An Overview of Electricity Tariff Regulation

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According to neoclassical economic theory,competition creates economic efficiency, which in turn result in the optimal prices and allocation of resoaurces across the economic. In practice ,though,competitive markets do not work perfectly,or may be altogether impractical (i.e.in the case of "natural monopolies" such as network infrastucture like roads and transmission lines). Moreover,certain economic activities are accompanied by externalities,which are impacts of the activity that are not included in the market price.Pollution is a commonly cited externality.

I. The Purpose of Regulation

GIVEN that markets do not work perfecly,governments intervene through regulation to compensate orcorrect market failures to protect the public good. Government regulation of the business falls into three main cartegories:

(i) Anti-trush laws that prvent firm from reducing competition through collusion or predatory pricing.
(ii) Regulation of prices and conditions of entry,for both natural monopolies and more competitive markets.
(iii) Quality-of-life regulation concerning welfare,health,safety,and Working conditions.

In the electricity business, generation and retailing (i.e. the customer interface) can be oper.ed as competitive markets, while transmission and distribution (the"wires business") are seen as natural monopolies. Power sector regulation covers allthree categories described above.

Electricity tariff regulation is subset of power sector regulation that falls into last two categories. It aims to ensure that electricity consumers pay a"fair" price (i.e. similar to the disadvanteged social groups are protected.We refer to these concerns as regulation of price level and price structure,respectively.

II Prevailing Models for Regulation of Price Levels

There are two principal forms of alectricity regulation practiced in the world today: price-cap and rate-of-return.

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Price-cap regulation is generally viewed as a relaticely recent form of regulation,and is most frequenly associated with the ongoing regulatory reform and privatization in the United Kingdom. In contrast,rate-of-return regulation is the most commonly used form of utility regulation in the United States,and has been in use for decades. Both form of regulation,however,attempt to accomplish the same goal:to reduce the power of natural monopolies to restrain output,raise prices,and realize above-normal profits. In theory,the way the two regulatory methods accomplishes these goals differs considerably. In practice,howevwe,the methods have tended to converge.

Rate-of-return regulation is also called coat-of-service regulation in that it essentially allows companies to pass through those costs which are deemed necessary by the supervising regulatory body to ensure that an adequate level of service is provided to end users.During periodic regulatory reviews, expenditures that are deemed appropriate by the regulatory body are added to the rate base,i.e.the total amount of approved costs that are to be recovered by the tariffs. In order that appropriate levels of capital invesment are undertaken., supevising regulatory bodies (in United States, these are generally State publik utility commission) estimate appropriate rates of return for the regulated utility, based in part on the cost of capital to utility.

Rate-of-return regulation has both iy's virteus and it's weaknesses. Rate-or return regulation allows representation of the publik in matters regarding utility priece setting, rates of return, and invesment so that utilities cannot restrain supply and realize monopoly profits. However, rate-of-return regulation affer utilities few financial incentives to aggressively restrain or reduce operation costs.

Price-cap egulation has been the common means of regulation for the recently privatized industries in the United Kingdom. For several reason, rat-of-return regulation was rejected expensive effort that would require a large bureaucratic structure. Further, it was felt that obtined from the regulated industry was always incomplete relative to ingformation possessed of industry, leaving the regulator in an inferior negotiating position relative to that industry. Moreover, as state earlier, rate-of-return regulation offered insufficient incentives for the utilities themselves to reduce cost aggressively.

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To avoid these problems, the United Kingdom adopted what was felt to be a hands off, lessbureaucratic, regulatory method based upon price caps and periodic reviews. This new from of regulation often goes by the name of RPI-X. RPI-X regulation is also often called.

"Performance-based regulatio" in that it seeks to achieve ecconomic efficiency through altering the incentive structure of tha industry.

