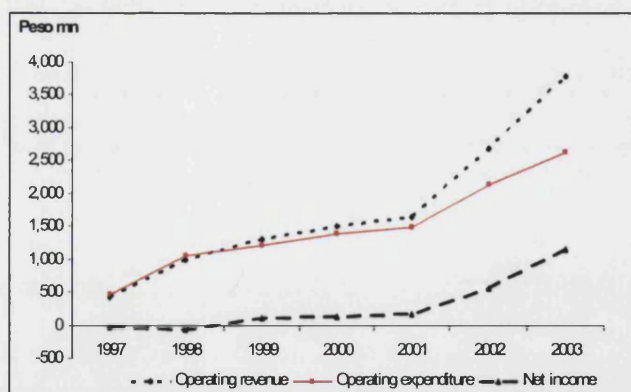
The Amendment also contained a commitment on the part of Benpres and Suez to infuse extra equity in their JV; to resume the payment of concession fees in mid-2002 and to submit a revised business plan for consideration in the Rate Rebasing. In fact, Maynilad never resumed concession fee payments, with the exception of one fee of PHP 30m in November 2002 and repayment of the total debt covering the operating budget of the RO (Interviews: Sakai, A.Agustin). The agreement left some issues unresolved, notably the concerns of the lenders about the revenue position of the concessionaire, and

negotiations were meant to continue in the context of the rate rebasing in 2002 (Interviews: Sangster, Burrell),

The contract provided for a 5-yearly comprehensive review or 'Rate Rebasing' to set operating targets and tariffs based on a full assessment of financial and operating performance. The contract contained a provision allowing the regulator to decide whether the first Rate Rebasing would take place in 2002, or in 2007, but the RO had agreed in the context of the negotiations with Maynilad that the RRB would take place in 2002. A new head of MWSS, Orlando Honrade, was appointed in January 2002 and a team of consultants was appointed.

For the East concession, the RRB proceeded in line with the contract (Interviews: Rivera, Sakai). The submission and consideration of the concessionaire's financial and operation plans took place within the designated timeframe in 2002. Tariff increases were agreed for gradual implementation in 2003-2007 and implemented by the concessionaire.⁶² The RRB adjusted the ADR to 10.4%, bringing it into line with the ADR determination for the West concession. This reinforced the favourable financial position of the concessionaire. Figure 6.2 shows revenue and profit growth in the East concession.

Figure 6.2: Manila East Net Income (actual)



Source: MWSS RO

In the course of the Rate Rebasing, the RO proposed the introduction of new 'key performance indicators' and 'business efficiency measures' not included in the original contract. This initiative of the RO was prompted by its perception that the efficiency incentives implied in the structure of the contracts for the concessionaires to reduce

⁶² Manila Water Co was allowed to raise its rates to Peso 17 in 2003 (Visto 2002)

non-revenue water and improve customer services were not sufficiently strong. The new indicators would also help the RO to improve its own access to information and ability to monitor the concessions. These performance indicators have not been formally added to the contracts and so they are not legally binding, nor do they form a part of the regulator's official assessment of the company at the rate rebasing (Interviews: Sakai, A.Agustin). However, the East concessionaire agreed to provide this extra information to the regulator and has used for its own public relations (Manila Water Company Inc. 2004).

The RRB process was considerably more complicated for the West concession. In March 2002, Maynilad submitted its new business plan, which was rejected by the RO on the grounds that the tariff increases implied by the investment plan were excessive. The concessionaire was asked to revise the business plan to reduce planned capital expenditure. While the regulator conducted its deliberations, a new Presidential representative, the Government Corporate Counsel, Manuel Teehankee, conducted separate discussions with the concessionaire on a further amendment to the contract, starting in July 2002 (Interviews: Tirona, Flor). The President requested that tariffs remain at current levels until end-2004 in exchange for restructuring CF obligations and assistance with performance bond guarantees (Interviews: Sakai, Tirona).

In the context of the ongoing negotiations, Suez submitted a new business plan for Maynilad, without the approval of Benpres, in May 2002 (Interview: Esguerra). Suez's plan involved Benpres withdrawing from the venture and Suez taking management control and investing further equity (Interview: Sangster). The Suez plan provided for lower investment and a lower increase in the tariff. The plan was considered by Teehankee, but not by the regulator on the grounds that it had not been submitted officially by the concession company. In September 2002, shortly before the regulator was due to announce its determination, Maynilad submitted a revised business plan, but the regulator argued that it had been submitted too late for consideration, and instead reverted to the 'unacceptable' March plan to make its determination.

Maynilad's financial difficulties in this period were not only due to macroeconomic shocks. In the initial years of operation, the concessionaire did not exercise financial restraint and operating and capital costs were imprudently high, as the Chief Financial Officer of Maynilad himself recognised (Interview: Tirona). This came to the fore in the Rate Rebasing, when the firm's operating efficiency and capital investment

requirements were critically assessed by the RRB team, who proposed a cost disallowance of PHP8.8bn (US\$175mn) (MWSS RO 2002).

The RO made its determination in November, on the basis of the March business plan, setting the ADR at 10.4% (Interview: Medalla). Table 6.2 below summarises the changes to the ADR as a result of the Rate Rebasing. This was very close to the level that the concessionaire had used in its own financial plan. However, the controversial aspect of the determination was the cost disallowances assumed. The determination implied an increase in the average tariff to PHP26, but also implied that the extra charges that Maynilad had been allowed to collect as a result of Amendment No 1 would be phased out. Although the RO had followed the process set out in the contracts, and had used reputable consultants to carry out the analysis, political influence may also have played a role in the decision to impose the cost disallowances. A Presidential spokesman had announced shortly before the determination that the President might overrule the MWSS Board if new rates were “unreasonably high and burdensome to Metro residents.” (Manila Standard 20 Nov 2002).

Table 6.2 Adjustments to the Appropriate Discount Rate 1997-2002

ADR	Maynilad	Manila Water
Bid	10.4	5.2
Renegotiated 1998		9.3
RRB – petition	15.7	10.3
RRB – award	10.4	10.4

The concessionaire strongly objected to the regulator’s determination, and refused to attend the public consultations on the proposed increase (Interviews: Sakai, Sangster). The MWSS responded by threatening to defer the increase granted in the RRB. Maynilad in turn refused to introduce the new tariffs and continued to charge the old tariff with the adjustments granted in the renegotiation of the previous year in order to keep up the pressure on the government to negotiate a full amendment to the contract (Interview: Sangster).

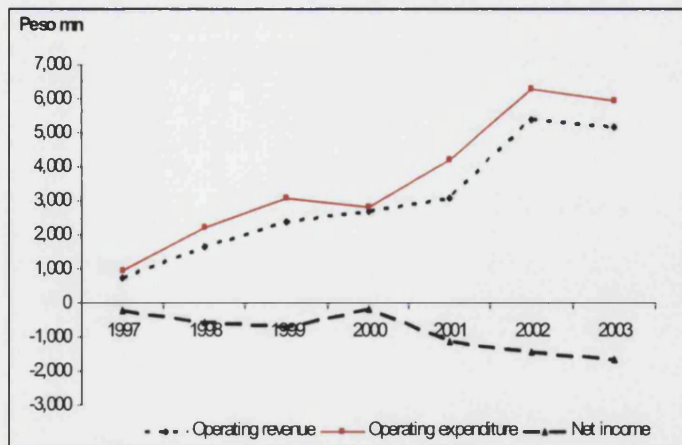
At the end of 2002, Maynilad took the dispute a step further, giving notice of termination, a ‘major dispute’ under the terms of the contract (Interview: Sangster). The termination would be considered by an international arbitration panel to establish the termination payment due to the company. The firm’s case cited “delayed and inadequate regulatory relief from unforeseen problems, and *force majeure*, that undermined the concession’s viability from 1997-2001” and cited particular problems since Arroyo became President. The firm’s contention was that MWSS has violated terms of the

concession agreement through non-implementation of rate adjustments; non cooperation and unreasonable demands to resume concession fee payments in its statement. The MWSS made a counter accusation, saying that Maynilad had failed to meet its contractual obligations, including the non-payment of concession fees; equity due in Oct 2001 was not infused; NRW targets were not met and certain assets had not been adequately maintained. The two parties selected arbitrators for the international panel and the proceedings went ahead in 2003.

At this stage, the Executive was keen to distance itself from the problems of the concession and did not engage with the concessionaire outside the arbitration process, while being broadly supportive of the MWSS. Presidential Spokesman Robert Tiglao stated in December 2002 that Maynilad's failure was "Not a problem of privatisation. It's a problem of Maynilad complying with its own obligation. Our position is that the MWSS has been complying with all its obligations under the contract." (Visto 2002).

The Panel offered its judgement in October 2003 and, to the surprise of all parties, it was equivocal (Interviews: Sakai, Sangster). The Panel found that neither side had breached the contract seriously enough to warrant termination, and ordered the parties to continue their discussions (Appeals Panel for Major Disputes in the Manila Water Concession Contracts 2003). In the meantime, the concessionaire was ordered to pay its outstanding concession fees, and the MWSS was permitted to draw down the performance bond. It did not, and the MWSS BOT moved to draw down the performance bond provided for under the contract. By the end of 2003, Maynilad's debts amounted to US\$330mn, of which \$130mn was owed to the MWSS and a further \$130mn owed to a consortium of banks. Its net income continued to decline (see Figure 6.3) The concessionaire then filed for bankruptcy in the local court (Quezon City Court) and the judge imposed a temporary restraining order (TRO) on the MWSS BOT to prevent it from drawing on the performance bond during the bankruptcy proceedings. The MWSS objected to this, arguing that the performance bond was intended for use precisely in circumstances of this kind and brought the case before the Supreme Court to get the TRO lifted (Interview: Sakai). At this stage, the President intervened to prevent the Supreme Court from reviewing the case, and negotiations between the government and Maynilad began again to try to agree Amendment Number Two.

Figure 6.3: Manila West Net Income (actual)



Source: MWSS RO

The interests of Maynilad's JV partners had by this time clearly diverged. Since 2001, the Benpres Group had been involved in a dispute with the government over the payment of back taxes. This dispute was decided in late 2003 in favour of the government and Benpres went into bankruptcy proceedings itself (AFX Asia 17 Aug 2003). The company's priority at this stage was to reduce its debts and it was looking for a way to exit the concession. Suez's management was also trying to reduce the company's debts and to reduce its exposure in developing countries (Interviews: Beatrix, Sangster). In the short-term, Suez wanted to avoid having to pay up the company's guarantee or to have the performance bond drawn down. Suez hoped to reduce its liabilities by finding a workable amendment to the concession and to continue operating to recoup some of the financial losses already incurred (Interviews: Beatrix, Sangster).

Concurrently, the courts considered the bankruptcy proceedings while the equity holders and MWSS put forward various proposals to Manuel Teehankee, who continued as the government negotiator, although he no longer held the position of Government Corporate Counsel (Interview: Ortega). The most promising of these proposals included the transfer of majority ownership back to the MWSS in a debt for equity swap and it was proposed as Amendment Number Two. It included a partial draw down of the performance bond amounting to \$50mn, conversion of US\$96mn in government debts and a further \$18mn of debts to the private banks into equity. Benpres' corporate guarantee would be written off in exchange for their equity share and a new management team would be brought in, nominated by MWSS and the banks.

The concessionaire understood that the government supported the proposal (Interview Tirona). However, some members of the MWSS BOT and RO objected to both the process and content of the renegotiation. They cast doubt on the legitimacy of Teehankee to negotiate on behalf of the government, given that he had no official position, and maintained that the performance bond should be drawn down in accordance with the contract (Interviews: Ortega, Reyes, Sakai). According to some accounts, BOT members were invited to meetings in the Presidential Palace, Malacañang, to 'encourage' them to support the amendment, and when it came to voting on Amendment Number Two, a majority of MWSS BOT did vote in favour. The two who voted against publicly disassociated themselves with this decision (Interviews: Ortega, Reyes).

In 2004, Arroyo was coming up for election and chose as her running mate Senator Noli de Castro, who was a former newscaster with Benpres' ABS-CBN television channel. Commentators in the Filipino media viewed this as 'sweetheart deal,' with Arroyo rewarding Benpres with a very preferential exit package in return for the support of the group in the Presidential elections. In response to these internal and external doubts about the legitimacy of the new amendment, the MWSS BOT insisted that the amendment be approved by other government bodies, the Department of Finance, the Department of Public Works and Highways and National Economic Development Authority (NEDA) before becoming official. As part of this approval process, public consultations were conducted and the strong negative response led the political leadership to withdraw its support from the Amendment. At the same time, Maynilad's financial situation deteriorated. By the end of 2004, Maynilad owed approximately US\$310mn to its creditors. The largest single creditor was the MWSS, which was owed PHP8bn (US\$160mn) (Financial Times 26 Oct 2004).

By January 2005, with the election six months behind her, but no prospect of a satisfactory renegotiation yet available. Arroyo's political position was shaken by accusations of vote-rigging and corruption in the elections, and legislators attempted to impeach her. From this weak position, Arroyo allowed the RO to draw down the full \$120 million performance bond. This decision was approved by multiple government bodies, to ensure that responsibility for the legality of the decision was shared. The draw was also authorised by the Supreme Court (Manila Bulletin 17 Jan 2005).

The drawdown of the performance bond took some of the political heat out of the amendment. Agreement was finally reached later in 2005 on a debt-for-equity swap in which majority ownership of the concession would pass back to the public sector and Benpres would withdraw from the concession. After the swap, 84 percent of the equity in Maynilad was owned by the government. Suez retained the remaining minority stake (Financial Times 3 June 2005). This resolution was favourable for the Benpres Group, which moved back in the black by mid-2006. Maynilad, on the other hand, has continued to face financial and operational difficulties. As a result of low levels of capital investment, the same service problems that existed at privatisation continue. Non-revenue water in 2006 stood at 68 percent.

At the beginning of 2006, the President appointed a financial adviser as the first step in the process of rebidding the West concession, and the bidding took place at the end of that year. The winning consortium was made up of DMCI Holdings (Philippines), a major property development group and partner in the Subic Bay water concession, and Metro Pacific (owned by First Pacific Group, Hong Kong), controlled by Anthony Salim, and part of one of Indonesia's biggest business groups. Salim Group also held a controversial and short-lived stake in one of Jakarta's water concessions, as I discuss in the next chapter. The consortium acquired an 84% stake in Maynilad for US\$447mn, winning over Manila Water, which put in a bid for US\$400mn (The Manila Times 6 Dec 2006).

