



**European Bank**  
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# Contracting in transition economy municipal projects

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## **Abstract**

The paper analyses optimal contract design in various municipal infrastructure settings. Particular contract types considered are concessions, management contracts and service contracts. The last of these is defined as a contract between a municipal-owned company and a municipality. The paper argues that contracts to the private sector should be awarded through a process of competition. Contract design should provide a balance between risk mitigation and incentives for efficient performance. This can best be achieved through modified price cap regulation in the case of a concession, and performance-related remuneration in the case of management contracts, where performance is measured according to operating cost and service quality. Recourse to expert panels and to arbitration can provide an alternative to *independent* regulation here. For service contracts, which may be appropriate as a first step to commercialisation or in well-run, small utilities, performance-related remuneration is more appropriate than price cap regulation. Well-designed contracts should lead to efficiency gains, and therefore lower prices/subsidies and/or higher service quality.

*Keywords:* commercialisation, contracts, competition, regulation, private sector participation

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## INTRODUCTION

There has been substantial progress around the world in recent years in reform of water and waste-water provision. In England and Wales, the first countries to undertake radical reform, the industry was privatised in 1989, with resulting efficiency gains – equal in magnitude to around 35 per cent of total amount billed to consumers – and service quality improvements.<sup>1</sup> Following this positive experience, the private sector has been introduced to various municipalities in Latin America (e.g. Chile and Venezuela) and Australia (e.g. Sydney), again with resulting enhanced performance.<sup>2</sup>

In the former communist countries, the heritage was one where prices typically did not cover operating cost, investment was limited, quality standards were low and water resources were depleted in the process of supplying heavy industry. From an institutional point of view, water and waste-water industries were run from departments within municipalities and along engineering rather than commercial lines.

Given the importance of the water and waste-water sectors from the perspective of (industrial and residential) consumers, taxpayers (who currently partially finance the sector), and the environment, and the large investments required particularly in EU accession countries to meet the requirements of the *acquis communautaire*, market-based reform here represents a key element of the transition process. In response to this challenge, often due to the need to raise off-budget finance, and with support from the international financial institutions, some municipalities in the region have made progress in sector commercialisation. For example, in Bulgaria, the Czech Republic, Estonia, Kazakhstan and Romania, the private sector is involved in the provision of water and waste-water services.<sup>3</sup>

This paper attempts to characterise the optimal contract framework for commercialisation of water and waste-water companies in different investment and institutional contexts. When investment requirements are low, for example, a management contract may be appropriate. Concessions may be suitable when large investments are necessary, for example in new water-treatment plants or network rehabilitations.<sup>4</sup> Service contracts between public sector bodies may provide an alternative means of commercialisation to private sector participation. The aim in the paper is to derive the desirable properties of these three contract forms (management, concession, service).<sup>5</sup> The approach draws on theory and evidence from transition countries and around the world.

One main message of the paper is that private sector participation in the water and waste-water sector should be in a context of incentive regulation (i.e. with incentives for efficient performance) with resulting efficiency gains yielding to consumers. This could be in the form

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<sup>1</sup> See Byatt (2001) for a discussion of reform in the water industry in England and Wales.

<sup>2</sup> For a discussion of Chile and Venezuela see respectively Shirley, Xu and Zuluaga (2000) and Marino et al. (1998). Chapman and Cuthbertson (1999) discuss the Sydney water privatisation.

<sup>3</sup> See EBRD (2001) for a comparison of progress in municipal reform in transition countries.

<sup>4</sup> The discussion does not cover private sector participation through asset divestment and regulation by licence, as in the case of the England and Wales water industry model. The reason for this is that the England and Wales model has not been replicated in transition economies. Having said this, the type of concessions advocated in the paper are not fully specified and are analogous in many respects to regulatory licences in England and Wales. The paper discusses briefly how concessions might fit into a national framework, should this evolve at a later date.

<sup>5</sup> Defined in Section 2 below.

of price cap regulation or profit sharing rather than cost-pass-through-type formulas, or performance-related fees in the case of management contracts. Regarding the institutional framework, investors should have recourse to an independent third party in the event of a contract dispute and, given the absence of a national sector regulator in most transition countries, this should be to (international) arbitration in the last instance, at least for an interim period while the national regulatory framework is developed.

Regarding service contracts for publicly owned and operated municipal companies, the paper argues that these are unlikely to yield the same efficiency gains as the private sector. Nevertheless, efficiency gains should accrue when these contracts are incentive based, this through linking management remuneration to performance (as measured by out-turn operating cost). Service contracts may be used in well managed and/or small municipalities serving tens or hundreds of thousands rather than millions of consumers, where transaction costs associated with introducing the private sector would not offset potential gains. Alternatively, service contracts might represent a first step towards possible introduction of the private sector, the latter depending on the level of success achieved in commercialisation within the public sector.

The paper is structured as follows: Section 1 provides a brief definition of the alternative contract forms for private sector participation and commercialisation. Section 2 focuses on private sector participation, starting with a discussion of the role of competition in contract allocation, moving on to a discussion of regulatory rules (namely tariff formulas) and finishing with regulatory institutions (for example, the role of independence in the process of regulation). Section 3 considers contracts for commercialisation without introduction of the private sector. Section 4 concludes the paper. An Annex outlines the different types of bidding processes used in the award of contracts.

## 1. DEFINITIONS

The paper considers management contracts, concessions, Build-Operate-Transfer contracts, and service contracts. These are defined as follows:

### ***Management contract***

Under a management contract a public authority makes a private company responsible for the management and delivery of a service (e.g. water and waste water). The public authority retains financial responsibility for the service, thus limiting the risk for the contractor. Remuneration for the contractor is in the form of a flat fee with the possibility of additional performance-related payments. Management contracts are typically for periods of around three years.

### ***Concession***

Under a concession a private company becomes responsible for both the operations and the capital investments of a municipal service provider (e.g. a water company). The benefit of private sector participation is extended relative to a management contract to encompass potential efficiency gains in the investment programme in addition to those relating to operating cost.