In essence, RPI-X employs price

caps which allow individual utilites (or companies) discretion over all invesment and operating decisions. In contrast to rate-of-retur regulation, utilities in the United Kingdom realise all gains from efficiencies achieved beyod the esthablished benchmark up until the net regulatory review. RPI-X regultion has not only been employed in the electriciy sector but also has been applieed to recently privatized telecomunications, natural gas, and water industries. For expository purposes, ea generalized from of RPI-X price-cap regulation works the following way:

Let us suppose t is our base year and p, are electricity prices in the base year. The RPI in RPI-X regularion represents the change in the retail price index in the United Kingdom andis a measurenment similiar to the consumer price Indeks (CPI) in the United States. X is generally considered to be a productivity factor, which could be positive if hthe industry is expected to aoperate more efficiently in the feature, or negative if efficiency declines are expected. The productivity factor, X, is based upon past performance and projected analisis af future productivity gains. Athird variable (let's call it K) could be added to equation to account instance, an electricity company to directly pass through all cost related to changes in energy priece (makng our equation, assuming efficeency gains, RPI-X+K). This, maximum prices one year hence (Pt+1) shuould equal: Pt=1 =Pr+RPI-X+K.

RPI-X regulation employs a multiyear review cycle. In the United Kingdom,depending on the industry being regulated, the review cycle has typically been from 3 to 5 years. This allows companies to realize the benefits of their cost reduction efforts over a set period of time, or until the next review cycle comes due. Upon completin of the regulatory cycle, the regulator conducts a new review and redetermines new benchmarks both for the initial set of prices and for projected future productivity gains. The regulator is hen able to pass on some of the benefits of the ralized efficiency gains to consumers.

In England and Wales, RPI-X regulation has been applied only to those segments of he industry still deemed natural monopolies (or not ready for complete competition). These segments are basically the wires (electricity transmission and distribution) portion of the business. RPI-X is not applied to the generation of electricity a secor in which the price setting mechanism is the national electricity pool. RPI-X is also currently being applied to electricity marketing for residential users (although this market is scheduled for deregulation in 1998). Prices in the other segment of the industry, generation and non-franchised marketing are in general freely determined in the marketplace.

The chosen base price in the United Kingdom was directly related to the assetvalue at he beginning of the initial regulatory period. The selected productivity factors tended to vary aross segments of the industry, with the transmission companies assigned an initial X of zero. For the twelve distribution comanies, varios X's were applied, varying from zero to a positive top rate of plus 2.5. The franchised supply companies were assigned an initial X of zero. The regulatory cycles for the three regulated industries have varied from 3 to 5 years.

RPI-X is supposed to provide utilities ith a stronger incentive to reduce costs than rate-of return regulation because the utilities themselves realize all the value of the cost reductions made beyond the benchmark. The other supossed advantage of RPI-X regulation is that it is also designed to reduce regulatory costs and provide a disincentive for the regulated to engage in costly activities designed to influence the regulator (an activity called regulatory capture). The visibilty of a single national regulator may also provide for more accessible public scrutiny of regulatory decisions.

However, RPI-X regulation has some clear shortcomints, both theoritical and practical. One problem is calculation of the appropriate initial level of prices. In the united Kingdom, this proved particulerrly difficult because the goverment was also attempting to maximize the value of thiese companies for a sucsessful initial public offering. Lower future elecricity prices would have meant lower immediate gains to the treasury during the public auction of electricity industry assets.

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A second problem involves estimating future productvity gains. In practice, this has proven to be a rather problematic process in United Kingdom. In order a achive the dsired allocation of future benefits achiecved through realizing greater industry efficiency gains, the regulator would still need detailed knowlegde of the industry and future market development in order to come up with a suitable initial price and projected future productivity gains. In additional, X would represent not expected future productivity gains, but rather some theoritical cutoff rate for rate for electric utilities to have an incentive to surpass in order to retain all of the cost reductions benefits that accrue beyond X

Thus far, it terms of economic efficiency, RPI-X has been a clear succes. In the United Kingdom, the RPI-X regulatory approach has inducaced cost reductions well beyond expectations. Electricity companies have been able to gratly reduce operating cost in large part through subtansial work force reductions. As intended, the electricity industry has benefied financially because these cost reductions have made subtantial contributions to the bottom line results. However, subtantial conversy has surrounded the new form of elecricity regulation. In particular, some dissatifiction between the industry's stakeholders. I.e.,investors, labor. And consumer. As a result of this controversy, several of basic tenets pf RPI-X pricing have become have suspect.