The story has turned out very differently in the East concession, which has been extremely successful in raising financing since the 1998 tariff adjustment. Manila Water has seen some changes in ownership since the award of the concession, but the management team has remained stable (Interview: Rivera). In 2004, the IFC took a stake in the company and in 2005 the company staged a successful initial public offering (IPO) on the Manila Stock Exchange, raising US\$150mn from the issue. After the rate rebasing, the original three JV partners in the Manila Water Company reduced their equity stakes in Manila Water.⁶³

In the same year, Manila Water was awarded a contract to implement a US\$84mn project supported by the World Bank for the roll-out of the East zone's sewerage network (World Bank Project ID: P079661). In addition, Manila Water intends to

⁶³ In 2005, the major shareholders in the company were Ayala Corporation, United Utilities, Mitsubishi Corporation, the International Finance Corporation and BPI Capital Corporation.

expand in domestic and international markets. It has been in negotiations with the local government in Cebu (Philippines) and submitted an expression of interest for an operations and management contract for water services in Delhi (India) (Interview: Rivera), as well as putting in an unsuccessful bid to take over the Manila West concession.

6.3 Discussion

This section considers, first, the hypotheses developed in Chapter 5, and then discusses other issues that emerge from the case study.

H1: If the parties cannot agree a mutually satisfactory renegotiation, but termination costs are high, the parties will seek to maximise short-term revenues under the contract and will terminate when the costs of doing so have declined.

Evidence from Manila's West concession fits well with this hypothesis, as the concessionaire and the government found it very difficult to agree a mutually satisfactory solution, yet the parties continued with the concession for several years, before finally moving to arbitration. The severity of the shock that hit the West concession, which undermined its business plan and made it impossible for the concessionaire to access long-term financing, meant that a substantial adjustment to the contract would be needed to restore the viability of the contract. In the same period, political instability, the impeachment of Estrada and the arrival of Arroyo as President raised the government's hurdle rate, demonstrated in the President's 2002 sanction of any amendment that would imply a tariff increase. As a result, the set of mutually acceptable outcomes from the renegotiation became very narrow. The government's hurdle rate finally came down after the election of Arroyo in 2004, opening up an agreement space to conclude the renegotiation.

At the same time, termination costs for one of the JV partners were high. Suez's bank guarantees and performance bond were at stake in the event of a termination with the concessionaire at fault, and so it keenly sought compromise solutions. Benpres, for whom the cost of termination was negligible, because of its bankruptcy proceedings, was resistant to compromise solutions and pushed Maynilad its own into bankruptcy proceedings when the arbitration case did not generate the desired outcome. On the other hand, the loose attitude of Manilad to financial management in the first few years

seems more likely to have been a negotiating tactic than due to efforts to extract revenues from a contract that they ultimately expected to be terminated.

In contrast, the East concession's bid to negotiate in 1998 came at a time when the government's hurdle rate was low – Estrada had just won resoundingly in the elections – and the much lower tariff in the East of the city than in the West meant that there was a broad negotiating set within which the firm would be better off without a significant loss in utility on the public side. No shock had restricted the size of the negotiating set, which made it possible for the firm to secure the contract adjustment relatively easily.

H2: When the probability of enforcement is low, the party with the lower cost of termination secures preferential outcomes in both contractually mandated and shock-induced renegotiations.

The experience of Manila's west concession also provides some support for this hypothesis. The party that managed to secure the most preferential outcome from the renegotiation was the Benpres Group, whose debts to the banks and the MWSS were written off in the debt-for-equity swap. Benpres was also the party with the highest discount rate at that time, as the group was in bankruptcy proceedings. Suez, on the other hand, faced financial and reputational costs from termination, so had less bargaining power.

The successful renegotiation by the East concession, both in the opportunistic renegotiation of 1998 and the scheduled renegotiation in the RRB in 2003, also provide some support for this hypothesis. The first renegotiation came only a year into the operation of the concessions, before the private firms had invested significantly in sunk assets, so they had little to lose from their brinkmanship. The government, on the other hand, may have wanted to keep a positive image with foreign investors, although this was a lower policy priority for Estrada than it had been for Ramos.

H3: The involvement of multiple government principals makes it more likely that renegotiation will be triggered, but less likely that renegotiation will be concluded.

The West concession provides ample evidence in support of this third hypothesis. Many parties played a part in triggering renegotiations. In the first instance, it was the RO that

responded positively to the concessionaire's move to renegotiate, leading the MWSS into the renegotiation; subsequently it was the Executive that took the lead. In 2002, the Executive engaged the concessionaire in renegotiations but refused to accept a solution which implied a tariff increase, while the MWSS and RO were engaged in the contractually mandated RRB, which would result in the approval of a substantial tariff increase. The President also held the MWSS back from drawing down the performance bond at the end of 2003 and reinitiated renegotiations after the arbitration, in direct contrast with the MWSS' approach at this time, which was to implement the letter of the contract.

Furthermore, the involvement of multiple government bodies made it more difficult to conclude the renegotiations. The best example of this is the fate of Amendment Number Two which was agreed by the MWSS and the Executive but was never approved by the two other government bodies. The members of the MWSS RO and MWSS BOT who were opposed to Amendment Number Two were not able to prevent the amendment being agreed by the BOT, but opposing interests were able to block the agreement at the later stage.

In contrast, the successful conclusion of the East concession's renegotiation may also be due in part to the fact that only the MWSS RO was involved and that the Executive and other parties did not intervene in the process, passively approving it.

H4: The existence of a contract-specific regulatory agency or contract monitoring agency will increase the probability of concluding a renegotiation.

The Manila concessions provide mixed evidence for this hypothesis. The RO managed to conclude the contractually mandated renegotiation for the East concession, but for the West concession, the RO did not manage to play a constructive role in bringing the parties to agreement in the renegotiations. The activist Chief Regulator in the initial period of the contract was replaced with a more compliant CR who presided over a more restrained RO. He deliberately carried out the RRB without reference to the ongoing negotiations that the concessionaires were having with the President. This certainly did not facilitate the process of renegotiation and may even have made it more difficult for the parties to reach an accommodation.

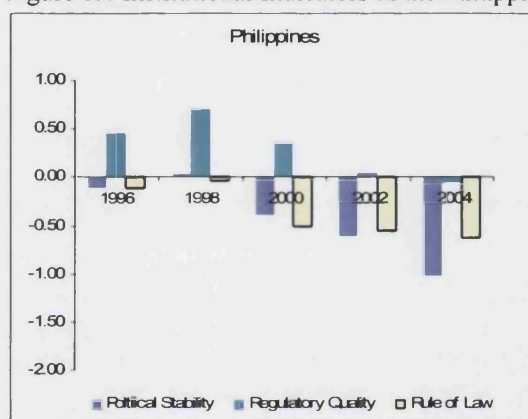
Some other important features of the implementation of the Manila contracts are not adequately captured by the discussion of these hypotheses.

Foremost among these is the dramatic and asymmetric impact of the Asian crisis on the concessions. The original decision to allocate most of the debt repayment burden to the West concession was made with a sensible intention – to make the contracts equally attractive to investors, and so to balance tariffs in the two sections of the city. The reason for the much lower tariffs in the East was not due to a mistake in the structure of the contract, but to the highly competitive bids put in by the Manila Water consortium for both sides. However, the impact of the currency devaluation was to greatly exacerbate the difference between the two zones, to undermine the business model of Maynilad and prevent the concessionaire from securing long-term financing. Of course, the ability of the concession to recover from the shock was not aided by imprudent expenditures by the concessionaire in the early years of the contract. The financial model of the East concessionaire was resilient to these events, yet benefited from the application of Amendment Number One to both contracts. The implication of these outcomes is not that the contract should have been structured differently in terms of the distribution of debt, but that the contract should have been adjusted more quickly and more effectively to cope with such a major shock.

Secondly, the Manila concessions have multiple agents as well as multiple principals. The case study shows how the interests of the private parties can also diverge and make renegotiations more difficult to conclude. By 2001, the interests of Suez and the Benpres Group in the outcomes of the West concession had diverged considerably and they diverged further when Benpres went into bankruptcy proceedings and showed no interest in an ongoing role in the concession while Suez sought to negotiate an expanded role for itself in the management of Maynilad. A third set of private interests – the consortium of banks – also added to the mix, with their own distinct interests, and at certain points becoming directly engaged in the negotiations with the executive. This suggests that the framework could be usefully extended to take into account multiple private agents and even to consider the different incentives of local and national firms, to see whether there are any systematic differences in relation to contract implementation.

The overall institutional environment in the Philippines is also very important to understanding the events that took place. When the concessions began, the Philippines scored reasonably well for regulatory quality, control of corruption, political stability etc. in international indices. However, by 2004, its institutional ratings had declined considerably, as shown in Figure 6.4. Although corruption increased in this period, public sensitivity also increased, perhaps due to the attention given to Estrada's impeachment. This has increased government officials' concerns about being found in breach of anti-graft legislation (1960 Anti-Graft and Corrupt Practices Act) and made them less likely to support a contract amendment that could be considered preferential to a private party.

Figure 6.4 Institutional Indicators in the Philippines 1996-2004



Source: World Bank Institutional Indicators

A third aspect of the Manila concessions which is not well captured in the analytical framework is the special role of Benpres in Philippines political economy. As a major banking, media and utility group, with close connections to elected officials, the group is at the same time highly influential, experienced in the machinations of Filipino politics and also the target of close scrutiny and criticism by opposition politicians and media. This may help to explain the approach that Benpres took to financial management in the early years of the concession, spending imprudently to emphasise its financial constraints in order to strengthen its bargaining power. The significance of the links between Arroyo and the Benpres Group, and the outcomes of the renegotiations for the West concession is not easy to demonstrate, but was inevitably the subject of intense speculation that made it more difficult to conclude the negotiations without accusations of bias and corruption. The Ayalas' less political approach to the renegotiations, focusing on the regulator and the contractually mandated processes, seems to have made their renegotiations more straightforward.

7 Uncooperative Agreements: The Implementation of the Jakarta Water Concessions

7.1 Introduction

The Jakarta concessions are examples of contract-based regulation in a highly unstable political and institutional environment. During the lives of the concessions, Indonesia has moved from autocracy to nascent democracy, has had five different and experienced a severe macroeconomic crisis. The multiple actors involved in the concessions – the central and local governments, the former public utility and the new regulatory body, foreign and local firms – have different and often conflicting interests in the outcome of the contracts. Given all this upheaval, perhaps the most surprising thing about the Jakarta water contracts is why after 10 years of instability, limited investment and protracted renegotiation, the concessions have not been terminated. In this chapter, I examine whether the incentives and pay-offs to the government actors and the firms can help to explain why this is the case.

The West concessionaire, Suez, is the same French company that has a stake in Manila West; in the East, the concessionaire was Thames Water, a UK company owned until recently by the German firm, RWE. In contrast to Manila, where the histories of the two concessionaires have been markedly different, the experiences of the concessionaires in Jakarta have been broadly similar throughout most of the life of the contract. However, the West concession has managed to finalise its negotiations more rapidly. Can the shifting discount rates of the firms help to explain these developments?

7.2 History

The public water utility in Jakarta in the 1990s was offering poor service at high cost. In 1996, only 41 percent of the population was served (Lanti 2004) and around a third of those connected only received water intermittently. Non-revenue water was more than 55 percent and demand projections showed that raw water shortages were imminent (Nihon Suido Consultants for JICA 1997; Nihon Suido Consultants/JICA 1997). Both unit production costs and tariffs were high compared to other Asian cities (ADB 2004). Against this background, private sector participation was expected to bring improvements in service quality and coverage (Lanti 2004), while generating attractive returns for private investors (Interview: Skelcher).

In the early 1990s, local private companies were already providing water meter reading and billing services to the Jakarta water utility, Pam Jaya, under service contracts, and

Suez subsidiary Degrémont was implementing a BOT contract for a water treatment plant. Meanwhile, British water company Thames Water was in discussions with the Governor of Jakarta about the construction a water ring main around the city (Interviews: Roswita, Rogers). The idea of letting concessions for Jakarta's water services was instigated by Thames and Suez both of which were pursuing aggressive strategies of international expansion at the time (Interviews: Rogers, Sangster). The companies sought to convince Radinal Moochtar, the powerful Minister of Public Works in Suharto's government, that the problems in water supply were mainly due to the poor distribution system and linked to the bad management of Pam Jaya (Interview: Rogers). The Minister and Governor were duly convinced (Interview: Lanti).

In some accounts, President Suharto is said to have played a personal role in the decision. An apocryphal story recounts that Suharto, in his garden one day, noticed that the gardeners suddenly stopped watering the plants. When questioned, the gardeners explained that the water had been cut off, as often happened, prompting Suharto to take a new interest in the quality of water services in his capital (Interview: Rogers).

Tensions between different parts of the government may also have played a role in the decision. At this time, Suharto was increasingly centralising power within the government and wanted to undermine the independent power bases of state-owned enterprises like Pam Jaya. Suharto may also have held suspicions of corruption in the management of Pam Jaya and wanted to increase his control over the utility. Although such accusations of corruption are extremely difficult to confirm, the concessionaires claim to have found evidence of it when they took over (Interviews: Rogers, Skelcher). The World Bank has found evidence in other cities in Indonesia that water utilities tacitly agree to the exploitation of illegal connections by small-scale providers in exchange for payments off the books, well above the official tariff (World Bank 2003: 9). The performance of Pam Jaya over time, with consistently low coverage and high non-revenue water, despite a positive net income, is consistent with this type of corruption.

Perhaps even more important was the tightening grip of Suharto's family and cronies on business in Indonesia. Privatisation opened up a new source of privilege for the family and cronies of Suharto, who moved into the services and infrastructure sectors in partnership with the foreign companies. As Robison and Hadiz write, "No Ministry or

state corporation could resist the demands of the Soeharto family as they moved more forcefully into business, and no monopoly or contract was beyond their reach.” (2004: 76). In keeping with this, most privatisations in this period took the form of negotiated sales without transparent divestiture procedures and always involved an Indonesian partner linked to the government.

These links were also useful to the foreign investors, who saw them as guarantees of political favour in the future (Fisman 2001 and interview: Rogers). They did not consider the possibility of the imminent collapse of Suharto’s regime. In keeping with this, Thames and Suez established partnerships with Indonesian companies, both intimately connected with the Suharto regime. Thames’ Indonesian partner, Kekarpola, was a company 40 percent owned by Sigit Harjojudanto, one of Suharto’s sons. The other 60 per cent was owned by two businessmen, Harisapto and Fachry Thaib, both well connected with the regime (Interview: Anderson, Rogers). Suez’s partner was Garuda Dipta Semesta, a company in the Salim Group of Liem Soe Liong, one of Indonesia’s wealthiest businessmen at that time and a close associate of the President (Interview: Berthelot).