Assets are typically leased from the municipality by the concessionaire, though there may be alternative legal arrangements that allow the concessionaire the right to use assets. Income to cover operating and capital costs derives from the revenue stream associated with service provision. Concession length is typically 20 to 30 years, sufficiently long in order that investments can be paid back from revenues.

### ***Build, Operate, Transfer (BOT)***

Under a BOT arrangement, a new facility (e.g. a water treatment plant) is built and operated by a private contractor. The municipality owns the facility and leases it to the contractor. Variants on this – *Build, Own, Operate, Transfer (BOOT)* – see the contractor owning rather than leasing the facility.<sup>6</sup>

Income for the contractor derives from the revenue stream of the facility. The length of contract is typically 20 or 30 years, as in the case of concession, commensurate with the payback period required for investment.

From the point of view of the following discussion on regulation, concessions and BOT contracts may be regarded as equivalent (i.e. the same regulatory framework is appropriate for both contract types).<sup>7</sup>

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<sup>6</sup> The paper does not attempt to say which structure – BOT, BOOT, etc. – is suitable for a particular situation. This will depend, *inter alia*, on the legal and tax frameworks for leasing, and security arrangements for lenders.

<sup>7</sup> The BOT contract framework may include extra dimensions relative to the concession, for example, a turn-key contract for construction of the new facility is likely to feature; this is not relevant in the following discussion of regulation.

### ***Service contract***

For the purposes of this paper, a service contract is defined as a contract between a municipality and a municipal company (owner of assets for municipal service provision). It may apply in situations where the primary responsibility of the municipal company is to manage existing assets. It may apply equally when the municipal company is charged with undertaking substantial investments. The municipal company is paid through cash flows from the service that it provides, with the possibility of rewarding the company for good performance (see Section 3 below). The length of service contracts may be limited – at least in the first instance – to allow for the possibility of introducing the private sector should commercialisation attempts within the public sector fail.

## 2. PRIVATE PARTICIPATION

### 2.1 BIDDING FOR CONTRACTS

One crucial aspect of private sector participation relates to the way that contracts (management contract, concession, BOT, etc.) are awarded. This provides an opportunity for the contracting authority (the municipality) to extract more of the benefit of private sector participation (efficiency gains), either in the form of higher concession fees or lower tariffs/higher levels of service quality for consumers, as opposed to high profits for the contractor.

In order to achieve this outcome, contract awards should be through an open and transparent competitive bidding process. Such a process selects the most efficient (lowest cost) contractor (this contractor will post the most competitive bid).<sup>8</sup> The bid made by this contractor will factor in envisaged efficiency gains (i.e. these are passed through to the municipality, and then either to its taxpayers or to consumers).

The outcome under competition may be compared to private sector participation under a contract negotiated bilaterally between a municipality and a strategic investor. In the latter case, there is no guarantee that the contractor is the most efficient from the pool of potential contracting firms. Neither is it clear that the benefits of private sector participation accrue to the municipality, at least to the same extent as through a process of competition.

The contract price in this setting depends on the relative bargaining strength of the two contract parties during negotiations, with a range of outcomes possible, and only at the extreme is the outcome equivalent to that under competition. It is unlikely that this extreme would be reached in practice in transition economies, given the limited experience of municipalities in contract negotiation, and the lack of information that they have regarding contractors' operating efficiency. Though benchmarking may be used during negotiation, this can only provide a rough guide to the appropriate contract price, and cannot provide confidence as regards the competitive contract price. Given lack of clarity over the appropriate contract price, this may provide opportunities for corrupt behaviour.

In light of this discussion it may be asked why some contracts are awarded through a process of negotiation. One possible argument is that the cost of organising a tendering process is prohibitively high. In practice, tendering cost is low compared with other costs associated with institutional development to support private sector participation (e.g. regulatory, see below).

A second argument against a competitive tender is that the cost of bidding in a competitive process is prohibitively high relative to the risk-return profile associated with the contract. If this is true, then companies that might be interested in participating are put off when this involves taking part in a tender. There is limited evidence that this is the case based on tenders that have taken place in the region so far, where a number of companies have bid for contracts in Bulgaria and Estonia.

The extent to which bidding cost might be a problem can be reduced through design of the tendering process and, in particular, provision of good financial and operational data relating to the contract. A second way to try to ensure that there is an appropriate level of investor appetite to support a bidding process is to make the contract more lucrative by improving the

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<sup>8</sup> See McAfee and McMillan (1986) for a survey of the literature on the economics of competitive bidding.

institutional environment in which it will be implemented; this is discussed further in Section 2.2 below.

Nonetheless, there may be certain situations where bidding is either not feasible or not desirable. One example of such a situation is where a public sector company is seen to operate at a level of efficiency equivalent to that of the private sector, and thus there is no benefit to contracting in the private sector; this is unlikely to be the case, particularly in transition economies. More likely is a situation where a municipality is small and thus offers a limited potential return to investors. Alternatively, a country may not have a track record as regards private participation in the municipal sector, and related risks might undermine investor interest in a competitive tender.

Where competition is feasible, the tender process should be characterised by transparency and accountability. This would normally include a formal notification of the proposed tender to potential bidders, a pre-qualification process, and a structured approach to requesting and evaluating proposals.<sup>9</sup> As regards the variables upon which bidders compete, these may be one or more of concession fees, tariffs, investment programmes and service quality standards; see the Annex for a discussion.

Which of these is the chosen bidding variable(s), and associated weights in the bidding process, should be clear to bidders (for example, the relative weight of fees versus investment), should require bonds and/or other forms of security where the bid includes components relating to future financial commitments (on investment and tariffs rather than up-front fees), and should be straightforward to evaluate in a way that can be monitored by third parties.

## **2.2 REGULATORY FRAMEWORK FOR PRIVATE SECTOR PARTICIPATION**

### **2.2.1 Concessions and BOTs**

#### ***Regulatory rules***

The private operator is regulated according to rules/processes laid out in the contract (whether this be awarded through competition or negotiation).<sup>10</sup> The regulatory framework in the contract is key to determining the risk-return profile for investors, together with performance incentives, and tariffs for consumers. Poor design of the regulatory framework can lead to inefficient performance, high cost of capital, and/or excess profits for the contractor. A well designed framework, on the other hand, can encourage good performance, which is reflected in relatively low tariffs and/or high service quality standards. In short, the regulatory framework is key to the success of private sector participation.