III Regulation of price Stucture

Classical economic theory asserts that economic wlfare is maximized when prices are set equal to marginal coast. Any deviation from this optimal level of pricing will lead to economic inefficiencies, with incorrect price signals being provided to buyers ad sellers. Sometimes, however, pricing to particuler costiumer classses may deviae from a marginal cost structure to provide socio-economic benefits to that class. Its is up to the regulatory body determine whether and in what form these deviations (effectively, subsidies) are called for.

Subsidies may be broadly defined *as all measures that keep prices for consumers below the market level, keep prices for producers above the market level, or reduce costs for consumers or producers by giving direct or indirect financial support.* In other words, subsidiesrepresent distortions in prices-whether due to market inefficiencies or direct goverment intervention-which result in incorrect signals being conveyed to producers and consumers.

Subsidies are not inherently "bad" . Ineed, most subsidies are initiated for good and sound purposes. But the impact of public policies must be evaluated independently from the appeal of their goals. Subsidies must be evaluated on whether they actually serve their intendeed purposes, at what cost, and how the costs and benefits are distributed and balanced.

Studies by OECD, the World Bank, and various NGOs have identified that some combination of the following broad objectives underlie most subsidy policies:

- Stimulate economic develoment
- promote sectoral employment and/or invesment
- safeguard domestic supplies
- reduce poverty or support the poor
- provide greate access to basic living conditions

Extensive research from divese groups -including goverment agencies, international lender, and independent NGOs- suggests that many existing subsidy policies do not serve their stated purposes. All too frequently, subsidies for energy production or consumtion contribute little to economic development or helping the poorest segments of society, but rather lead to grater economic inefficiencies. Benefits that might accrue from a subsidy may be neutralized by unintended side-effects. Alternatively, a subsidy may accommodate "free riders", i.e. provide benefits to those who are not the intended beneficiaries. For example, subsidies for road transport encourage overuse of roads, creating pollution and congestion. Water subsidies often disproportionately benefit the rich, while agricultural subsidies are an expensive and ineffective way to maintain farm incomes. In summary, subsidies tend to impose burdents on public budbets while failing to achieve their intended objectives, or at best are inefficient means if realizing the target benefits.

Understanding the perverse impact of subsidy policies on economic efficiency, and even proposing strategies for reform, in often inadequate ammunition to garner political support for change. The many obstacles to policy reform include, among other factor:

- Opposition from vested intersts
- Concern over distributional consequences, and
- Uncenrtainty

Subsidy beneficiaries resist reforms that might deprive them of their acquired advantages. These groups are often more focused tahn "taxpayers" or other broad public contituencies (e.g.,java ratepayers) which ultimately bear the cost of hidden subsidies. Benefits are more visible than widely dispersed and hidden cost. As a result, subsidy beneficiaries are generally more effective in preserving their benefits than groups that would be expected to have an interest in dismantling the subsidies.

Any subsidy reform has winners and losers, and subsidy reform must address the raeal economic interest of the "losers" in order to succeed. Beneficiaries have based their economic decisions on support policies, and have ;ikely grown somewhat dependent on them.

Uncetainty-fear of the unknown-has been reforted as primary force in favor of preserving the status-quo. Even the potential beneficiaries of reform may resists in the absence of clear policy alternatives.