IFIs and donors played a limited role in the development of the concession. The World Bank withdrew its involvement when it became apparent that the contracts would not be bid competitively (Interview: Sukarma), and the Japanese government, which was the largest donor to the water sector, reviewed the privatisation plan and concluded that it was not in the interest of the government to proceed with it (Nihon Suido Consultants 1997: 3-198). The review emphasised the lower cost of public and donor finance.

Direct negotiations began with Thames and Suez in 1995, with occasional participation of their local partners (Interview: Rogers). On the government side, the negotiations were technically led by the Governor of Jakarta but were conducted principally by Pam Jaya. The Ministry of Public Works (MPW) provided technical support and intervened intermittently (Interview: Lanti).

At the suggestion of the firms, Jakarta was divided into two service areas, East and West. This also had advantages for Suharto as it allowed the expected benefits from the contracts to be shared between two members of his inner circle (Interview: Rogers, Lanti). The private firms were given six months and access to Pam Jaya’s operating

information to conduct due diligence and to develop their business plans, which were then considered by the government negotiating team (Interviews: Lanti, Rogers). However, the criteria for assessing the plans were not clearly defined and the negotiators on the government side did not have a clear conception of how the contract should be structured (Interviews: R.Agustin, Lanti), allowing the private companies a relatively free hand in shaping the concessions (Interviews: Rogers, R.Agustin, Lanti).

According to managers in the foreign companies involved in the negotiations, the private companies discovered that Pam Jaya was systematically under-reporting the number of connections and over-reporting the level of NRW in its annual reports (Interview: Skelcher). This would make it possible for the private companies to increase coverage and reduce NRW simply by regularising reporting. When this became apparent to Pam Jaya, they attempted to redress the situation by reporting thousands of new connections in the months before the handover (Interviews: Skelcher, Roswita).⁶⁴

Pam Jaya was opposed to the privatisation throughout and blocked or stalled negotiations when they could (Interviews: Roswita, Rogers, Krieg). When this occurred, MPW set a fixed deadline for the finalisation of the contracts at the end of 1997. Pam Jaya resisted to the end. According to one account, the President Director of Pam Jaya, Rama Boedi, left Jakarta on the day before the formal signing ceremony, saying that he would refuse to sign. "Apparently he must have received a telephone call that evening because he was there the next morning." (Interview: Krieg). The contracts, or "Cooperation Agreements," as they are known, were approved by the Governor of Jakarta and subsequently the central government. In addition to its role as contract signatory, the role of monitoring the concession was assigned to Pam Jaya, in addition to its role as contracting party. No autonomous regulator was created in the original contract.

At the suggestion of the firms, the contracts separate the firms' revenue (a flat-rate for each unit of volume of water supplied to consumers, known as the Water Charge) from the Water Tariff, which is paid by consumers. The separation of the tariff and the charge helped to balance out revenues between the concessionaires, given differences in land

⁶⁴ In an interview, Roswita explained that there were unusually high numbers of new connections in these months because new financing arrangements were introduced to help people cover the connection fee, and this created strong demand for new connections.

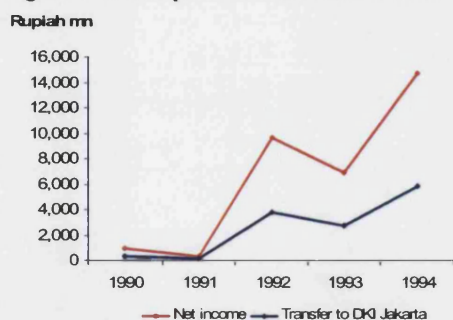
use and socio-economic balance in the two service areas and it also allowed the government greater flexibility in the timing of tariff increases.

The Water Charge is set according to the financial projections of the firms on a cost-plus basis, with a fixed ROR for the investors of 22 percent in nominal Rupiah terms calculated over the life of the contract. The Charge is different for the two concessionaires, to reflect their different cost structures (Interview: Krieg), although some external observers have doubts about whether this is justified (Bartlett and Witono 2006). It is indexed to inflation and foreign exchange rates and is adjusted every semester to reflect changes in these indices. The underlying components of the Charge are reviewed at five-year intervals in the Rate Rebased (RRB). This exercise establishes a revised financial plan, and indicates but does not require the appropriate tariffs for the subsequent five-year period.

The contract does not specify how tariffs are to be adjusted. The power to set tariffs lies with the Governor of Jakarta, who adjusts them on an ad hoc basis (Interview: Anwar). The Tariff is volumetric, differentiated by income groups and user types, and has an increasing block structure with extensive cross-subsidies from industrial and commercial users to households. There is no clearly defined national law or regulation governing the calculation of water tariffs; the regulations state only that water tariffs bills should not be more than 4 percent of household expenditure and that tariffs should allow for utilities to cover costs (Interviews: Anwar, Hilwan).

Tariffs are collected by the private operators and transferred directly to an escrow account. The total revenue is then used to pay the operating costs of Pam Jaya, debt repayments to the Ministry of Finance (MOF) on historic loans from IFIs, and then the operators. The city government does not have a direct financial relationship with the concessions. Under public ownership the city government was entitled to a dividend of 40% of profits and transfers were made in several years (Interview: Tutuko, Figure 7.1 below). Legally, the city government could still require these payments, but has not so far exploited this possibility and there is an informal agreement that it will not before coverage has reached a target level of 70% (Bartlett and Witono 2006).

Figure 7.1: Pre-privatisation Transfers to DKI Jakarta



Source: Nihon Suido Consultants for JICA (1997)

The concession contracts set out detailed performance requirements for volume, coverage and quality of services. The priority target is the volume of water billed: if the volume billed falls below 70% of the target set in the contract, Pam Jaya can trigger the termination of the contract (Interview: Anwar). On the other hand, the contract does not set out an investment target. The level of investment is jointly agreed by the parties in the RRB. The firms are – in principle – able to decide how best to allocate spending between capital and operating expenditure in order to meet the performance targets, which they set out in their financial projections for the planning period. However, in practice, Pam Jaya has intervened in decisions on investment (Interviews: Krieg, Novari).

Under the contracts, penalties can be imposed on the firms for failure to meet targets but no sanctions or penalties are applicable to Pam Jaya or any other governmental agency. Under the original contract, the concessionaires were meant to sign additional agreements with the autonomous government agencies responsible for water supply to Jakarta (POJ, a publicly owned company that manages the dam and pipeline which is the source of most of Jakarta's raw water), and with the Department of Mines, which is responsible for regulating the abstraction of groundwater from private wells. These agreements have never been signed, as the parties could never come to a mutually satisfactory agreement, and no other branch of government intervened (Interviews: Krieg, Anwar).

The contract provides for termination either by the government or by the firm. In the event that the concessionaire is justified in terminating the contract due to the failure of the government side to meet its contractual commitments, the concessionaires are

entitled to the 'Early Termination Payment.'⁶⁵ The amount actually due would depend heavily on the decisions made by the international arbitration panel provided for in the contract and would need to be enforced in Indonesia.

In 1997-8, Indonesia underwent a period of extreme economic and political instability. Suharto, who had been in power since 1968, was deposed and replaced by former Vice-President Habibie amidst mass protests, rioting and looting. Economically, the country was the most severely hit of all in the Asian crisis of 1997-8. Figure 7.2 shows the trends in GDP, inflation and exchange rates in this period. Like the Philippines, inflation in Indonesia spiked but returned to its average level but there was a permanent adjustment in the value of the currency. This combination of macroeconomic and political shocks had both direct and indirect effects on the concessions.

Figure 7.2 Indonesia Macroeconomic Indicators 1995-2005



Source: World Bank Development Indicators

The most dramatic impact of the crisis on the concessions was Pam Jaya's move to take back management control during the climax of the social unrest in May 1998. Accounts of the actual events are contested. In the concessionaires' version, the expatriate managers left Indonesia temporarily in May 1998 on the advice of their Embassies, leaving a skeleton staff behind to continue the business (Interviews: Skelcher, Anderson). According to Pam Jaya, however, this left a vacuum in management and "anarchy in our office" which needed to be filled if water services in the capital were to continue without disruption (Interview: Tutuko). Amidst rioting and protests by the utility's employees, Pam Jaya took back management control of the utilities at the end

⁶⁵ The Early Termination Payment is equivalent to the net present value of the concessionaires' projected pre-tax profits for 50% of the remaining years of the concession based on historical and forecasted profits (Cooperation Agreement 2001 Clause 42.6).

of May with the approval of the Governor of Jakarta (Interview: Roswita). Representatives of the concessionaires who were present in the country signed an agreement transferring control to Pam Jaya, perhaps under duress. The concessionaires argue that these representatives did not have the authority to sign the concessions away to Pam Jaya (Interview: Skelcher) and on the return of the senior foreign managers shortly afterwards, the companies took a much more aggressive stance, calling Pam Jaya's move a 'coup d'état' (Interview: Lanti). Pam Jaya, for its part, maintained that the concessionaires had abandoned the company and that they had been forced to step in (Interview: Tutuko).

Soon after Habibie took over as President, he decreed that all existing contracts with the private sector would be respected and renegotiated where necessary in an effort to control the flight of investors from the country. The central government ensured that control of the concessions was transferred back to Thames and Suez. However, the new government imposed certain conditions which reflected the new political situation.

Civil unrest at the end of Suharto's regime had coalesced around the issue of corruption and the role of his family and cronies in the economy, under the *korupsi, kolusi dan nepotisme* (KKN) slogan. Protesters called for reprisals against these individuals and contracts and licenses for monopolies that had been awarded without public tender became a focal point for reformers. Habibie responded to popular pressure in relation to the water concessions and required that the Indonesian JV partners leave the JVs, that their shares be bought up by the foreign partner and that all management and key employees nominated by the Indonesian partners resign (Interview: Skelcher).⁶⁶ At the same time, the Governor of Jakarta announced a freeze on tariffs until 2001, which was clearly inconsistent with Pam Jaya's legal obligations under the concession contracts. Declining purchasing power and increases in fuel prices had ignited civil protests in the last weeks of Suharto's Presidency, so tariffs for basic services were high on the political agenda (Bird 1999).

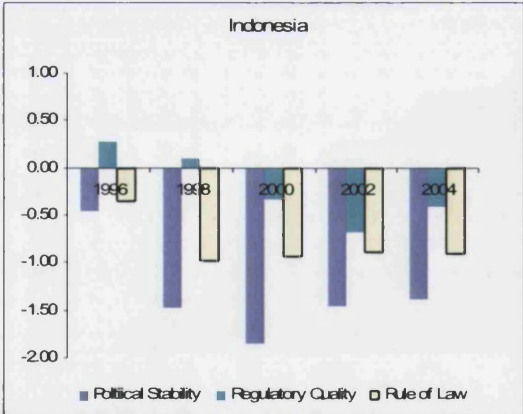
These changes to the contracts occurred against a background of wide-ranging political reforms. Competitive direct elections were brought in for the President, the legislature

⁶⁶ The foreign companies increased their share holdings to 95 percent but in order to comply with Indonesian law, two Indonesian companies, PT Terra Metta Phora and PR Bangun Cipta Sarana, both sub-contractors of the multinational companies, took a 5 per cent minority stake in the East and West concessions respectively. The Indonesian companies have played a very minor role, were not well known to the concession managers and did not even receive periodic reports (Interview: Krieg).

become a significantly stronger, fully elected body, able to review and constrain the actions of the President and substantial powers were transferred from the centre to provincial and local governments (Robison and Hadiz 2004: 224). These changes have created competing sources of power in the Cabinet, bureaucracy and SOEs. Decentralisation allocated significant new powers to local parliaments, including the power to approve tariffs for water and other municipal services.

Reforms to the bureaucracy made at this time included small steps to increase transparency and to reduce corrupt or arbitrary behaviour within the bureaucracy. The Supreme Audit Agency (BPK) and the Government Financial and Development Comptroller (BPKP) have become more prominent and conducted far-reaching audits of government ministries and agencies together with international accounting firms (Robison and Hadiz 2004: 189-190). Some argue that the fragmentation of power has effectively multiplied opportunities for corruption (Robison and Hadiz 2004: 214). This is borne out by corruption indices, which show a deterioration in the years following the regime change, although Indonesia performed marginally better in 2004 (see Figure 7.3).

Figure 7.3 Indonesia Institutional Indicators 1996-2004



Source: World Bank Institutional Indicators

The firms also faced external challenges to the legitimacy of the concessions in this

corruption and that they were afraid of losing business after the privatisation (Interviews: Skelcher, Lanti 2004). The concessionaires also engaged in informal discussions with Akaindo alongside the legal proceedings and managed to conclude an amicable settlement, but the case was widely covered in the media and contributed to a perception of illegitimacy surrounding the contracts.

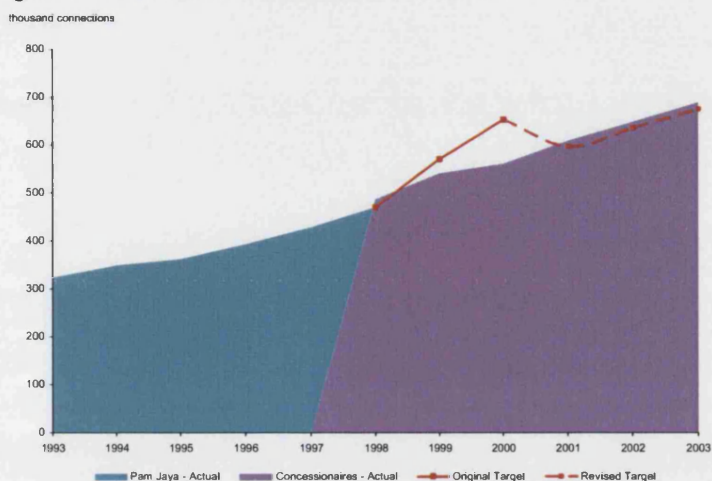
The economic shocks also had a negative impact on the financial viability of the concessions through several direct channels. The foreign firms had taken on foreign currency debt finance to fund their investment programmes (Interview: Berthelot). In theory, they were protected from inflation and exchange rate risk by clauses for automatic adjustment of the Water Charge in the concession contracts, but Pam Jaya did not have adequate cash flows from tariffs to pay the concessionaires. The difference between the contracted amount due to the firms and the amount they received created a 'shortfall,' effectively a debt owed by Pam Jaya to the firms, which would build up until the Governor agreed to increase tariffs again. Figures 7.4 and 7.5 show how the shortfall

From 1998-2001, the parties engaged in renegotiations. Pam Jaya took the lead in these renegotiations with little involvement from the federal or city governments (Interviews: Skelcher, Weitz). The rapid changes taking place at the Executive level, with the President changing from Habibie to Abdurrahman Wahid in 1999, the impeachment of Wahid and his replacement by Megawati Sukarnoputri in 2001, did not affect the concessions directly as the Governor of Jakarta, Lt. General Sutiyoso, remained in power throughout. He had been appointed by Suharto but managed to stay in favour with the populace enough to win the first round of local elections in 2002, with support from President Megawati (ICG 2003: 15). Sutiyoso sought to shore up his popularity with populist policies like the water tariff freeze.