The most straightforward approach would be to write mechanistic formulas into contracts, stipulating that a base tariff will be updated by a specialist regulatory body according to investments undertaken – rules governing investments (e.g. these should yield in excess of a

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<sup>9</sup> See EBRD (2000) for a characterisation, and second-best arrangements absent a competitive bidding process.

<sup>10</sup> The alternative, to specify *actual* parameter values (e.g. a numerical tariff schedule), is not feasible in practice given the great deal of uncertainty relating to the contractor's cost (input prices, inflation, exchange rate) and demand.

*floor* economic rate of return) would also be written – and to movements in input prices.<sup>11</sup> This type of contract would appear to limit the scope for dispute between the regulator and the regulated company (e.g. disputes over the appropriate level of investment as opposed to allowed cost). Such a framework is not ideal, however, from the point of view of risk allocation, incentives and distribution.

The reason for this is that uncertainties over potential efficiency gains make future cash flows risky from an investor perspective. The additional cash that might be generated through efficiency gains would be heavily discounted by the contractor and would not therefore have a significant impact through the bidding (or negotiation) process; a contractor would bid low (on concession fees or on investments to be made within a given tariff structure), or high on consumer tariffs, depending on the way that the bidding process is organised (see the Annex for a discussion).

Subsequently this contractor would have the incentive to make efficiency gains in order to generate extra cash (tariffs are fixed in this scenario). In effect, the contractor would be charging a substantial risk premium (showing up as a low bid *ex ante* and high profit *ex post*) for bearing the risk associated with efficiency gains. Such a premium would erode the benefit of private participation from the point of view of the municipality and consumers (who do not see the benefit of efficiency gains).

Economic questions aside, if there is no visible benefit of private participation to these parties, then from a political point of view the legitimacy of the process is open to question.<sup>12</sup> If the benefit is predominantly enjoyed by the private company (as it would be in this situation), the likelihood is for politically motivated actions to tax excess profits. The anticipation of such events by private investors raises the cost of capital relative to a system where a more equitable sharing of benefits is achieved.

Finally, it is questionable whether it is feasible to fully specify a contract in the manner above. A contract to remove all uncertainties over the future – to provide a mapping from every possible state of the world to a price for consumers – would likely be prohibitively expensive from the point of view of transaction costs (i.e. writing the contract). From a practical point of view, it is impossible to anticipate every possible state of the world, and there is no guarantee that a contract designed to fulfil this objective would actually cover all realised outcomes. In these circumstances, a less fully specified contract may be desirable.

### ***Price cap regulation***

An alternative mechanism is *incentive* or *price cap regulation*.<sup>13</sup> This is more attractive from a risk allocation point of view than the straightforward indexing approach above, while it maintains incentives for efficient performance, the benefits of which are passed on to consumers. Under incentive regulation, prices are set on a forward-looking basis, typically for

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<sup>11</sup> The discussion in the paper focuses on tariff rules rather than, say, investment rules. This is because tariff rules provide the main vehicle for incentivising contractors and sharing benefits of good performance with consumers (which two are the main subject of the paper).

<sup>12</sup> Van den Berg (2000) outlines problems that can occur when the benefit of private sector participation does not accrue to key stakeholders, focusing on the case of municipal service provision in Argentina.

<sup>13</sup> This type of regulation was developed in the context of utility privatisation in England and Wales. It has been used in transition countries in the Czech Republic (see Box 1 below). It has been used also in Argentina (see Crampes and Estache, 1996), Chile (see Shirley et al., 2000), and Sydney (see Chapman and Cuthbertson, 1999).

a period of five years in developed market economies and longer (say seven years) in emerging market economies. Prices are set so that revenues will cover costs over the forecast period (the calculation is in present values and in real terms). Once the price has been set, the incentive for the regulated company is to reduce cost in order to increase profit. When prices are once again reviewed (e.g. after five years), forecast costs will be lower than in the previous period to the extent that efficiency gains were made.

A definition of cost is required here: in the context of BOTs and concessions, where investors put money into companies, prices must be set so that revenues cover both operating and investment-related costs. Regarding the latter, this can be contentious in practice. The standard approach is that investors are allowed a return on a notional asset base. The definition of the return used is usually the weighted average cost of capital (WACC), defined as the average cost of country-specific debt and equity finance (based on market information) weighted according to company gearing. The notional asset base is called the *Regulatory Asset Base* and can take a range of starting values (above whatever the investor initially puts into the company and below the asset book value) which are then updated as investments are undertaken.<sup>14</sup>

Tariffs are adjusted from year to year according to inflation. In addition, adjustments within review periods (i.e. before the periodic review after five years when revenues and costs are re-balanced) are allowed in order that revenues continue to cover costs if the out-turn for exogenous variables differs from forecast at the time of the price review. The key variables here are demand and the real exchange rate. For example, as demand increases revenue will rise faster than cost where price is in excess of variable cost, and prices may be adjusted down to reflect this. If there is a real exchange rate depreciation, then tariffs will be insufficient to cover debt service, and thus must be revised upwards.<sup>15</sup>

A key area in incentive regulation relates to the *efficiency* or “X” factor set during a price review. In setting prices to cover cost, a regulator might forecast potential cost reductions and factor these into the revenue calculation. One way to forecast potential cost reductions in the water industry is to use benchmarking (i.e. analysing performance relative to similar companies). The “X” factor is the annual efficiency gain – measured as a percentage cost reduction – that the regulator sets as a target for the regulated company through the price cap. It applies for the period of the price cap (i.e. five years) and is re-set during a price review. Failure to make the target gain will result in a realised return on equity less than the equity. Out-performance – making efficiency gains over and above the target (and the incentive for the company is to out-perform) – will result in a return on equity above the cost of capital.