Review of experience with subsidy reform in diverse international setting suggests that the most effective subsidies have the following characteistics:

- *Transparent.* Creating transparency in objectives, administration, cost and impacts of subsidy policies will raise quetions about their effectiveness and existence. Exposing the costs and implications helps to clarify the often implicit choices embedded in hiden subsidy policies.
- *Formally justified.* Subsidies should not be maintained by defauld. Rather, the goverment should be required to regularly justify each subsidy, its effectiveness in achieving its target, and the actual distributiotive impacts of policy. The terms of evaluations should be agreed to in advance. If power sytem privatization is to proceed, the burde of proof must fall upon the goverment -rather than the privatized utility - to justify the need to diverger from market pricing. Goverments can use this opportunity to evaluated the arguments of both winners and losers for given subsidy proposals.
- *Targeted.* Subsidies can be more cost effecive if they are (I) carefully targeted to intended recipients, and (ii) delivered directly to these recipients rather than linked to production, consumtion, or inputs. Direct subsidies are the least distorting in term of their impacts on resource allocation, and benefit recipients far more than more circuitous mechanisms. If the goal is directly reach a target population, direct subsidies are superior.
- *Part of a comprehensive reform package.* Broard-based policy reform, which involves liberaling markets and restructuring sectors to create fair competition, may eliminate the root motivations for many subsidy policies. Financial discipline for the entire economy is essential for the success of any individual sector. World Bank Studies have shown that economic growth deteriorates dramaticaly above a threshold inflation rate of about 40 percent per annum. Interdisciplinary terms of both financial and sector specialist are important in successful policy reform.
- *Properly timed.* Financial crises such as the one currently facing Indonesia should be viewed as opportunities to re-evaluae subsidies these are opportunities to open people's minds toward broad-based reform, including arethinking the costs angd benefits of embedded subsidies.
- *Quickly implemented.* Whatever specific strateges are adopted to eliminate subsidiy distortions, there are competing views regarding the ideal pace of reform. Shock therapy is particularly

relevant where political commitment and social stability are ove time. An advantage of shock therapy is that it may produce result quickly, enabling goverments to sustain political support for reform efforts. The World Bank has reforted that countries in which liberalization succesful than slow reformers. Rapid change as generally resulted in earlier and stronger recovery, and has also produced greater success in the long run.

■ *Phase reform.* Has also proven more appropriate in some cicumstance, particularrly where goverments are consrained by initial conditions, institutional capabilities, historical practices, or cultural attitudes. Goverment must build a constituency that supports required change. Coupled with compensating measures and adjusment schemes, gradual phase-in canhelp to cushion the transaction,and minimize the social cost of removing embedded subsidies. However, phased reform requires a long-term political commitment to adjusment, even in the face of opposition from vested interests.

The funding of social and basic infrastructure service is a critical issue facing all goverments. Many of these services, notably health and welfare services, are focused on the poore sement of society, i.e., those least able to pay, so many users are unable to bear the full cost of service. Subsidies are typically employmend to make these services affordable. At their best these subsidies are targeted owarsd specific, needy recipients of goverment services; at their worst, they not provide benefits to the intended beneficiaries, result in poor resource allocation, and cause financial deteriation for the organization funsding the subsidy.

Commonly used subsidy mechanisms include:

■ Cross subsidies btween users
■ direct transfers to consumers
■ direct goverment funding of enterprises and inputs (including contracting for services)
■ accepting lower rates of return

These mecanisms may be applied as source of funds, or as way to allocate funds. Cross-subsidies, for example, provide both sources and allocatons, as they recover additional revenue from one goup to reduce the costs to another. Direct tansfers to consumers and direct govrment funding, on the other hand, are purely allocatingmechanisms; the funds must be generatd from outside of sector. Accepting lower raes of return is alsoan allocation mecanisms, but it does not involve actual cash transfers. Seen within the tariff rationalization framework presented in chapter 1, mechanisms that sources of funds collect from consumers, while sources that allocate funds collect from the goverment.