During this period, relations between the firms and Pam Jaya were often extremely tense, especially as the provisions of the original agreement had not been willingly accepted by Pam Jaya and so the renegotiation became an opportunity to open up these difficult issues once again (Interview: Roswita). In the political upheaval, sources of political power that had imposed constraints on Pam Jaya had been weakened, and Pam Jaya's influence on the implementation of the concessions increased (Interview: Sangster).

During the renegotiations, neither the government nor the firms met their contractual commitments. The most obvious breach was the decision by the Governor not to raise tariffs, but the concessionaires did not directly contest this (Interviews: Krieg, Lanti). At the same time, the firms failed to meet their performance targets for volume of water supplied, number of new connections, UFW etc. Figure 7.6 shows how performance under the private contracts continued on the same trend as under public management. The expected increases that had been included in the original contract did not materialise.

Figure 7.6: Number of Connections 1993-2003



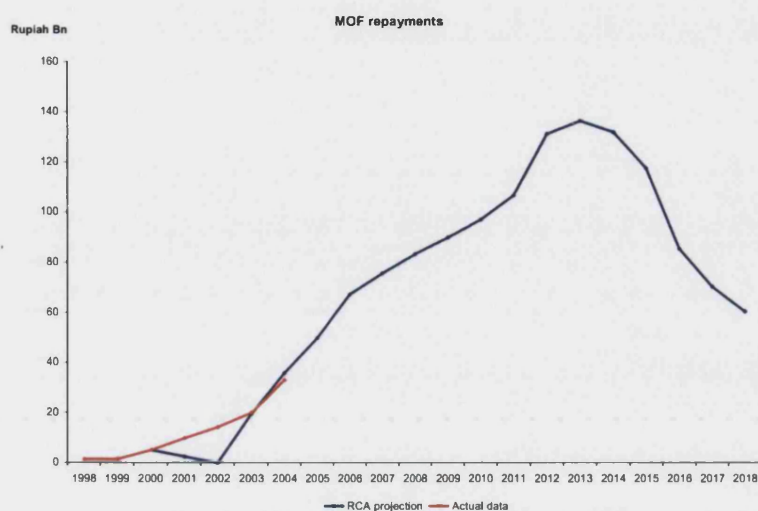
Source: Lanti (2004)

Much time was devoted in the negotiations to discussing the validity of the data on which the re-calibration of the tariffs, charges, operating and capital expenditures would be based. The failure to agree on a common set of figures meant that the negotiations proceeded very slowly throughout (Interviews: Lanti, Krieg). The treatment of the 'shortfall' was also a major concern as the parties found it extremely difficult to agree a mutually satisfactory schedule for repayments (Interviews: Roswita, Skelcher).

Several times during the renegotiations, the firms threatened to terminate the contracts and sought to raise the issue at the political level, with one of Jakarta's Vice-Governors. However, the firms were aware that they could not play this hand too often, and that threats of termination would be decreasingly effective (Interview: Skelcher).

By 2001, the Indonesian political and economic situation was much more stable. Inflation was under control, the economy was growing again. Politically, the impeachment of Wahid and his replacement with Megawati had passed off with the new institutions in tact. Despite the fact that the Governor was due to come up for election in 2002, he had secured the support of Megawati and water tariffs were not a high profile issue in the election, so he was able to consider implementing a tariff increase. The conclusion of the renegotiations had also become more urgent for Pam Jaya, which was faced with difficulties in repaying loans to the Ministry of Finance (Interview: Roswita). Figure 7.7 shows how the profile of debt repayments faced by Pam Jaya. At the same time, Pam Jaya was building up huge liabilities to the concessionaires, as shown in Figures 7.4 & 7.5 above.

Figure 7.7: Pam Jaya Debts to MOF 1998-2018



Source: Pam Jaya-TPJ Cooperation Agreement (2001) and Pam Jaya (2004)

These factors pushed the parties towards finalisation of the Restated Cooperation Agreements (RCA) in 2001 and the first of several planned tariff increases in April of that year. The RCAs provided a schedule of repayment for the shortfall. Suez had been able to secure earlier repayment of the shortfall than Thames (Bartlett and Witono 2006). This was due to Suez's more favourable financial position, which meant that the same tariff increase translated into a greater surplus that could go towards repaying the shortfall (Interview: Bouvier).

The RCA also provided for the creation of the Regulatory Body, charged with limited mediating and monitoring functions (Cooperation Agreement, Pam Jaya and Palyja 2001). The RB was created at the request of the firms who wanted to reduce the role of Pam Jaya in the concession, although they have not been consistently supportive of its efforts (Interview: Weitz). The legal status of the RB is backed by a regulation issued by the Governor in 2001. The RB is not financially independent, as Pam Jaya has to agree any increase in its budget over inflation (Bartlett and Witono 2006).

2002 was designated as a transition period, during which special regulatory conditions were applied, and the concessions were due to begin normal operations after agreement of new financial plans for the second 5-year period in 2003. During this 12-month period, Pam Jaya was allowed open book access to the accounts of the concessionaires (before the next RRB) in order to assist in this process and to 're-establish trust'

between the parties (Interview: Roswita). The interim period was successful in neither and the information collected by Pam Jaya served, if anything, to fuel further disputes (Interview: Krieg). Pam Jaya and the concessionaires were unable to agree a common set of figures before the RRB and these issues were carried over into the RRB process. The RCA specifies reporting requirements of 112 tables monthly but the operators are not required to specify their assumptions for demand forecasts, price elasticity, UFW etc or to disclose their financial models (Bartlett and Witono 2006). Pam Jaya's financial model is also not in the public domain, leading to protracted disagreements which could be resolved with a common financial model.

Key points of contention were the concessionaires' management fees, set at 5 percent of revenues, costs of advisors, legal fees, expatriate salaries and other 'unnecessary' expenses like security for personnel and training (Interviews: Roswita, Bouvier). The practice of taking management fees is common amongst the French water companies (Sirtaine, Pinglo et al. 2004) and Thames followed the same practice in the Jakarta concessions. Pam Jaya argued that these payments were too high. Another area of controversy was the use of subsidiary companies for construction and procurement. The contract required competitive bidding for contracts above US\$500,000, but the fall in the value of the Indonesian Rupiah and inflation meant that the proportion of contracts not subject to bidding was higher than had originally be intended (Interview: Sikar). Pam Jaya argued that the concessionaires were not investing efficiently, highlighting a few prominent examples, like Thames' investment in a large pipeline across the city that was not being used (Interview: Novari).

Another change in the RCA was that the concessionaires were allowed to reduce their capital expenditure without prior agreement from Pam Jaya, if tariffs were not raised in line with the agreement, or if raw water availability was too low or insufficient quality. Capital expenditure reductions would in theory restore the concessionaire's financial returns to the level specified in the contract. However, the contract provides no specific guidance on how these adjustments should be made, leading to further scope for dispute between the parties.⁶⁷ In practice, this has led to long periods during which the contracting parties have held meetings with no clear direction (Interviews: Krieg, Skelcher, Lanti). These clauses have also undermined Pam Jaya's power to impose penalties on the firms which are only applicable where failure to meet a target is due

⁶⁷ Cooperation Agreement 2001 Clause 11.1

exclusively to the fault of the concessionaire (Pam Jaya and Palyja 2001). Pam Jaya has demanded payment of fines by the firms on numerous occasions, but the firms have contested these demands and penalties have not been enforced (Interview: Krieg). Other penalties specified in the contract are so low that they do not constitute an incentive for the firms to meet the targets (Interview: Tutuko).

Once the RCA had been signed and pressure from the firms decreased, the Governor once again reneged on his commitment to raise tariffs and the firms switched back to a coping strategy of minimal investment (Interview: Krieg). The tariff increases that were scheduled for January 2002 and January 2003 eventually took place in April 2003 and January 2004 after further negotiations.

By 2003, the deadline for the rate-rebasing, agreement was nowhere in sight. Pam Jaya's priority was to reduce the concessionaires' operating and capital expenditures and to focus on providing more water to high tariff customers through existing connections (Interview: Novari). At the same time, the international strategies of the companies were changing. Both were refocusing on core European markets and on reducing their financial exposure, so were reluctant to engage in further capital investment. Thames began to withdraw rapidly from its Asian projects at this time (Interviews: Anderson, Weitz). Suez, meanwhile, was in the process of arbitration proceedings for its Manila contract and had taken a hit to its profitability from its Buenos Aires contract (Interview: Sangster). By mid-2003, the parties had effectively given up on the negotiations (Interview: Krieg).

At this point, the Regulatory Body intervened to restart discussions by engaging international consultants, the Independent Combined Experts team (ICE-team), with the support of the central government.⁶⁸ None of the parties had sought the involvement of the RB in the Rate Rebasing (Interviews: Lanti) and they agreed to the process on the condition that recommendations made by the ICE team would not be binding on the parties (Interview: Krieg). However, during this period, Suez began to engage seriously with the RB (Interview: Bouvier). Thames, on the other hand, refused to cooperate with the team by not providing financial data requested to back up the model that they were using, and refused to participate in meetings (Interviews: Bouvier, Weitz). The

⁶⁸ The consultancy was supported by the ADB, through a technical assistance contract with the Ministry of Human Settlements & Regional Infrastructure.

consultants therefore produced their report without adequate information, and the final report was rejected by all parties including the Regulatory Body.⁶⁹ Pam Jaya offered to accept the report in its entirety if the concessionaires also did so, confident in the knowledge that the firms would not accept it (Interview: Lanti). In the meantime, the concessionaires demanded a 'goodwill' gesture from the Governor to demonstrate that he was still serious about making the concessions financially viable. The Governor implemented a further 30% increase in the average tariff in January 2004. Altogether, tariffs were raised by 75% in the 2003-4, with little public protest or media attention devoted to the increases, yet no mechanism for adjusting tariffs was put in place (Interviews: Lanti, Anwar).

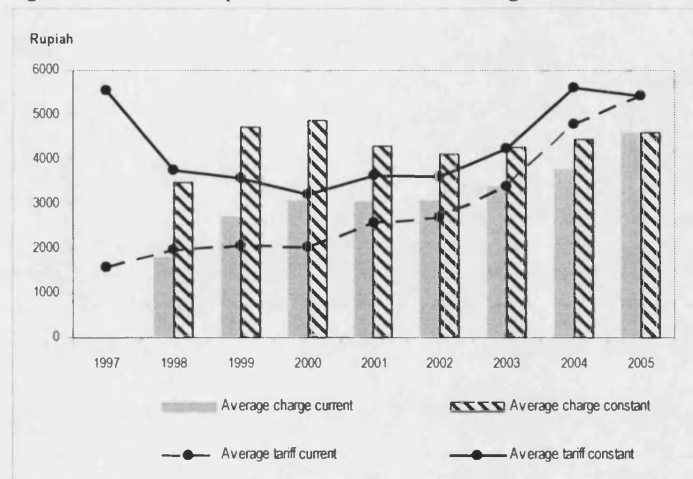
After the failed ICE Team Report, the parties resumed discussions, which again involved lengthy discussions on individual expenditure lines. The Regulatory Body continued to play the role of mediator, chairing meetings between the parties (Interviews: Lanti, Bouvier). The central government also intervened to put pressure on Pam Jaya after the firms threatened once again to terminate the concessions (Interviews: Krieg, Lanti). Again, Palyja was at an advantage because of its different debt structure. The Finance Director of Palyja estimated that Palyja required a 16% tariff increase in the RRB, whereas Thames would require a 40% increase in order to meet their debt repayments (Interview: Bouvier). Clearly, it was easier for Palyja to conclude its negotiations, and they reached agreement in November 2004. Agreement was reached for TPJ in July 2005.

The disjuncture between the Water Tariff and the Water Charge remains a key concern for Pam Jaya as well as for the firms. Figure 7.8 shows the relationship between the tariff and charge over time. This issue was addressed in new regulations in 2004, when the Governor and local Assembly approved a proposal for automatic tariff increases to take place each semester so that the Water Tariff would stay above the Water Charge (Decreets 2459/2004, 138/2005). The formula for the adjustment needs to be approved by the local parliament once every five years. The 'Automatic Tariff Adjustment' (ATA) allows for the Water Tariff to be reset each semester according to inflation and other conditions (TPJ and Palyja Letters, July 2004). Under the ATA, tariff adjustments do not require a separate decree from the Governor or the approval of the local

⁶⁹ Pam Jaya offered to accept the report in its entirety only if the concessionaires also did so, but the concessionaires had already announced their rejection of the report's recommendations.

assembly. The ATA mechanism was implemented in 2006, but agreement on the half-yearly adjustments was already taking longer than planned in the first year of implementation (Bartlett and Witono 2006).