Though X factors are commonly used in developed market economies, this adds risk to the process of regulation because the level of potential efficiency gains is difficult to estimate accurately. This is particularly important in the case of transition economies because: (i) there is a multitude of other risk for investors; (ii) the ability of regulators in transition economies to accurately calculate the X factor may be limited, due to constraints on information flow (e.g. on the relative performance of companies) and/or institutional capacity (e.g. how to process this information); (iii) setting of the X factor provides scope for regulatory discretion which may be exploited to further political objectives.

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<sup>14</sup> See Grout and Jenkins (2001) and Vass (2001) for a discussion of the regulatory asset base.

<sup>15</sup> This is the appropriate risk allocation where local currency markets are not developed and exchange rates are volatile (e.g. CIS countries). Moving further west, there may be some countries where it is appropriate for the contractor to bear exchange rate risk (e.g. Poland).

Given these factors, X may best be set (close) to zero, at least where private participation is new and regulatory frameworks untested (i.e. for the first and possibly the second price periods). With zero X, companies will have the incentive to make efficiency gains which can then be passed on to the consumer at the price review; in present value terms, the bulk of an efficiency gain occurs after the first five years. Setting a higher value of X, thus increasing the likelihood that the target is unreachable, is likely to reduce investor appetite for participation, and to raise the cost of capital unduly.

### ***Profit-sharing regulation***

An alternative to price cap regulation which preserves incentives for efficient performance but claws back the benefits more quickly than at the five-year review is *profit-sharing* or *sliding-scale* regulation.<sup>16</sup> Under this type of regulation, any profit earned in excess of the cost of capital is shared between the regulated company (which keeps some of the excess profit) and consumers (who enjoy reduced tariffs). A straightforward way to implement this is to reduce tariffs as operating costs are cut.<sup>17</sup> Profit sharing implemented in this way can be equivalent in present value terms<sup>18</sup> to price cap regulation without X factors; it is less risky from an investor perspective than price cap regulation in that it rules out the possibility of setting an X factor in the future (for example, at the first price review).

Profit sharing may actually be implemented in tandem with price cap regulation – profits within review periods are shared between the regulated company and consumers – including the setting of X factors. Introducing these elements does, however, increase risk (in the case where an X factor is set) and reduce incentives to improve performance (because related payoffs are lower than under pure profit sharing / price cap regulation). Having said this, a profit sharing – price cap methodology has been introduced in one transition economy (see Box 1 on the Czech Republic).

### ***Incentives for service quality***

One danger under price cap regulation is that regulated companies cut costs through reducing service quality. In order to prevent this the concession should incorporate service quality standards. Monitoring should be carried out and incentives should be in place in the form of fines for failure to reach quality standards. Likewise, it may be desirable to encourage out-performance of service quality targets by providing rewards for this in the form of higher tariffs. The number and type of quality standards in a contract should vary according to the challenges in particular municipalities (e.g. treatment standards, levels of connection and reliability will feature more where there is a deficiency in these respects). The number of quality standards should be limited to the extent possible with a view to keeping monitoring costs down and minimising the potential for regulatory bureaucracy and dispute.<sup>19</sup>

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<sup>16</sup> See Burns, Turvey and Weyman Jones (1998) and Mayer and Vickers (1996) for a discussion of this type of regulation.

<sup>17</sup> Though this does not share benefits associated with improved efficiency in investment, it avoids problems of finding the appropriate measure of profit.

<sup>18</sup> That is, in the share of the present value of efficiency gains that ensues as benefit to the consumer.

<sup>19</sup> In the England and Wales water industry, the key service quality targets relate to: raw water availability, pressure of mains water, interruptions to water supply, water usage restrictions, flooding from sewers, response to billing enquiries, response to written complaints. These are presented in full in OFWAT (1996).

### **Box 1: Private sector participation in the Czech Republic**

Brnenske Vodarny a Kanalizace (BVK) leases and operates the water and sewerage system in Brno, the second-largest city in the Czech Republic. BVK is a joint-stock company and was formed in 1992. In 1993 Suez Lyonnaise Des Eaux (SldE) purchased 39% of the shares in BVK under a negotiated deal (i.e. not through a process of competitive bidding); remaining shares were owned by the city (51%) and private Czech investors. Regarding corporate governance, BVK has a six-member board, with three members selected by the city, two by SldE and one by the Czech investors. Of the three managers, one is selected by SldE. BVK is undertaking an €80 million investment programme to upgrade water treatment to EU standards. This is financed through €50 million EBRD debt, €10 million equity from the city and SldE, with the remainder comprising internally generated cash and EU grants.

Prior to approval of the investment programme, BVK's contract with the city was extended for a period of 25 years. This provided an opportunity to introduce a new tariff formula which would share the benefits of private sector participation with consumers. Tariffs are set on a forward-looking basis over a period of five years. The (five-yearly) tariff review process involves the setting of a base tariff which allows the company to cover its cost in the first year after the review. In subsequent years, the base tariff is updated to reflect inflation. In addition, the tariff is increased as investments are undertaken, with full cost pass through of debt service (principal and interest) and a return on equity equal to the cost of capital for local currency investments. Each year tariffs are adjusted to compensate for differences in forecast and out-turn demand, and reduced to reflect forecast efficiency gains (i.e. there is an "X" factor set at the time of the five-yearly review). Tariffs may be adjusted where there is a substantial difference between forecast and out-turn operating cost where this does not result from actions under the control of BVK. Where the company is responsible for changes in operating cost (reductions or increases) these are shared with consumers through tariff adjustments based on a sliding scale formula (i.e. benefits are shared between BVK and consumers according to a pre defined ratio).

This contract fixes the real tariff for BVK over five years and provides incentives for operating cost reduction which, other things being equal, will increase net cash flow. From a risk allocation point of view, the contractor bears exchange rate risk, which is appropriate in countries where local capital markets are well developed. The consumer, on the other hand, bears demand risk, which is appropriate to the extent that demand is exogenous, a reasonable assumption in the case of the water industry. From a benefit-sharing point of view, consumers stand to benefit from private participation in a number of ways: through price reductions according to forecast efficiency gains; through the sliding scale tariff adjustment if forecast and out-turn tariffs differ; through realignment of tariffs with costs to reflect efficiency gains at the five-year review).