Each methode has its own advantages and disadvantages. Further, the methodeds are not mutually exclusive, and are frequently used in combination.

IV. Cross Subsidizaion

Cross-subsidization between users has been the primary funding mechanisms utilized by GOI for the electricity sector. It is implemented regionally by means of the uniforme national tariff; as previously mote, Java users support services to the outer islands. Cross-subsidies also transfer resources between classes, as higher tariffs to commercial and large residential consumers suppor small residenial tariffs.

The chief advantage of this approach is that it does not require a bugdet commitment on the part of goverment. In today's financial environment, this is a significant advantage.

The chief diadvantage of cross-subsidies is that distorted result in production and consumtion inefficiences. Those who pay for the subsidy (face a price above the revenue-neutral marginal cost) will restrict their usage of the product, even though they might value additional units more than the cost of producing them. Conversely, those who receive the subsidy (face a price below the revenue-neutral marginal cost of supply) will be encourage to expand their use of the product beyond what they should otherwise consume. The result of a cross-subsidy from commercial to small residential consumers is a shift of resources away from the productive sectors of the economy.

Cross-subsidzation requires barries to entry in order to preven compreitors from enterin the higher margin markets created by the "tax" on some users

Cross-subsidzation requires barries to entry in order to preven compreitors from enterin the higher margin markets created by the "tax" on some users. The rapid growth of self generatoion among comercil/industrial electricity consumers in recent years illustates what happens in absence of entry barries. In turn, entry barries can lead to further inefficiencies such as cost-padding, failure to adjucst to changes in demand, and delayed introduction of afficiency improvement.

Another disadvantage of cross-subsidization is that it generally lacks transparency. The extent of tax/subsidy is frequently left unquantified, with the level of subsidy is not easily discovered.

Examples of cross-subsidies are widespread in Indonesia and elsewhere. There are four principal types of electricyity cross-subsidie:

- inter-class
- geographic
- lifeline
- levies

Few juridiction bhave been able to price electricity to each scustomer group based strictly economic (or financial) scost of supply. With an inter-class cross-subsidy, custumers in one tariff class will pay more than their revenue-neutral LRMC-based tariff so that another class can pay less.

Many of examples of inter-class cross-subsidies throughout the worls are rooted in the sociopolitical aspects of setting tariffs. Groups with the greatest political coherentce and leverage often achieve a comparative advantage. The greatest distortions have traditionally occurred between commercial (and to a lesser extent, industrial) classes and residential customers. While residential customers are a clearly identifiable and politically coherent group. Commercial customers are more dispersed and less organied. In other word, commercial custumers have traditionally been less likely to complain when targeted for higher tariffs.

Inter-class cross-subsidies are sometimes implemented by defining tariff classes based on considerations other than cost of service. In Indonesia, hotels have been treated as a separate class, althourh there is little technical justicfication for doing so. In Egypt, "Motive Power" (i.e., industries using elecricity for mechanical energy) for many years was a distinct tariff class, as are "Foreign Embassies" in other jurisdictions.

Geographic cross-subsidies, such as that implied by uniform national tariff in Indonesia, typically represent transfers from urban to rural areas, and can be either transparent or hidden. Thailand offers an example of transfarent subsidies. The uniform national tariff collets reveneues more than sufficient to meet the financial objectives of urban distribution company, but insufficient to achieve rural targets. The generating Company (EGAT) collects reqyuired revenue by charging a higher-than-avarage rate to the urabn distribution (MEA) and a lower-than-avarege rate to the rural provincial distributor (PEA). The price is set to achieve the desired cross-subsidy which will allow each distributor to make its desired rate return. A similiar practice has been adopted in Egypt; the elecrticity authority (EEA) sells to provincial distributors at whatever rates are required to achieve adequate performance given the revenue potential of the local customer base.