Figure 7.8 Relationship Between the Tariff & Charge 1997-2005

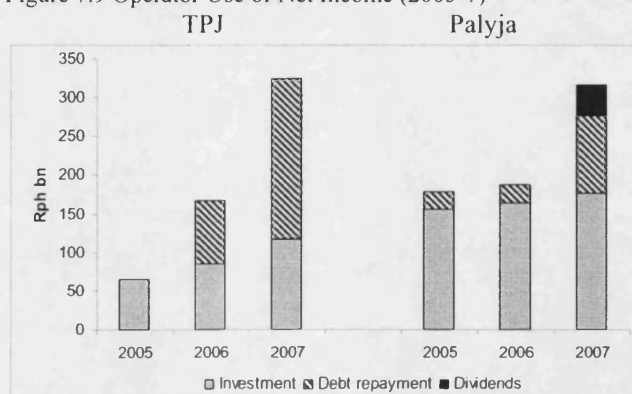


Source: Bartlett & Witono 2006

In 2005, the Governor strengthened the RB through a new decree No 54/2005 which replaces the 2001 decree and provides for the RB to be “an independent and professional body” and extends the role of the RB to taking decisions on the adjustment of financial projection, technical targets and service standard of cooperation proposed by the Parties and advising the Governor on tariff adjustments. However, Pam Jaya and the concessionaires continue to insist on bilateral discussions between the contract signatories to decide the Water Charge. Legally, the RB should make recommendations to the Governor on ATA adjustments but the contractual data on charges and shortfall payments available to the RB is limited to hard copies of data given in the RCA Addenda, making it extremely difficult for the RB to fulfil its obligations. As a result,

Palyja has since improved further as Suez closed a local bond issue to cover its remaining foreign debt obligations. Subsequently, the company agreed the sale of 45% of its shares to a local company (Interview: Marc Beatrix). The failure of the Manila arbitration may also have made the company more willing to adopt a gradual risk-reduction strategy for the Jakarta concession over a termination, while extracting revenues from the contract where possible. Despite its less favourable financial position, Thames has also sought to divest its stake in TPJ and was finally able to find a buyer in 2006. The company is now majority owned by an Indonesian investment firm, Recapital.

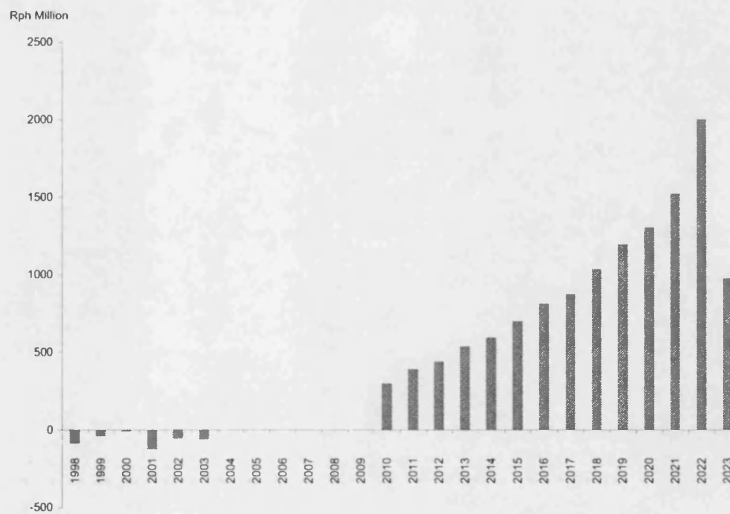
Figure 7.9 Operator Use of Net Income (2005-7)



Source: Bartlett & Witono 2006

Given the profile of dividends up to 2007, the projected profile of returns has become even more concentrated in later years in order to achieve an average rate of return of 22 percent over the life of the concession. A 2001 projection for TPJ projects dividends rising towards the end of the concession term, as Figure 7.10 shows, up to 48% of revenues in 2022 (Schedules Pam Jaya and TPJ 2001). If this profile was maintained, this would make it possible for the firms still to meet the contractually targeted ROR. However, very high dividends in later years could also stimulate a public backlash, and possible intervention by the government (Interviews: Bouvier, Krieg). Pam Jaya has signalled its desire to renegotiate the concession ROR but has not taken any action in this regard: “We would like to raise that issue but we have not brought it up so far.” (Interview: Roswita).

Figure 7.10: Equity Injections and Projected Dividend Pay-Outs to East concession 1998-2023



Source: Pam Jaya-TPJ Cooperation Agreement (2001)

7.3 Discussion

As in the previous chapter, this section considers the hypotheses and then other issues emerging from case study.

H1: If the parties cannot agree a mutually satisfactory renegotiation, but termination costs are high, the parties will seek to maximise short-term revenues under the contract and will terminate when the costs of doing so have declined.

The political and economic shocks in Jakarta were dramatic and utterly unexpected. As in Manila, the severity of the shocks greatly restricted the set of mutually acceptable contract amendments. This is demonstrated most clearly by the Governor's refusal to consider a tariff increase between 1998 and 2001. Unsurprisingly, the parties were not able to conclude the renegotiations until 2001, when the political hurdle rate had declined.

The concessionaires' hurdle rates have fluctuated over time, given shifts in corporate strategy of both the foreign investors away from risk exposure in emerging markets. However, the parties did not threaten to terminate the concession in the period up to 2001, suggesting that the status quo pay-offs were still within their acceptable pay-off set. In the later period, the behaviour of the concessions is consistent with the hypothesis, as the cost of termination was high, and the concessionaires were successfully channelling revenues out of the concessions, while planning their partial or

complete withdrawal from the contracts. There are signs of divergence in the attitudes of the two parties which reflect the different financial structures of the two concessions, which mean that the same tariff increase implies that the hurdle rate of one of the concessions is met, but not the other. for This has made it much more difficult for Thames to conclude its RRB negotiations than for Suez.

H2: When the probability of enforcement is low, the party with the lower cost of termination secures preferential outcomes in both contractually mandated and shock-induced renegotiations.

This case study provides only limited support for this hypothesis. During the critical events of 1998, the national government had a high cost of termination and exerted pressure on the other government actors to return the concession to the private companies. However, the government imposed constraints on the companies, notably the tariff freeze and the exit of the Indonesian partners from the concession. The companies do not seem to have been able to use the government's reluctance to terminate to their advantage and acquiesced in the Governor's refusal to raise tariffs, allowing the shortfall to build up. This suggests that the concessionaires were able to extract adequate revenues in the status quo, while reducing their future exposure by cutting back capital expenditure.

In the subsequent years of the concession, the concessionaires used the threat of termination to secure tariff increases, but have not used this negotiating tactic often, nor have they shown any signs of following through on their threats. Instead, the parent companies have sought to reduce their exposure by selling their equity in the concessions.

In the renegotiation of 2001, Suez managed to negotiate a more rapid repayment schedule of its shortfall than Thames, but this does not seem to have been due to a lower termination cost giving Suez more bargaining power. Instead, the explanation probably lies in the lower tariff increase (and thus larger negotiation set) that Suez was able to offer because of its different financing structure. This also allowed Suez to come to earlier agreement on tariffs in the RRB, while Thames struggled to secure agreement.

H3: The involvement of multiple government principals makes it more likely that renegotiation will be triggered, but less likely that renegotiation will be concluded.

The competing interests of different government actors certainly contributed to the extended periods of renegotiation for the Jakarta contracts. The different interests were exacerbated by the structure of the contract, with the delinking of water tariff and water charge which creates an obvious tension between Pam Jaya's interest in reducing its indebtedness, both to the concessionaires and the MOF, and the Governor's interest in limiting tariff increases. The separation between the water tariff and charge in the contract may allow for some flexibility in timing between increases, but ultimately Pam Jaya cannot achieve a satisfactory conclusion to a renegotiation without the agreement of the Governor to tariff increases. Pam Jaya, meanwhile, has an interest in tariff increases, in order to pay off the shortfall, and as a way of discrediting the concessionaire. Other government agencies, POJ and the Department of Mines, have also played a role in holding up agreement on the renegotiation by failing to meet their obligations under the contract.

Both the local government and Pam Jaya have played a role in initiating renegotiations, Pam Jaya through its takeover of management in 1998, and the Governor in his refusal to raise tariffs. As we would expect, it has proved easier to initiate renegotiations, which can be done unilaterally, than to conclude them, which must be done unanimously. During the tariff freeze, the Governor effectively imposed a veto on any agreement. During the transition period and rate rebasing, it was Pam Jaya that managed to put an effective break on agreement through its delaying tactics.

H4: The existence of a contract-specific regulatory agency or contract monitoring agency will increase the probability of concluding a renegotiation.

The RB has played a very interesting, albeit limited, role in the Jakarta concessions, very much in line with this hypothesis, even though it is a relatively weak body established as a result of the first round of contract renegotiation. The RB does not have either a discretionary power to make decisions on the water tariff, charge or business plans; nor does it have power to negotiate amendments to the contract. However, during the RRB process, the RB played a proactive role in bringing the parties back into negotiations when these had stalled and in mediating between them, although it cannot

force a conclusion to disputes. The RB has also increased transparency, using external consultants to review the data provided by the concessionaires and by Pam Jaya.

Despite its limitations, the RB has been able slowly to build itself a function in the concessions. The RB's legal role and status has changed as a result of the Governor's decrees and it is likely to become increasingly powerful as a result of its new obligation to advise the Governor on tariff adjustments. The increasing professionalism of the RB will also help to strengthen its position.

As in Manila, there are additional considerations that help to understand the behaviour of the parties.

In particular, it is important to take into account the dramatic political and economic changes of 1998 and the weak institutional environment in which these events unfolded. Under Suharto, power was highly centralised, with few if any 'checks and balances' on the President's power. Indicators for corruption, bureaucratic quality and rule of law show a weak institutional environment, but these indicators worsened in the years after the end of his regime as power fragmented. Six months into the concessions, the private firms faced a new and even more challenging institutional environment.

The link between the local companies, international companies and the political leadership is again an important thread. Corruption played a role from the start, when the concessions were awarded without public tender to consortia connected directly with the President. This in turn caused a political backlash against the concessions when Suharto was overthrown and popular opinion demanded the departure of Suharto's family and cronies friends from the concession companies. Corruption may also explain the resistance of Pam Jaya to the award of the contracts, as its managers would lose access to flows of illicit payments, and in the legal case brought against the concessionaires by the subcontractors association, which also lost its close relationship with the utility.

A further element that is central to understanding the events in Jakarta is the incompleteness of the contract, in particular with regard to principles and processes for adjusting the contract. Although the contract provided for period rate rebasing, there was no underlying agreement between the parties about how financial and operating

would be shared and verified, the need for transparency about the financial models used to establish adjustments to the charge, the principles for judging the efficiency of expenditure, and so on. Agreement on these matters is fundamental to the smooth-running of public-private contracts, and its absence in Jakarta has made both shock-induced and contractually mandated negotiations extremely time-consuming and contentious. Negotiations have become bogged focused on the details of expenditure, rather than on establishing a method to agree these. Future RRB may not be as difficult and bitter as the first round has been if the set of mutually acceptable outcomes is sufficiently large, but further wrangling between the parties is inevitable.

Annex 7-A: Jakarta Concession Contracts : Provisions, Dates and Key Actors

Jakarta Concession Contract Water Charge Provisions

The Water Charge is set separately from the Water Tariff, according to the formula:

$$C_n = [C_o \times (F_n \times G_n + H_n \times O_n)] + K_{xn} + K_{in}$$

Where: C is the water charge for period n

C_o is the water charge set out in the contract for the current period

F_n is the weight allocated for capital expenditure in period n

G_n is the coefficient of adjustment of the capital expenditure of the second party for period n

H_n is the weight allocated to operational expenditure in period n

O_n is the coefficient of adjustment of the operating expenditure of the second party for period n

F_n and H_n are defined so that F_n + H_n = 1

K_{xn} is the compensation for exchange rate variation in period n

K_{in} is the compensation for interest rate variation in period n

Source: Restated Cooperation Agreement 2001

Table 7.1: Jakarta Concession Key Dates

1989	Water sector opened to foreign direct investment
1993	First discussions on private sector involvement in Jakarta water take place
1997	Negotiations for the water supply Cooperation Agreements concluded
1998 – February	Concessions become operational
1998 – May	President Suharto leaves office, replaced by former Vice-President Habibie Management control of water supply taken over by Pam Jaya Governor of DKI Jakarta announces there will be no tariff increase before 2000 Management control returned to concessionaires with conditions International investors buy out the equity stakes of their Indonesian partners Renegotiations begin between Pam Jaya and the concessionaires
2001	Restated Cooperation Agreements signed Regulatory Body created
2001 (Oct) – 2002 (Sept)	Transition Period during which special contractual provisions apply Preliminary discussions about the periodic review (Rate Rebasing) take place
2003 – Jan	Contractual deadline for completion of Rate Rebasing Discussions between Pam Jaya and concessionaires stalled
2003 – Sept	External consultants contracted to advise on Rate Rebasing
2004	Recommendations of the consultants rejected Negotiations between the parties continue
2005 – Oct	Rate Rebasing concluded

Source: Compiled from field interviews

Table 7.2: Jakarta Concession Key Actors

Institution	Function
Perusahaan Air Limbah Jakarta Raya (Pam Jaya) (<i>Jakarta water supply enterprise</i>)	Party to the contract, owner of the concession assets and liabilities incurred pre-privatisation. Legally responsible for treatment, distribution and supply of water to Jakarta (but not for wastewater) through a decree issued by the Governor of Jakarta. Monitors the firm with regards to technical targets and performance indicators, operating and capital expenditures; negotiates financial and technical parameters in the Rate Rebasing for each 5-year planning period.
Thames Pam Jaya (TPJ)	Concessionaire for the East zone of Jakarta Initially, majority-owned by Thames with a stake held by Kekarpola Airindo (Indonesia) a special purpose company 40 per cent owned by Sigit Harjojudanto, one of Suharto's sons, 60 per cent owned by two Indonesian businessmen, Harisapto and Fachry Thaib. Currently 95% owned by Thames Water International. 5% stake held by a local company, PT Terra Metta Phora
Pam Lyonnaise Jaya (Palyja)	Concessionaire for the West zone of Jakarta Initially 40% owned by Suez (formerly Lyonnaise des Eaux, later Ondeo) and 60% owned by Garuda Dipta Semesta, a company in the Salim Group (Indonesia) Currently 95% owned by Ondeo, 5% owned by a local company, Bangun Cipta Sarana
Jakarta Water Regulatory Body (RB)	Created in 2001. Responsible for monitoring the contract, mediating disputes and proposing tariff adjustments to the Governor
Independent Combined Experts Team (ICE Team)	Consultants who advised on the first periodic review (Rate Rebasing)
Daerah Khusus Ibukota Jakarta (DKI Jakarta) (<i>Special capital region of Jakarta</i>)	Government of Jakarta, which has the status of a province in the Indonesian political structure. Headed by the Governor, an elected official who has the power to approve tariffs (with the agreement of the Assembly).
Dewan Perwakilan Rakyat Daerah Jakarta (DPRD) (<i>Jakarta provincial assembly</i>)	The city legislature, increased in importance since decentralisation laws of 1999. Must approve any tariff increase.
Kimpraswil (<i>Ministry of Settlements and Regional Infrastructure, formerly Ministry of Public Works</i>)	(Central Government) Within the Ministry, the Directorate General of Urban and Rural Settlements is responsible for urban development programmes. It implements programmes to provide water to poor communities; provides technical guidance to local water companies and administers loans from development agencies
Dinas Pendapatan (<i>Mines Department</i>)	Department of the Central Government. Regulates and supervises drilling and abstraction of groundwater in Jakarta in accordance with provincial regulations; recommends charges for groundwater extraction.
Perum Otorita Jatiluhur (POJ)	Company that manages the Jatiluhur dam and canal which is the main source of raw water for the city
Tangerang, Bogor and West Java regional governments	Neighbouring provinces to Jakarta, responsible for delivering local water services. Sell treated water to the concessionaires.
Ministry of Finance (MOF)	Responsible for loans from development agencies; distributes these to the relevant implementing authorities

Source: Lanti 2004 and other sources

Annex 7-B: Jakarta Concessions Hurdle Rate Analysis

In this section, we consider whether the contractually defined 22 per cent IRR, if it is actually achieved by the end of the concession, constitutes a reasonable, inadequate or excessive return for the shareholders, given the risks associated with the investment. It may seem to be a high rate of return for an investment in the water sector. However, the Shareholder IRR measure for the Jakarta concessions need to be seen in a comparative context of returns on investments of a similar nature in countries with a similar risk profile.