To the extent that investment and standards are related, target setting can provide incentives to undertake necessary investment. Given the lag between investment and impact on performance, direct monitoring of the investment programme is typically undertaken, with deviation from forecast investment (agreed at a price review) reflected at the subsequent price review (for example, if there is an investment under-spend, or if physical investments are limited relative to targets and the investment programme has gone over budget, prices might be revised downwards).

#### ***Cost plus regulation***

An alternative to price cap regulation is *cost plus*<sup>20</sup> regulation. Under this mechanism, tariffs are reset on an annual basis so that revenues and costs, including a normal return on capital, are equal. The incentives here for efficiency improvement are weak because any increased profit that would result from a cost reduction is taken away from the company at the time of the price review. Though the regulator can set targets for efficiency improvements (this is similar to setting the X factor in price cap regulation) this is risky, particularly in transition

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<sup>20</sup> Alternatively known as *cost of service* or *rate of return* regulation, discussed – and compared with price cap regulation – in Armstrong, Cowan and Vickers (1994).

economies. Furthermore, companies do not have an incentive to beat the target. Finally, the annual price review required under cost plus regulation is costly to undertake, and may provide a more unstable environment relative to a situation where prices are reviewed every (say) five years (there are five times the opportunity for dispute under cost plus regulation).<sup>21</sup> For these reasons (lack of incentives under cost plus together with large potential for efficiency gains, and risks associated with frequent price reviews), price cap regulation is more suitable than cost plus regulation in municipal regulation, particularly in transition economies.

### ***Regulatory institutions***

Key to the regulatory framework is the institutional set up within which the rules outlined above will be implemented.<sup>22</sup> The fact that there is discretion for a regulator in setting prices at the time of a review opens the possibility of regulatory / political risk. For example, the regulator might underestimate the cost of capital with a view to holding prices down for political reasons, or set over-ambitious targets for cost reduction / service quality improvement, or claw back profits. In a context of profit sharing (or cost plus) regulation there is risk associated with tariff adjustments, for example, over whether to allow increased tariffs following an increase in operating cost, or an overspend in the investment programme, or when demand out-turn is below forecast.

In order to reduce the risks associated with these types of action, it is necessary to distance regulation from the political process. Failure to do this will result in a higher cost of capital that will show up in the form of higher tariffs. Lower cost of capital / tariffs can be achieved by distancing regulation from politics, typically achieved through setting up an independent regulator.

There are various criteria for assessing whether a regulator is independent. An independent regulator should be appointed for a fixed term, with dismissal only possible in a narrow range of circumstances. Funding for an independent regulator should come from the regulated industry (through licence fees, for example) rather than from a government budget. An independent regulator should have the power to approve tariffs without sanction from government officials. Ideally a regulator will publish the thinking behind key decisions, with investors allowed to challenge these decisions through recourse to third parties and the judiciary.

These criteria as presented above are abstract as regards industry and/or country. They may be applicable in the case of municipal industry regulated at the national level (as is the case in England and Wales). Where regulation is at the local level – usually the case in transition economies – this type of independence may not be feasible. Though a separate local regulatory unit might be set up, with funding through (say) a concession fee, it is unlikely that such a body would have the requisite expertise to carry out a price review to the standard required either by an investor (for example, as regards benchmarking, or calculating the cost of capital) or – in the case of a disputed review – upon which a third party could make a recommendation. In addition, though on paper a regulator might seem to be independent, this

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<sup>21</sup> Problems associated with frequent reviews led to calls from international investors for the introduction of a long-term tariff methodology which has since been developed by the sector regulator with support from the EBRD, see Kennedy (2002).

<sup>22</sup> Levy and Spiller (1996) discuss regulatory institutions (which they refer to as *regulatory governance*) at length.

is unlikely to be the case *in practice*; a local level regulator is likely to be more subject to *capture* by local politicians than a national regulator.

In this event, other mechanisms for independence may be brought into play. One such mechanism is to bring in international consultants to carry out a price review according to the price methodology laid out in the contract. To the extent that one of the parties rejects prices proposed by the consultants, then there may be recourse to an independent third party. A cost effective and flexible option here is to have a panel of independent experts make a recommendation; rules for appointing this panel can be written into the contract. If the parties still cannot agree following recommendation by the panel, then the dispute may be referred to international arbitration;<sup>23</sup> both models have been used in the case of Bulgaria water sector privatisation (see Box 2 below).

### **Box 2: Bulgaria water sector privatisation**

The Sofia water and waste-water system is run by Sofijiska Voda AD, a company with 51% international ownership – a consortium of Bechtel, Edison SpA and United Utilities – and 49% municipal ownership. The private sector owners were selected through a competitive bidding process with the key bidding criterion being base tariff (i.e. the bidder offering to supply water at the lowest tariff was selected). The company has a 25-year concession starting in 1999. Related to this is an investment programme of around €90 million to be implemented by 2005, including finance of €30 million by the EBRD and €12 million in equity by the company shareholders.

One key element of the concession is the tariff formula. This updates a base tariff according to changes in input costs through indexing on inflation, the exchange rate and the power price. In addition, a list of inputs are specified (e.g. raw water supply), changes in the price of which trigger a tariff adjustment. Tariffs are adjusted to reflect changes in capital cost and differences between forecast and out-turn demand. Incentives under this contract to reduce both operating and capital costs are strong given that real tariffs are fixed. The danger here is that, in the absence of a periodic price review, the benefit of efficiency gains accrues solely to company shareholders. In recognition of this, there is a profit-sharing mechanism, which allows tariffs to fall (by 25% of the value of the excess cash) when there is excess cash (resulting from cost reductions) in the company.

This tariff mechanism minimises potential for dispute through the absence of an “X” factor and a periodic review. Regulatory risk is further reduced through design of the institutional setting for enforcement of the concession. The concession is overseen by a specially designated monitoring unit – a quasi independent body – within the municipality. Though this is helpful in de-politicising the process of contract enforcement, it cannot be fully effective in this respect. Should a contract dispute arise, both parties have recourse to a dispute resolution committee: a three-person body comprising international experts. This is a cheap alternative to international arbitration, something to which parties have recourse should the dispute resolution committee not be successful.