Following the methodology of Estache and Pinglo (2004) and Sirtaine, Pinglo, Guasch and Foster (2004), comparative rates of return are calculated that reflect a level of return to the shareholder commensurate with the level of risk being taken, known as a 'hurdle rate.' The methodology is based on the Capital Asset Pricing Model (CAPM) and the key insight of this model, that investors prefer less risky projects to more risky ones and will require a higher rate of return on higher risk projects. If a project is more risky, investors will need to have a higher expected return if they are to invest in the project. There is no single 'appropriate' return across a sector or across a country. The appropriate return will be determined by project-specific risks. However, as information on project-specific risks is not available, it is necessary to estimate the risks of this project with information on risks associated in particular with the sector and with the country.

Any investment has two types of risk associated with it: unique risks, which can be reduced through appropriate portfolio diversification, and market risks, which affect all investments in an economy. According to the CAPM, the return on the project should be equal to the return that the company can earn on a risk-free investment plus a premium reflecting non-diversifiable risk.

The investor is interested in how sensitive a particular investment to fluctuations in the overall market. The measure of sensitivity is known as the beta. According to CAPM, the risk premium that investors demand over the return to a risk-free asset varies in direct proportion to the asset beta. Although the accuracy of the CAPM as a method for calculating the cost of capital is contested by some recent work which has found that returns are not (very) closely correlated with the beta. However, the CAPM is still used

as the primary model in many regulatory systems, including the UK, and is therefore used here to calculate hurdle rates for the Jakarta concessions.

The formula below is used to calculate the hurdle rate:

$$R_a = R_f + \beta * (R_m - R_f) + R_c$$

Where:

R_a = hurdle rate (minimum required return for investment to take place)

R_f = rate of return on a risk-free investment

β = beta of the asset (the asset's sensitivity to market fluctuations)

R_m = return on the market as a whole (i.e. a fully diversified portfolio)

$R_m - R_f$ = market risk premium

R_c = country risk

The risk-free rate of interest is a theoretical interest rate associated with an asset that was entirely free of risk. Government bonds are considered to be low risk investments, but some countries clearly have risks associated with them. The US government has a track record of no default and is therefore considered to be an approximation for a risk-free entity. Thus the rate for the US 3-month Treasury Bill can be used as an approximation of the risk-free rate. In May 2004, this was 0.98.

The beta is a measure of the volatility of a stock against the market as a whole (unique risk as opposed to market risk). A beta above 1 means that the stock is more volatile than the market as a whole, while a beta below 1 means the stock is less volatile than the market. The unique betas for the projects in question are not available and so it is necessary to use a proxy. Following Sirtaine et al (2004), average predicted betas for American companies in the same sector is used. These betas are adjusted according to the average level of leverage (debt: equity) in the sector and to the nominal corporate tax rate. The resulting leveraged beta for the water sector in Indonesia is 0.71.

The market risk premium represents the additional return that investors require to hold the extra risk associated with shares over risk-free bonds. Using data for the period 1960-2004, the market risk premium is estimated at 5 per cent.

The risk associated with investment in a particular country is assessed by credit ratings agencies. The level of risk is associated with a country risk premium, the extra return investors would expect to earn given the level of risk. Moody's ratings agency gives a

rating of B2 for Indonesia (February 2005). A rating of B2 is associated with a country risk premium of 10.9 per cent.

Summary of Parameters

Rf:	0.98
B:	0.71
Rm:	5.0
Rc:	10.9

Using the formula above for the hurdle rate generates a result of 14.73.

The Jakarta contract specifies the Rate of Return on nominal Rupiah. We therefore adjust the hurdle rate above for inflation. Inflation stood at 6 percent in 1997. Table 7.10 shows fluctuations in inflation in the 1990-2005 period for Indonesia.

Figure 7.11: CPI Indonesia 1990-2005

Year	CPI index %	Nominal hurdle rate
Average 1990-1997	8.32	23.05
Average 2000-2005	8.39	23.12

Source: EIU Country Data

In the period 1990-1997, average inflation was 8.32 percent, giving a nominal hurdle rate of ROR of 23.05, below, but close to the 22 percent specified for the firms in the contract. This implies that the Jakarta concessions were only an attractive investment option for private sector players if inflation was reduced.

8 Conclusion

8.1 Motivation

This thesis is motivated by an underlying concern about the inadequate coverage and low quality of water and sanitation services available to households in developing countries. The low quality of these services is not just an inconvenience – it is associated with ill health and higher mortality rates. Starting in earnest in the 1990s, governments, donors and firms pushed the case for large-scale private sector involvement in the water sector, which, it was hoped, would address the inadequate performance of public utilities. Private firms were expected to bring management expertise, efficiency improvements and access to finance for much needed capital investments. Yet, the experience of PSP in the water sector has been beset with problems. High profile cancellations, a high rate of contract renegotiation, disappointing profits, and a perception that low income households have suffered from tariff increases have led to a backlash against PSP in the water sector.

Of course, private firms will only deliver the sought-after benefits if they have the incentives to do so, and the natural monopoly characteristics of the water sector mean that this cannot be achieved without economic regulation. Our understanding of how to design economic regulation has advanced considerably in recent decades, but in the incomplete, sometimes turbulent, institutional environments of developing countries, it can be very difficult to establish an effective regulatory structure. Replacing “regulation by agency” with “regulation by contract” is certainly not the easy resolution to incomplete institutions that some claim. While a well drafted contract can help to offset some aspects of the incomplete institutional environment, contracts themselves are incomplete. When the contract needs to be adjusted to take account of new information, the institutional environment will inevitably play a central role in supporting – or undermining – the parties’ ability to find a mutually satisfactory solution.

The findings of this research suggest that even in complex, difficult cases, we do not need to abandon PSP. Instead, we can draw on our experience and knowledge of economic regulation and its relationship with institutions to tailor regulatory models to be more robust and effective in the institutional environment of developing countries.

8.2 Contribution

Research on PSP in the water sector has been held back by the paucity of reliable comparative data on many aspects of the sector, from an accurate record of the number and size of PSP contracts, to data on financial and operating performance for water utilities, and institutional attributes, such as the existence and nature of a regulatory agency. I noted early in the thesis that the water sector poses particular problems for data collection because of its localised nature, with municipal governments responsible for water supply and sanitation often without oversight at the national level. This thesis takes a first step to addressing this gap in the data with a new database of water sector PSP projects. This allows me to test the relationship between PSP and institutions quantitatively, and thus to demonstrate the significance of this relationship for emerging markets. This is supplemented in the latter part of the thesis with the rich qualitative material of the case studies.

The theoretical literature has addressed many facets of PSP in network industries. However, the limitation of the existing models is that they do not capture all the elements that are likely to be important in large, complex PSP arrangements in developing countries. An encompassing framework would need to include the following elements:

- Both contractually mandated renegotiations and contract renegotiations induced by shocks, in addition to renegotiations resulting from opportunism;
- Multiple time periods to allow for exogenous shocks and changes in the parties' discount rates;
- Multiple principals with distinct sets of interests;
- Hybrid regulatory structures that include both contracts and agencies.

The analytical framework that I apply in this thesis allows us to understand these arrangements and their context more deeply than has been possible before. In the future, it may also serve as a base for the development of a formal model.

8.3 Key Findings

The importance of institutions for economic regulation is confirmed throughout the thesis. Chapter 4's count regression model of determinants of frequency of PSP projects found that institutions are a significant determinant of the number of projects by country. The institutional indicators that emerged as most significant in the regression were the quality of the bureaucracy and investor protection against expropriation. However, the institutional indicators provide only indirect measures of underlying

institutional attributes, making it difficult to isolate the effects of the attributes themselves. In the regression analysis, measures of the size of the market, the availability of public funds, macroeconomic risk and the involvement of the World Bank all emerged as significant.

The analysis of Chapters 6 and 7 complimented the quantitative analysis, looking at the detail of the evolution of two concessions in large cities in developing countries – Manila and Jakarta. The Manila concessions were originally held up as an example of good contract design and award, but one of the two quickly became known as an equally high profile example of the ‘failure’ of privatisation. A striking aspect of this case is just how differently the two concessionaires have fared. This cannot be explained just by the impact of external shocks as we are still left asking why the parties were unable to renegotiate the contract in a mutually satisfactory way. Here, the answer lies partly in the timing of shifts in the discount rates of the parties involved, which allowed the East concessionaire to negotiate its concession contract without difficulty in the first year of the concessions, but made renegotiated deals too politically sensitive just a few years later.

The Jakarta concessions present a different puzzle: why have the private companies stayed on for so long in contracts that seem to offer such limited returns? Here, the explanation lies in the high termination costs that the companies were faced with and the relatively effective strategies of the firms to extract short-term rents from the concessions. The weakness of the institutional environment has made it easier for them to do so and has failed to provide them with adequate incentives to invest and improve service.

Both case studies experienced severe political and macroeconomic shocks, as well as periodic reviews, which allowed us to examine the impact of shifts in discount rates. The scale of the shocks in the Philippines and Indonesia was such that the set of mutually satisfactory renegotiated outcomes for the public and private parties became very narrow. In the end, the parties were only able to agree amended contracts when the discount rate of the government had declined again and compromise became possible. In the interim period, the firms proved unwilling to terminate the contracts, consistent with the high-cost of termination. However, as the first hypothesis suggested, the failure to find an accommodation led to short-term behaviour by the parties, at the expense of

service quality and coverage. The firms cut back dramatically on their capital expenditure, in order to reduce their exposure, but took a lax approach to operating efficiency, and sought to extract rents through management fees, in the expectation that low or negative operating income would strengthen their negotiating hand with the government.

Contracts like these are often structured deliberately to make termination costly, in order to improve the commitment incentives of the parties. However, the negative effects of short-term rent extraction need to be weighed up against the more positive incentive properties of termination penalties. In some cases, a shock may be so severe that no renegotiated outcome will be satisfactory to both parties. In these cases, the termination of the contract should not be considered a failure; instead, it may be possible to rebid the contract to a party with a lower discount rate and achieve a more satisfactory outcome.

Shifts in the hurdle rates of the parties caused by exogenous events will inevitably create challenges for the implementation of concession contracts. Firms should be aware that government hurdle rates tend to vary with stages in the political cycle. Of course, political crises and regime changes may occur at any time, shown by the overthrow of Suharto in 1998 and the impeachment of Joseph Estrada in 2001. And while a country is likely to recover from a macroeconomic shock over the course of a few years, the effect of political crises may be longer lived, as in the case studies, where institutional quality continued to deteriorate after the economic crisis was over. The more closely the contract is connected to a particular political leadership, the more susceptible it will be to these discount rate fluctuations.

Turning to firms, changes in discount rates may well be driven by events far outside the concession in question. As we saw in the case studies, some of the world's largest water companies went through a major shift in strategy in the last five years, switching from a strategy of aggressive international expansion, implying a low hurdle rate, to rapid withdrawal from emerging markets and liability reduction. Under these conditions, contracts that were previously acceptable, even attractive, to international companies became financial burdens. This does not mean that the companies will terminate their role in the concessions immediately, but it changes their approach. Instead, they have

sought to maximise short-term gains while seeking ways to reduce their equity exposure.

Clearly, the involvement of international firms can make contracts more vulnerable to shifts in firm strategy. However, the role of Benpres in the Manila West concession shows how the same can apply to large local firms. There, the bankruptcy proceedings of the group caused a jump in the firm's discount rate, which made it extremely difficult to find a satisfactory compromise.

The impact of shocks on these contracts was dramatic because of the dimensions of the crises that hit Indonesia and the Philippines in the period under study. But these shocks are not as exceptional as they might seem at first. Since the late 1990s, the period in which water privatisation spread through emerging markets, Argentina, Mexico, Russia and South East Asia all experienced macroeconomic crises. Volatility therefore cannot be considered a peripheral concern for contract implementation; it is necessary to consider how contracts perform in crises and how they can be tailored to deliver better outcomes even in these circumstances.

The evidence from the case studies in support of the second hypothesis, which posited that the cost of termination determined the relative bargaining power of the parties, was limited. In Manila, the party which had the least interest in continuing the contract did manage to secure the most preferential outcomes but the case studies suggest that other factors, such as negotiating skills, or the ability to disguise opportunism effectively, may also be relevant to the outcomes of negotiation. Further investigation of the determinants of renegotiation outcomes is warranted.

The experience of Manila and Jakarta provided strong support for the hypothesis that multiple principals will lead to more renegotiations being initiated and fewer satisfactorily concluded. This is important because several government actors will inevitably be involved in the implementation of a concession contract. Even in the highly centralised structure of Suharto's Indonesia, the contract signatory was the public utility, so there were two key government actors with different pay-off structures involved from the beginning of the contract. The number of players multiplied with the end of Suharto's New Order, giving a role to the Governor, the local Parliament and the Regulatory Board. In the Philippines, there were similar tensions between the interests

of the different parties within the public sector, especially between the President and the Manila public utility.

The separation of powers undoubtedly serves a vital purpose in reducing the scope for any of the parties to act arbitrarily. However, it also opens up a responsibility gap – lots of actors can block agreement on a contract adjustment but no one actor is responsible for ensuring that these disparate views are brought together to make contractual adjustments when necessary. The problems caused by this multiple veto power do not imply that a single government entity should take all decisions relating to a concession contract. However, it would be useful to clarify in the contract which party is responsible for negotiating adjustments to the contract, which party is responsible for approving the adjustments and which for implementing them. The contract could also contain provisions specifying a process for shock-induced renegotiations, echoing the principles that are used for contractually-mandated renegotiations. While this would by no means guarantee the swift resolution of major contractual changes, it would allow the parties to move ahead with a common understanding of the nature and timeframe for the process.