If regulation is to be at the local level, the question arises about how this should interact with evolving national regimes (for example, national regulators are being set up in Romania and Poland). It would be desirable for regulation to revert to the national level if the national regime were independent and well functioning. The problem here is that there are no examples of *model* regulators in transition economies in any of the infrastructure industries.<sup>24</sup> Thus moving to a national regime and replacing recourse to international arbitration with recourse to a national competition authority or judiciary would increase risks and would

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<sup>23</sup> The effectiveness of arbitration as a sanction against adverse regulatory behaviour was demonstrated in the case of Kazakhstan, where the government paid a substantial financial settlement to an international investor prior to a scheduled arbitration hearing – see Kennedy (2002) for more details.

<sup>24</sup> Stern (2002) comes to this conclusion in the context of the power sector, the regulation of which is most developed from all the infrastructure industries in transition economies.

therefore not be desirable. In this situation, the national regulator might better play a role in setting broad policy parameters for regulation and providing information on relative performance to be used in benchmarking exercises.<sup>25</sup>

### **2.2.2 Management contracts**

The discussion so far has focused on concessions and BOTs. These are not always appropriate forms for private participation, for example, where risks are high and thus appetite from investors is limited as regards funds that they are willing to commit to a municipal company (e.g. through payment of a concession fee or financing of an investment programme). Then a management contract (which does not require a financial outlay by the contractor) can provide a means of introducing the private sector by reducing down-side risks (for example, that required equity returns are not achieved). Management contracts often mark the first step in municipal commercialisation towards deeper participation by the private sector in the form of a concession, and can often yield significant operating performance gains.<sup>26</sup> They are currently being introduced by the EBRD to municipal water and waste-water companies in Ukraine.

#### ***Price cap regulation?***

Management contracts may incorporate performance incentives, though typically not through price cap regulation. Under concessions, tariffs are set so that revenues cover forecast cost under assumptions on performance. In the event of under-performance (e.g. an upward drift in cost) the regulated company remains financially viable (able to cover operating cost plus debt service) because the tariff contains a component for return on equity; failure to meet the performance target results in a return on equity below the market level. The incentive then is for company shareholders to make sure that managers meet performance targets.

In the case of management contracts, typically there is limited equity (in the sense that discounted cash flows do not exceed operating cost plus debt service). Regulation through a price cap methodology would therefore jeopardise financial viability through failure to meet performance targets (absent the *equity cushion*, i.e. the possibility of lower equity returns). Though a way around this would be to allow tariff adjustment for failure to meet performance targets, this would undermine incentives; managers would anticipate an adjustment following poor performance and thus restrict their effort to perform well. Moreover, given the absence of significant equity, there is no need to engage in the costly and contentious activity of determining the appropriate equity return, something which is required under the price cap methodology.

#### ***Performance-based payment***

More straightforward than invoking price cap regulation to strengthen performance incentives is to link remuneration under the management contract to performance as regards cost, for example, increasing payments under the contract in line with operating cost reductions (much in the same way as the profit-sharing methodology discussed above). If such payments are guaranteed by the municipality (i.e. they do not rely on the cash flow [tariff] of the company),

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<sup>25</sup> Roche and Johannes (2001) discuss the balance between local and national regulation in the French water industry. They argue that the national regulator should not supersede local regulation and rather should play an advisory role in the context of contracts between parties at the local level.

<sup>26</sup> Marino et al. (1996) discuss a situation where a management contract resulted in improved performance.

then regulatory risk is reduced relative to writing a tariff formula into the management contract; this would show up in the form of lower management contract fees (and thus lower consumer tariffs). These arguments underpin the typical management contract design witnessed in practice, where payments comprise a fixed fee plus a performance-related component.

As in price cap regulation, there is an issue over whether to incorporate an efficiency factor into management contract performance targets. A contractor might be rewarded, for example, for meeting pre-agreed targets for cost reduction (*X factors*). The problem here (just as in price cap regulation) is how to set targets.

Though there are methods for doing this – benchmarking, for example – this cannot provide a precise figure as regards what is achievable in terms of performance. Imposing a figure on a contractor adds risk relating to whether performance-related pay will be realised, more so as the target is higher – and as a result raises the fixed fee component of the contract (through the contract bidding/negotiation process). Uncertainties over whether targets can be reached or significantly beaten also reduce incentives to perform efficiently (if it is not clear that a target can be beaten, then the effort that would be required to test this is not warranted). To the extent that there are still incentives to pursue efficiencies, performance-related payments on top of the relatively high fixed fee raise the total cost of private sector participation to the consumer.

The alternative, linking payment under the contract to efficiency gains without specifying these in advance (i.e. setting the X factor [close] to zero) does not involve the same risk for a contractor, but does provide incentives for cost reduction, and should be preferred on this basis.

As in the case of the concession, there is the possibility that cost reductions might be achieved at the expense of service quality reductions; this can be countered through factoring service quality targets (minimum standards to be achieved before performance-related pay is triggered, or for which failure to meet results in a fine) into contracts. Also as in the case of concessions, there may be regulatory disputes, and it is desirable to make the process of dispute resolution independent through providing recourse to investors. Actually regulatory disputes under management contracts should be limited relative to concessions given that the management contractor is not subject to risks related to tariffs. Nevertheless, there are still potential areas of dispute (e.g. whether failure to meet a service quality target is the fault of the contractor or is due to exogenous factors) and recourse to (an independent panel and/or international) arbitration is typically available in this situation.

### 3. SERVICE CONTRACTS

It is likely that public sector municipal companies in transition economies will not reach levels of efficiency to match the private sector. This is both because there is no competition – and the related spur that this provides – in the process of service contract allocation, and because the incentives for/ability of insider managers to pursue productivity gains are likely to be weaker relative to a situation of private sector participation.

Notwithstanding this, the evidence suggests that gains can be made within the public sector, depending on how service contracts are designed and the performance incentives that they provide.<sup>27</sup> It may be the case that these gains are sufficient to justify contracting in a public sector context rather than introduction of the private sector. This is likely to be true where municipal companies are well managed and/or small (in the latter, the private sector may have no interest in entering). In either situation, the additional benefit from introducing the private sector might not outweigh the associated transaction cost.

Where there is some doubt over whether to introduce the private sector, introduction of a service contract can provide a first step in this direction. If the management of the municipal-owned company performs well under a service contract, then there may be no need to introduce the private sector. If performance is lacking, however, then the private sector may be introduced in one of the forms above (concessions, management contracts). The experience gained by the municipality through enforcing a service contract could support successful introduction of contracts with the private sector. The service contract might also provide a basis for private sector contracting, with costs of introducing the private sector being reduced relative to a situation with no service contract in place.

Incentive-based contracts for private sector participation provide a benchmark for the optimal service contract. The important point here is that private companies pursue profit maximisation as an objective whereas municipal companies in transition economies do not (or have not in the past). One way to proceed would be to change incentives within the municipal company towards profit maximisation. Such incentives could be written into a service contract or articles of association of the municipal company in the form of overall objectives (*e.g. the company will act to maximise profit, subject to constraints on service quality*), and through clauses either in the service contract or articles of association or employment contracts relating to rewards for managers (for example, *managers will be paid according to profits made by the company*). Given these incentives, then it would be feasible to mimic the situation with private sector participation by writing a price cap tariff mechanism into the service contract.

Proceeding this way would jeopardise financial viability of municipal companies and involve needless expense given the typical lack of equity (as in the case of management contracts above). In contrast to the case of a management contract (where investment is limited) a tariff methodology should be included in the service contract to support required investments. It would suffice here for a methodology setting tariffs to cover operating cost plus debt service (i.e. without a return on equity), with adjustments to allow continued viability in the event of poor performance.

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<sup>27</sup> OECD (1999) presents evidence suggesting that service contracts provide weak performance incentives in practice. Xu and Shirley (1998) argue that contract design is crucial in determining the success of service contracts, and cite examples where service contracts have spurred performance improvements.

This leaves the question of incentives, which could be provided (again, as in the case of the management contract) through remuneration linked to performance (for example, bonuses for achieving cost reductions). This may be more legitimate than profit-related pay to the extent that maximisation of profit is not regarded as an acceptable objective for a public company. It is likely to be legitimate if it is successful in spurring managers to improve performance, with resulting lower prices.

Regarding which cost should be linked to remuneration, it would be most straightforward to focus on operating cost. Given that much of the inefficiency in transition economy municipal companies relates to operating cost, linking remuneration in this way should provide incentives to realise the bulk of potential performance improvements. Regarding (new as opposed to maintenance) capital cost, it may be sufficient that investment programmes are developed and implemented in conjunction with international experts, for example, through a project implementation unit. Incentives could be strengthened here through linking remuneration of managers to achievement of milestones laid out in the investment programme and/or related contracts.

The split between performance and tariffs would allow the setting of targets for cost reduction without jeopardising company financial viability. Whereas above it was argued that targets in the case of management contracts could result in higher contract fees, this would not be the case in a public sector setting where the manager is not negotiating a flat fee with the municipality. In favour of targeting for municipal-owned companies, this could strengthen incentives relative to a situation of no targeting by providing a benchmark against which to judge management performance, and could be useful in a context where it is not a given that managers will ably pursue cost reduction even in a context of performance-related pay.

Targeting costs may be the *only* mechanism<sup>28</sup> to affect performance in a context where performance-related pay is not feasible, either legally or for political reasons. Then a stick rather than carrot approach is required, with failure to meet targets resulting for managers in financial penalty (e.g. through posting a bond which is subject to possible forfeit, or through a pay cut) or job loss or contracting out of services to the private sector.

One problem with this approach (already mentioned) relates to the setting of targets and specifically to the fact that it is not clear what level of performance may feasibly be achieved. Setting low targets with a view to raising these following good performance would undermine incentives to perform well. The temptation is then to set high targets – relative to a situation with performance-related pay, where there is an incentive to beat low targets, and thus less of a problem setting targets low – which might be unachievable; this would undermine management incentives.

A second problem relates to behaviour of boards *vis-à-vis* penalising managers, in particular, whether insider managers would *actually* be replaced, or services contracted out, for poor performance in practice. This risk can be partially mitigated through contract design, with clear clauses somewhere in the contract framework (in the service contract or in managers' employment contract) relating to remedial action for failure to meet targets, and through choice of board members (who should not have prior connections with the management, and should be well educated and politically neutral).

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<sup>28</sup> The alternative would be to rely on managers' public spirit to motivate them in the pursuit of efficiency gains. Evidence suggests that this is not likely to be successful, and is the whole reason for introducing other incentive mechanisms (through commercialisation, private participation, regulation, etc.). Publishing poor results might strengthen motivation in this respect, though there is limited evidence on whether this is effective in practice.

As in the private sector case, any mechanism which aims to reduce cost risks doing this at the expense of service quality reductions. To mitigate this risk, service quality targets should be written into the service contract. As regards independence in the process of regulation, as in the private sector case, independent experts might be employed to help set targets. This process will be less contentious than setting parameters in a concession given the less complex tariff mechanism. Compared with a management contract, public company managers will require less in terms of rewards and security (relating to the level of certainty associated with payment of awards) to attract them to a particular company.

In light of these facts, the arguments used for invoking arbitration are weaker in the case of a service contract. It might actually be difficult in practice for municipal company owners to allow a situation where they could potentially be subject to arbitration. To the extent that the contract should be *legally* rather than *morally* binding in order that the company has greater bargaining power (say over tariffs required to support an investment programme, and cash set aside for management remuneration), greater legal weight might be achieved either through international financial institution loan covenants (e.g. that the service contract is implemented) and evolving national (particularly regulatory) legislation (which might require legally binding service contracts). In this scenario, safeguards to protect the positions of company board members would be required in order to prevent the owner from replacing the board in the event of a dispute.