The case studies also brought to light the tensions between multiple private parties, although these were not explicitly covered in the analytical framework. JV arrangements between foreign and local companies should offer mutual benefits, but the case studies demonstrate that this relationship can be extremely difficult to manage, especially when shocks occur to the parent companies.

The case studies provided some justification for the relevance of the regulator in contract-based regulation. They showed that these regulators are often weak and in practice, political leaders may intervene in regulatory decision-making, no matter what is specified in the provisions of the contract. In particular, regulatory agencies are sidelined by politicians and firms when it comes to contract renegotiation. During renegotiations, the authority of the regulatory agency to take decisions is further undermined by the ambiguous status of the legitimacy of the contract.

At the same time, the case studies showed that even a regulatory agency with limited powers can play a useful role by supporting cooperation between the parties and increasing transparency. The regulatory agency can raise the costs of opportunism to the

parties by monitoring and publicising non-compliance by both parties, and imposing fines or penalties in accordance with the contract. If the regulator has a statutory or contractual responsibility to enforce the contract, and its reputation is linked to fulfilling its responsibility, then it will have an incentive to enforce the contract against both parties. The case studies showed how renegotiations can drag on if any of the parties is benefiting from the status quo. In these cases, a regulatory agency would have an incentive to encourage the parties to conclude the renegotiation.

Firms are understandably concerned about the creation of a new regulatory agency with discretionary powers. Like all new institutions, a regulatory agency will take time to develop the expertise needed to implement the contract. In both the case studies, the regulators have become stronger over time, and the private companies have begun to trust the regulators more. However, while there are good reasons to give the regulators more responsibility, it should be accompanied by oversight and a channel for the parties to contest the regulator's decisions.

Over time, the regulators have also learnt how to work with their concessionaires. Here, there is a balance to be struck between the idealism and energy that a new agency with a public service mission may be imbued with, and the time it takes for a new institutional arrangement, like that implied by a regulated private concession, to become embedded in the overall institutional environment. Too comfortable a relationship between the regulator and firms would suggest regulatory capture. Due to the recent vintage of most PPP projects in the water sector, there is a focus on problems associated with regulatory weakness of the early years of the contract, but this will change as the institutions mature.

A strong theme in the case studies is the damaging impact of corruption on long-term contracts. Its effects play out in a number of ways. Corruption in the original award process can lead to a backlash from the public or from a new leadership, as we saw in Jakarta. Perceptions of corruption, whether proven or not, can also be damaging, demonstrated by Benpres in Manila's West concession. Influential business groups will be in the media spotlight and can be easy targets for politicians looking to demonstrate their anti-corruption credentials. This may also make it more difficult to strike a deal in a contract adjustment that would be acceptable to the public. Corruption plays yet another role in the Philippines where broad-ranging anti-graft laws make government

officials risk averse in all decisions involving private business interests. Finally, corruption in public utilities pre-privatisation leaves a large constituency opposed to private involvement. Giving former public utilities a role in contract implementation, as was the case in both Jakarta and Manila, clearly poses significant risks.

Both contracts and institutions, then, play a part in ensuring that contracts are adjusted over time to changing conditions. Putting all the emphasis on “getting the contract right” in a weak institutional environment, is unlikely to lead to a successful and sustainable PSP arrangement.

8.4 Policy Implications

The findings of this thesis are, to a large extent, consistent with the current mainstream of views of good practice in economic regulation:

- Specify the principles and procedures for rate rebasing clearly in the contract;
- Improve the flow of reliable information between the firm and the regulator, through standardised accounting procedures, external auditing etc.;
- Target corruption. Demonstrations of transparency during contract award enhance the credibility of the contract with future political leaders and with the public.

In other respects, the research gives rise to distinctive policy recommendations.

We saw that though shocks are not inevitable, they are very likely. Of course, shocks cannot be planned for, but the contracting parties can explicitly recognise the possibility that a major adjustment may be needed that would not be addressed by planned periodic adjustments, and put in place a jointly agreed process and lines of responsibility.

Monitoring and supervision by multiple government bodies may be effective in constraining the discretion of any one actor, but the involvement of multiple parties makes renegotiation more likely to be triggered and more difficult to conclude. Specifying the government body responsible for conducting renegotiations, the body responsible for approving any amendment and the procedures to be followed within the original contract should help to streamline the process of renegotiation.

Termination penalties can serve a useful purpose in providing incentives for the parties to stick with a contract even if it is experiencing short-term difficulties. However, after a shock or a shift in the parties' discount rates, there may be no mutually satisfactory

agreement. In this case, termination may be preferable to short-term rent extraction by the parties, allowing the contract potentially to be rebid to a party with a lower discount rate.

The findings do not imply that developing countries should create discretionary regulatory agencies, but they do suggest that even contract-specific regulatory agencies with heavily circumscribed powers can contribute to the effectiveness of the regulatory regime. The following considerations in the design of regulatory agencies could enhance their role in supporting cooperative behaviour under contracts:

- Give the regulatory agency statutory responsibility for the implementation of the contract. If the regulator has a responsibility for implementing the contract, then it will have an incentive to monitor and (where it has the power) to enforce the implementation of the contract on both sides. The regulator's reputation can be linked to its ability to expose and punish violations of the contract. However its role, powers and accountability must be clearly defined and its power to interpret the contract should be strictly circumscribed.
- Give the regulatory agency incentives to increase transparency. Often, the contracting parties will have an incentive to disguise information about their performance as asymmetric information may allow them to extract rents from the contract. A regulatory agency may be able to use information as a way to increase its own influence in relation to the contracting parties. For example, the regulator can act as a conduit bringing customers' views to the attention of the contracting parties, and informing public opinion by publicising information about the behaviour of the contracting parties.

8.5 Directions for Future Research

The WATSUP database developed for this thesis improves significantly on existing data on PSP in the water sector. The analysis presented here shows a clear relationship between contract frequency and institutional indicators, but it is only the first step in using this data. Further research can be done taking into account the size dimension of the contracts and the origin of the companies involved. Ideally, the dataset would be supplemented with information on performance and sector-specific institutional data, which would allow for the investigation of many more interesting questions.

The analytical approach brings together important features of long-term PSP contracts into a coherent framework that comes closer than previous models to actual PSP experience in developing countries by capturing institutional incompleteness as well as contractual incompleteness. The next step would be to formalise the model, and to refine the hypotheses to allow for further empirical tests.

The case studies of Manila and Jakarta provide rich qualitative material and they have generated some valuable findings. Now, several avenues suggest themselves for further research: the first would be to compare these outcomes with how governments and firms behave in more complete institutional environments, both in response to shocks and in periodic contract reviews. Another interesting extension would be to examine how fluctuations in the discount rate of a single party, like an international firm, or a government, affect their behaviour in several different contracts.

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ANNEX A: DATA SOURCES

Name	Company	Source	Dates
Manila			
Audited financial statements	Metropolitan Waterworks and Sewerage System (MWSS)	MWSS	1992-1996
Audited financial statements	Maynilad Water Services Inc	MWSS Regulatory Office	1998-2003
Audited financial statements	Manila Water Company Inc	MWSS Regulatory Office	1998-2003
Annual Report	MWSS Regulatory Office	MWSS Regulatory Office	2002
Annual Report	MWSS	MWSS	1990
Performance Data	Maynilad Water Services Inc	Maynilad Water Services Inc	1998-2003
Key Performance Indicators	Manila Water Company Inc	Manila Water Company Inc	2004
Jakarta			
Financial Statements (Unaudited)	PT Pam Lyonnaise Jaya	Jakarta Water Supply Regulatory Board (JWSRB)	1997-2003
Financial Statements (Unaudited)	PT Thames Pam Jaya	JWSRB	1997-2003
Audited accounts	PT Pam Lyonnaise Jaya	JWSRB	1997-2003
Form of Outstanding Monies	PT Pam Lyonnaise Jaya	PT Pam Lyonnaise Jaya	2003 (Dec)
Laporan Evaluasi Kinerja Tahunan 2003	Pam Jaya	Pam Jaya	2004
Pelanggan Pemakaian Air Januari Tahun	Pam Jaya	Pam Jaya	2004

ANNEX B: ALPHABETICAL LIST OF INTERVIEWS

Name	Location	Position	Organisation	Date
Abidin, Zainal	Shah Alam, Malaysia	Director	Selangor Water Monitoring Dept (JKAS)	3 March 2004
Adam bin Abdul Hamid	Johor Bahru, Malaysia	Councillor, Public works and Utilities	State of Johor Executive Council (EXCO)	10 Feb 2004
Agustin, Angel	Manila, Philippines	Regulator Customer Services	Metropolitan Waterworks and Sanitation Services Regulatory Office	2 June 2004
Agustin, Rina	Jakarta, Indonesia		Kimpraswil (Department of Settlements and Regional Infrastructure)	10 Sept 2004
Alikpala, Ramon	Manila, Philippines	Executive Director	National Water Resources Board, Philippines	3 June 2004
Anderson, Carey	Hong Kong	Chairman, Former Asia Business Director of Thames Water	China Water Company	7 April 2004
Andrews, Charles	Manila, Philippines	Principal Water and Sanitation Specialist	Asian Development Bank	26 May 2004
Anwar, Alizar	Jakarta, Indonesia	Consultant	Jakarta Water Regulatory Body	6 August 2004
Arriens, Wouter	Manila, Philippines	Lead Water Resources Specialist	Asian Development Bank	26 May 2004
Beatrix, Marc	Hong Kong	Development Director	Suez Environnement Asia	13 May 2004 14 May 2004
Bernardo, Nonito	Manila, Philippines	Vice President Finance	Power Sector Assets & Liabilities Management Corporation (PSALM)	17 June 2004
Bernardo, Romeo	Manila, Philippines	Partner	Bernardo Associates	5 June 2004
Berthelot, Jean	Hong Kong	North East Asia Regional Manager	Natexis Banques Populaires	20 April 2004
Bouvier, Christian	Jakarta, Indonesia	Finance Director	Pam Lyonnaise Jaya (Palyja)	10 Sept 2004
Brenner, Werner	Jakarta, Indonesia	Management and Financial Advisor	PERPAMSI Association of Indonesian Water Utility Companies	25 August 2004
Burrell, Alix	Singapore	Director Project Finance Asia	BNP Paribas, Singapore	16 March 2004
Cases, Philip	Manila, Philippines	SAVP, Regulatory Affairs Group	Maynilad Water Services Inc	2 June 2004
Chan Ngai Wen	Correspondence	Director	Water Watch Penang	1 February 2004
Chatib, Benny	Jakarta, Indonesia	Finance Officer	Jakarta Water Regulatory Body	9 Sept 2004
Chen, David	Beijing, PRC	Country Manager, China	EarthTech	02 July 2004
Cheng, Eric	Beijing, PRC	Senior Manager	PricewaterhouseCoopers	22 June 2004
Clarke, Steve	Hong Kong	Country Manager, China Executive Director	Suez Environnement Asia Sino-French Holdings	19 April 2004
Cruz, Macra	Manila, Philippines	Deputy Administrator	Metropolitan Waterworks and Sanitation Services Corporate Office	27 May 2006
de Guzman, Elaine	Manila, Philippines	Chief Power Market Development Div.	Department of Energy, Government of the Philippines	17 June 2004
de Vera, Antonio	Manila, Philippines	Chairman	Subic Bay Water Regulatory Board	16 June 2004
Delgado, Guido	Manila, Philippines	Former President	National Power Corporation	14 June 2004
Esguerra, Jude	Manila,	Researcher	Institute for Popular	24 May 2004

	Philippines		Democracy	
Fabella, Raul	Manila, Philippines	Dean, School of Economics	University of the Philippines	25 May 2004
Fairclough, Graham	Manila, Philippines	Executive	Subicwater	12 June 2004
Fernandez, Jun	Manila, Philippines	Director	Leighton Contractors	8 June 2004
Flor, Mai	Manila, Philippines	Director Business Development	Ondeo Philippines	8 June 2004
Frauendorfer, Rudolph	Manila, Philippines	Urban Development Specialist	Asian Development Bank	2 June 2004
Fu Tao	Beijing, PRC	Director	Water Policy Centre, Tsinghua University	5 July 2004
Gaza, Jomar	Telephone	Legal Counsel	Subic Bay Metropolitan Authority	15 June 2004
Hartley, John	Hong Kong	Partner	Lovells	12 July 2004
He Jun Heng	Beijing, PRC	Assistant General Manager	Beijing Capital Company	30 June 2004
Hilwan	Jakarta, Indonesia	Department of Construction and Investment	Kimpraswil, (Department of Settlements and Regional Infrastructure)	31 August 2004
Johnson, Richard	Johor Bahru, Malaysia	Consultant to SAJH, Head of Operations	Thames Water (Malaysia)	4 February 2004
Krieg, Thierry	Jakarta, Indonesia	President Director	Pam Lyonnaise Jaya (Palyja)	24 August 2004
Lamacq, Sophie	Hong Kong	Regional Manager, South China	Veolia Water Asia	19 April 2004
Lanti, Achmad	Jakarta, Indonesia	Chairman	Jakarta Water Regulatory Body	11 August 2004 23 August 2004
Lazaro III, Angel	Manila, Philippines	Former Chief Regulator	Metropolitan Waterworks and Sanitation Services Regulatory Office	16 June 2004
Lee Hock Guan	Singapore	Fellow	Institute of S.E.Asian Studies, Singapore	13 February 2004
Lee Koon Yew	Kuala Lumpur, Malaysia	Deputy Director	Water supply branch, Public Works Dept, Government of Malaysia	4 March 2004
Leow Chi Pa	Kuala Lumpur, Malaysia	Director	Water supply branch, Public Works Dept, Government of Malaysia	4 March 2004
Leung, Amy	Beijing, PRC	Head, Social Sector Unit	Asian Development Bank	29 June 2004
Lewis, Robert	Beijing, PRC	Partner	Lovells	24 June 2004
Liu, Kathy	Beijing, PRC	Editor	H2O-China.com	5 July 2004
Madinsa, Jaseni	Telephone	Chief Engineer	PBA Holdings (Penang)	15 March 2004
Mahmood bin Haji Ismail	Johor Bahru, Malaysia	Branch Manager	Federation of Malaysian Manufacturers, Johor branch	6 February 2004
McCormack, William	Singapore	Partner	Shearman & Sterling Singapore	11 March 2004
McIntosh, Arthur	Manila, Philippines	Consultant	Former consultant to the Asian Development Bank	27 May 2004
Medalla, Felipe	Manila, Philippines	School of Economics	University of the Philippines	11 June 2004
Mohammad bin Alwi	Johor Bahru, Malaysia	Chief Financial Officer	Syarikat Air Johor Holdings (SAJH)	19 February 2004
Mohd.Idris Kaparawi	Johor Bahru, Malaysia	Director	Badan Kawal Selia Air Johor (Johor water regulator)	11 February 2004, 30 Nov 2006
Ng Ching Hai	Johor Bahru, Malaysia	Director Planning and Technical	Syarikat Air Johor Holdings (SAJH)	19 February 2004
Novari Lis	Jakarta,	Head Planning Division	Perusahaan Daerah Air	26 August