## 4. CONCLUSION

This paper has reviewed models for private sector participation in the water and waste-water sector and provided examples from transition countries. It has advocated that incentive-based regulation with benefit sharing is both desirable and feasible for transition economies.

Two forms of incentive regulation – price cap and profit sharing – were considered in a context of private sector participation through concessions. It was argued that either mechanism can provide appropriate risk allocation and incentives for efficient performance. The key point lies in the design of the regulatory rules: these should provide flexibility in an uncertain world, while at the same time limiting the extent of regulatory discretion. Well specified adjustment mechanisms together with cautious targets for cost reduction can fulfil these dual objectives.

In a context of management contracts, price cap/profit sharing mechanisms are less appropriate given financial vulnerabilities. A more straightforward linking of remuneration to operating cost can provide strong incentives for efficient performance. As in the case of price cap/profit sharing, regulatory discretion as regards the setting of targets for cost reduction should be limited in order to mitigate regulatory risk.

Under both concessions and management contracts, regulatory risks can be further mitigated through making the process of regulation independent, this through providing recourse for investors to panels of experts / arbitration.

Following the positive experience of private sector participation in Bulgaria and the Czech Republic, the EBRD is developing projects involving management contracts in Ukraine, and concessions in Croatia and Romania.

For countries where private sector participation is not necessarily economically desirable, incentive-based service contracts were recommended, at least as a first step towards deeper commercialisation, with links between management remuneration and operating cost, as in the case of management contracts. Regulatory independence is likely to be harder to achieve in a public sector setting given the practical difficulties associated with invoking arbitration in this case. Nevertheless, gains are likely to accrue under well-specified contracts. With this objective the EBRD is supporting the introduction of service contracts in its water / waste-water projects in Romania, Poland and Russia.

## ANNEX: TYPES OF BIDDING PROCESSES

This annex characterises alternative bidding processes that may be used to award a concession, BOT contract, etc. The mechanisms considered vary according to the bidding variable. Bidding might be on the basis of fees, investments, consumer prices, or a combination of these. The appropriate bidding variable is typically normative rather than positive; it determines the distribution of benefit between consumers and taxpayers from private participation. Whatever bidding variable is chosen, the key to ensuring an efficient outcome (in terms of selecting the best company for the contract, and limiting this company's above-normal profits) is in having well specified tender rules and a competitive / transparent tender process.

### *Bidding a fee*

In a tender process based on bidding a fee, bidders should be provided, *inter alia*, with required service standards, investment rules and price rules (see Section 2.2 above). The bidder is then able to calculate the discounted cash flow associated with the contract. In a context of competition, each bidder should be prepared to pay (just below) this amount (their individual forecast cash flow) in return for winning the contract. The winning bidder will then be the one that has the highest forecast cash flow (based either on the fact that it has the lowest cost or that it has mis-forecast the cash flow [underestimating cost and/or overestimating demand]). An amount equal to this forecast is paid to the tendering authority.<sup>29</sup>

In this type of auction the benefit from private participation – that is, forecast efficiency gains, reflected in forecast cash flows – goes to the tendering authority rather than the consumer.

This can be changed by requiring that service standard increases are achieved at current prices. Such an innovation would add uncertainty to the bidding process (associated with the cost of improving service quality) and thus reduce the benefit of private participation (because associated cash flows are more heavily discounted) to the tendering authority / consumer. Nevertheless, this could be a favoured option where the private sector is being introduced specifically to improve service quality.

Another way to rebalance benefits between the taxpayer and consumer is to quantify a level of required investment to be undertaken at current prices. This might be attractive when investments are required and affordability is a concern. The danger here is of ex post over-investment relative to what is economically desirable, and to mitigate this the specified investment level should be modest. Alternatively, and again to ease affordability constraints, X factors may be incorporated into price caps with investment-related costs passed through to consumers (see Section 2.2 above).

In any event, the bidding rules should be clearly specified: if this is not the case, then forecast cash flows become more uncertain. At best, this will reduce the benefit of private participation to the taxpayer / consumer (in the form of lower fees paid, or higher consumer prices). At worst, poorly specified rules provide scope for corruption, resulting in award of a contract to an inefficient bidder at an un-competitive price. The uncertainty associated with poorly specified rules may dissuade potential bidders from bidding for a contract, and thus result in the failure of the tendering process.

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<sup>29</sup> For a full discussion of auctions and bidding see McAfee and McMillan (1987).

### ***Bidding on price***

Rather than setting investment levels or X factors, benefit from private participation can be passed *in full* to consumers through tendering the contract on the basis of bid end-user prices. In this type of auction (called a *Chadwick-Demsetz* auction), bidders bid a base end-user price at which they would be prepared to provide supply; this should be such that forecast discounted cash flow is (close to) zero. The winning bidder is the one that quotes the lowest price. This would prevail in the initial period of the contract, and would be updated according to pre-specified price rules (according to inflation, investments, etc. [see Section 2.2 above]).

### ***Bidding on investment***

Another mechanism for passing benefit to consumers is through bidders bidding on the level of investment that they will undertake within a fixed end-user price; this may be appropriate when substantial investment is required and affordability is a concern. Bids should be close to or equal the forecast discounted net cash flow (excluding investment cost).

A potential problem here is that the cash flow of the company may exceed required investment – in which case there could be over-investment – though this is likely not to happen in transition economies where tariffs are low relative to long-run cost. If this were to be a problem, then some of the promised investment could be returned to the consumer in the form of lower prices.

Finally, if investment pledges are to be made, then these should be backed up by guarantees from the bidders; in some cases companies have won contracts and later reneged on investment commitments.

### ***Bidding on more than one variable***

In some cases contracts are auctioned on the basis of multiple bidding variables. For example, bidders may bid a combination of a fee and a level of investment. If the auction is to be organised this way, then it should be clear what weights will apply as regards assessment of bids. If weights are not public knowledge, then this is confusing for bidders, and provides for non-transparent – possibly corrupt, probably un-competitive – contract award. The difficulty then is in setting the weights to achieve the desired outcome in terms of balance between fee income and investment. In light of this, an auction based on fees only with a specified investment level may be preferred.

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