	Indonesia		Minum Jakarta (Pam Jaya)	2004
Ortega, Homer	Manila, Philippines	Member	Metropolitan Waterworks and Sanitation Services Board of Trustees	5 June 2004
Polloso, Estrellito	Manila, Philippines	Finance Director	Metropolitan Waterworks and Sanitation Services Corporate Office	5 June 2004
Poltak, Situmorang	Jakarta, Indonesia	Director	Association of Indonesian Water Works contractors of DKI Jakarta Province (AKAINDO)	18 August 2004
Razali bin Abdul Aziz	Johor Bahru, Malaysia	Chief Operating Officer	Equiventures	12 February 2004
Redman, Carl	Macau	Director Customer Relations	Macao Water Company	08 April 2004
Reyes, Alfredo	Manila, Philippines	Member	Metropolitan Waterworks and Sanitation Services Board of Trustees	8 June 2004
Rivera, Perry	Manila, Philippines	Group Director Regulation and Planning	Manila Water Company Inc.	28 May 2004
Rogers, Terry	Singapore	Retired (former Director Asia)	Thames Water International	16 August 2004
Roswita	Jakarta, Indonesia	Consultant	Pam Jaya (retired)	1 Sept 2004
Sa'ari Mohd. Nooh	Johor Bahru, Malaysia	Deputy Director	Economic Planning Unit, State Government of Johor	7 February 2004
Safwan, Achmad Djiddan	Jakarta, Indonesia		KOMPARTA	18 August 2004
Sakai, Randolph	Manila, Philippines	Acting Regulator Finance	Metropolitan Waterworks and Sanitation Services Regulatory Office	2 June 2004
Samonte, Edgar	Manila, Philippines	Director, Market Operations Service	Energy Regulatory Commission	10 June 2004
Sangster, Colin	Hong Kong	Chief Financial Controller	Suez Environnement Asia	13 May 2004 14 May 2004
Santos, Eduardo	Telephone	Chief Regulator	Metropolitan Waterworks and Sanitation Services Regulatory Office	9 June 2004
Santos, Nathaniel	Manila, Philippines	Member	Subic Bay Water Regulatory Board	10 June 2004
Schmidbauer, Stephan	Hong Kong		Bayerische Landesbank	20 April 2004
Sikar, Sjahrun	Jakarta, Indonesia	Thames Water Country Representative, Indonesia	Thames Water International	25 August 2004
Siregar, Kumala	Jakarta, Indonesia	Customer Relations Dir.	Pam Lyonnaise Jaya (former Director, Perpamsi, Director, Medan Water Company)	24 August 2004
Skelcher, Gary	Singapore	Asia Director (former TPJ)	Thames Water International	16 August 2004
Subramaniam	Kuala Lumpur, Malaysia	General Manager	PUAS (Selangor water distribution company)	4 March 2004
Sukarma, Risyana	Jakarta, Indonesia	Water and Sanitation Specialist	World Bank Water and Sanitation Program, SE Asia	10 Sept 2004
Suksmaningsih, Indah	Jakarta, Indonesia	Chairperson	YLKI (Indonesia Consumers' Association)	04 August 2004
Tang Jianguo	Shanghai, PRC	Vice Chief, Senior Engineer	Shanghai Water Authority	28 Sept 2006
Tirona, Salvador	Manila, Philippines	CFO	Maynilad Water Services Inc	02 June 2004
Truchot, Stephan	Hong Kong	Project Finance Director	Veolia Water Asia	25 July 2004
Tutuko, Kris	Jakarta, Indonesia	Technical Director	Perusahaan Daerah Air Minum Jakarta (Pam Jaya)	12 August 2004
Valahu, Philippe	Singapore	Regional Manager Asia	Multilateral Investment	16 March 2004

			Guarantee Agency	
van Aardt, Marius	Telephone	Executive Director	Aditya Tirta Batam	2 Sept 2004
Vernay, Stephane	Beijing, PRC	Partner	Gide Loyrette Nouel	29 June 2004
Vix, Nicolas	Hong Kong	Head of Project & Structured Finance	Calyon	13 July 2004
Wang Qiang	Shanghai, PRC	Research Supervisor	Shanghai Chengtou Corp	30 Sept 2006
Weitz, Almud	Manila, Philippines	Urban Economist	Asian Development Bank	27 May 2004
Wermert, Stephen	Manila, Philippines	Senior Structured Finance Specialist	Asian Development Bank	26 May 2004
Widya, Salusra	Jakarta, Indonesia	DG of Human Settlement and Housing	Badan Perencanaan Pembangunan Nasional (Indonesian National Development Planning Agency)	7 Sept 2004
Wind, Philippe	Macau	Chief Executive Officer	Macao Water Company	8 April 2004
Woodcock, Jim	Jakarta, Indonesia	Water and Sanitation Specialist	World Bank Water and Sanitation Program, SE Asia	6 Sept 2004
Yamamura, Shigeru	Jakarta, Indonesia		Japan Bank for International Cooperation	3 Sept 2004
Yniguez, Cesar	Manila, Philippines	Consultant	Consultant to the Asian Development Bank	17 June 2004
Yoong Jih Ping	Johor Bahru, Malaysia	President	Johor Consumers Association	10 March 2004
Zahdi, Ahmad Jamil	Johor Bahru, Malaysia	Chief Executive Officer	Syarikat Air Johor Holdings (SAJH)	19 February 2004
Zainuddin bin Mohd. Ghazali	Johor Bahru, Malaysia	Director Operations	Syarikat Air Johor Holdings (SAJH)	15 March 2004
Zhang Ming	Manila, Philippines	Infrastructure Sector Coordinator	World Bank, Country Office, Philippines	3 June 2004
Zhang Xiaolian	Beijing, PRC	Partner	King & Wood Partners	20 Sept 2006
Zhu George He	Beijing, PRC	Partner	Jun He Law Offices	19 Sept 2006
Zulkifli bin Ibrahim	Telephone	Asst Director Operations and Maintenance Unit	Water Supply Department, State of Negeri Sembilan	2 March 2004

ANNEX C: LIST OF INTERVIEWS BY CASE STUDY

Name	Location	Position	Organisation	Date
Manila (Chapter 6)				
Agustin, Angel	Manila, Philippines	Regulator Customer Services	Metropolitan Waterworks and Sanitation Services Regulatory Office	2 June 2004
Alikpala, Ramon	Manila, Philippines	Executive Director	National Water Resources Board, Philippines	3 June 2004
Andrews, Charles	Manila, Philippines	Principal Water and Sanitation Specialist	Asian Development Bank	26 May 2004
Arriens, Wouter	Manila, Philippines	Lead Water Resources Specialist	Asian Development Bank	26 May 2004
Bernardo, Nonito	Manila, Philippines	Vice President Finance	Power Sector Assets & Liabilities Management Corporation (PSALM)	17 June 2004
Bernardo, Romeo	Manila, Philippines	Partner	Bernardo Associates	5 June 2004
Cases, Philip	Manila, Philippines	SAVP, Regulatory Affairs Group	Maynilad Water Services Inc	2 June 2004
Beatrix, Marc	Hong Kong	Development Director	Suez Environnement Asia	13 May 2004 14 May 2004
Burrell, Alix	Singapore	Director Project Finance Asia	BNP Paribas, Singapore	16 March 2004
Cruz, Macra	Manila, Philippines	Deputy Administrator	Metropolitan Waterworks and Sanitation Services Corporate Office	27 May 2006
De Guzman, Elaine	Manila, Philippines	Chief Power Market Development Div.	Department of Energy, Government of the Philippines	17 June 2004
Delgado, Guido	Manila, Philippines	Former President	National Power Corporation	14 June 2004
Esguerra, Jude	Manila, Philippines	Researcher	Institute for Popular Democracy	24 May 2004
Fabella, Raul	Manila, Philippines	Dean, School of Economics	University of the Philippines	25 May 2004
Fernandez, Jun	Manila, Philippines	Director	Leighton Contractors	8 June 2004
Flor, Mai	Manila, Philippines	Director Business Development	Ondeo Philippines	8 June 2004
Frauendorfer, Rudolph	Manila, Philippines	Urban Development Specialist	Asian Development Bank	2 June 2004
Lazaro III, Angel	Manila, Philippines	Former Chief Regulator	Metropolitan Waterworks and Sanitation Services Regulatory Office	16 June 2004
McIntosh, Arthur	Manila, Philippines	Consultant	Former consultant to the Asian Development Bank	27 May 2004
Medalla, Felipe	Manila, Philippines	School of Economics	University of the Philippines	11 June 2004
Ortega, Homer	Manila, Philippines	Member	Metropolitan Waterworks and Sanitation Services Board of Trustees	5 June 2004
Polloso, Estrellito	Manila, Philippines	Finance Director	Metropolitan Waterworks and Sanitation Services Corporate Office	5 June 2004
Reyes, Alfredo	Manila, Philippines	Member	Metropolitan Waterworks and Sanitation Services Board of Trustees	8 June 2004
Rivera, Perry	Manila, Philippines	Group Director Regulation and Planning	Manila Water Company Inc.	28 May 2004
Sakai, Randolph	Manila,	Acting Regulator Finance	Metropolitan Waterworks and	2 June 2004

	Philippines		Sanitation Services Regulatory Office	
Samonte, Edgar	Manila, Philippines	Director, Market Operations Service	Energy Regulatory Commission	10 June 2004
Sangster, Colin	Hong Kong	Chief Financial Controller	Suez Environnement Asia	13 May 2004 14 May 2004
Santos, Eduardo	Telephone	Chief Regulator	Metropolitan Waterworks and Sanitation Services Regulatory Office	9 June 2004
Tirona, Salvador	Manila, Philippines	CFO	Maynilad Water Services Inc	02 June 2004
Weitz, Almud	Manila, Philippines	Urban Economist	Asian Development Bank	27 May 2004
Wermert, Stephen	Manila, Philippines	Senior Structured Finance Specialist	Asian Development Bank	26 May 2004
Yniguez, Cesar	Manila, Philippines	Consultant	Consultant to the Asian Development Bank	17 June 2004
Zhang Ming	Manila, Philippines	Infrastructure Sector Coordinator	World Bank, Country Office, Philippines	3 June 2004
Indonesia (Chapter 7)				
Agustin, Rina	Jakarta, Indonesia		Kimpraswil (Department of Settlements and Regional Infrastructure)	10 Sept 2004
Anwar, Alizar	Jakarta, Indonesia	Consultant	Jakarta Water Regulatory Body	6 August 2004
Bouvier, Christian	Jakarta, Indonesia	Finance Director	Pam Lyonnaise Jaya (Palyja)	10 Sept 2004
Brenner, Werner	Jakarta, Indonesia	Management and Financial Advisor	PERPAMSI Association of Indonesian Water Utility Companies	25 August 2004
Anderson, Carey	Hong Kong	Chairman, Former Asia Business Director of Thames Water	China Water Company	7 April 2004
Beatrix, Marc	Hong Kong	Development Director	Suez Environnement Asia	13 May 2004 14 May 2004
Berthelot, Jean	Hong Kong	North East Asia Regional Manager	Natexis Banques Populaires	20 April 2004
Chatib, Benny	Jakarta, Indonesia	Finance Officer	Jakarta Water Regulatory Body	9 Sept 2004
Hilwan	Jakarta, Indonesia	Department of Construction and Investment	Kimpraswil, (Department of Settlements and Regional Infrastructure)	31 August 2004
Krieg, Thierry	Jakarta, Indonesia	President Director	Pam Lyonnaise Jaya (Palyja)	24 August 2004
Lanti, Achmad	Jakarta, Indonesia	Chairman	Jakarta Water Regulatory Body	11 August 2004 23 August 2004
McCormack, William	Singapore	Partner	Shearman & Sterling Singapore	11 March 2004
Novari Lis	Jakarta, Indonesia	Head Planning Division	Perusahaan Daerah Air Minum Jakarta (Pam Jaya)	26 August 2004
Poltak, Situmorang	Jakarta, Indonesia	Director	Association of Indonesian Water Works contractors of DKI Jakarta Province (AKAINDO)	18 August 2004
Sikar, Sjahrun	Jakarta, Indonesia	Thames Water Country Representative, Indonesia	Thames Water International	25 August 2004
Siregar, Kumala	Jakarta, Indonesia	Customer Relations Dir.	Pam Lyonnaise Jaya (former Director, Perpamsi, Director, Medan Water Company)	24 August 2004

Rogers, Terry	Singapore	Retired (former Director Asia)	Thames Water International	16 August 2004
Roswita	Jakarta, Indonesia	Consultant	Pam Jaya (retired)	1 Sept 2004
Safwan, Achmad Djiddan	Jakarta, Indonesia		KOMPARTA	18 August 2004
Skelcher, Gary	Singapore	Asia Director (former TPJ)	Thames Water International	16 August 2004
Sukarma, Risyana	Jakarta, Indonesia	Water and Sanitation Specialist	World Bank Water and Sanitation Program, SE Asia	10 Sept 2004
Suksmaningsih, Indah	Jakarta, Indonesia	Chairperson	YLKI (Indonesia Consumers' Association)	04 August 2004
Tutuko, Kris	Jakarta, Indonesia	Technical Director	Perusahaan Daerah Air Minum Jakarta (Pam Jaya)	12 August 2004
Widya, Salusra	Jakarta, Indonesia	DG of Human Settlement and Housing	Badan Perencanaan Pembangunan Nasional (Indonesian National Development Planning Agency)	7 Sept 2004
Woodcock, Jim	Jakarta, Indonesia	Water and Sanitation Specialist	World Bank Water and Sanitation Program, SE Asia	6 Sept 2004
Yamamura, Shigeru	Jakarta, Indonesia		Japan Bank for International Cooperation	3 Sept 2004