Indonesia has adopted a comparable procedure with its uniform tariffs, although the level of subsidiy from Java to the outer islands is neither specific nor transparent. The disadvantage of this approach in Indonesia is the absence of a firmly enforced performance target for outside Java operations.

A third example of cross-subsidies are so called "lifeline rates" intended to provide low cost elecricity to the poor at subsidixed rate. Theorietically, these subsidies are intended to meet basix needs, e.g., low costelectricity to operate a light bulb, a radio, and a fan. In practice, however, the tariff is seldom targeted to the intended recipient group. Instead of a minimal consumtion level of perhaps 20 or 30 kWh per month, many utilities offer the subsidy for the firs 100 or maore kWh consumed. Since there is no easy way to target the poor, the subsidy is frequntly offered to all residential consumers, so tahat event the very rich receive their first block of consumtion at a subsidized rate. In some utilities, 30 to 50 percent of total residential sales are thus subsidized. (With this high threshold, even moderate-income consumers are never confronted with a higher rate.)

The current tariff regime in Indonesia defines custumers classes by their service connection circuit bereakers and thereby provides PLN with a more effective means of targeting lifeline tariffs. For example, the R-1 class is constrained to a fixed capacity of onl 450 VA. By granting a lifeline tariff to this class only, the incidence of "free riders" can be rduced. (Free riders are those costumers who receive a lifline subsidy on their first block of consumtion even thouhgh they are not in fact poor). In general, the existance of more one tariff class within a single customer group at the same voltage level (e.g., R-1 through R-4. U-1 and U-2, I-1 and I-2) can be a useful market segmentation tool to more effectively target subsidies ifthey are shown to be justified.

However, there common pitfalls with lifeline tariff implementation. Even whwn a "lifeline" rate is appropriately targeted, it is not uncommon to set the rate below the variable sost osf supply (i.e. , the cost of marginal fuel plus variable O & M). This pricing effectiveely iunderrestimate the value of increased electricity consumtion to all users receiving the siubsidy. In additional, the complexity of the market segmentation and of getting consumers to understand highly segmented tariff structures.

Another variation of cross-subsidization is a specific levy on consumers. Under this concept, a specific charge (or charge rate) is assessed to all consumers of a service. The approach has been adopted to fund the development of large hydro-electric projectts in China and energy efficiency in the United Kingdom. It has also been proposed in Indonesia under the Kawasan Timur Indonesia (KTI) program to fund Eastern Island rural electrification.

Economists generally argue that it may be more appropriate that the base for funding assistance programs consist of all taxpayers rather than be confined to the users of a particular service

The clear advantage of a levy as a transfer mecanism is that the cost is explicit, and consumers are informed of the intended use of tax revenues. Evidence suggests that levies have lower administrative costs relative to other ransfer mecanisms. However, consumption of the product being taxed will likely be reduced among industries that rely on the product intensively as an input.

Steetlighting costs are one type of levy already used in Indonesia. Due to metering and billing problems, it is often collected as a percentage adder to the bills of one or more consumer classes, een though consumion is not clearly related to these classes, nor do they have any contral over the total level of consumtion.

While levies clearly have he advantage of brodadening the base for redistribution, the charge is not related to the services received. Economists generally argue that it may be more appropriate that the base for funding assistance programs consist of all taxpayers rather than be confined to the users of a particular service. This reasoning leads to te conclusion that, apart from budget impact, there seems to be little justificaion for adopting a levy on users instead of a more general scheme of taxation to fund the subsidy.

Direct Transfers To Consumers

Cash payments to supplement the incomes of targeted groups are often suggested as the most efficient form of transfer mechanism. Supplemenenting the income of targed groups avoids the need to poperate public enterprises on a non-comercial basis. Further, consumers are free to spend the suplement on goods or services of their choice to meaximize personal wefare.

Unfortunately, it is difficult to ranslate theory into practice. A significant problem with directt cash transfers is the identification of targe recipients, and the human tendency for people to claim transfers intended for others. For example, efforts to target rural residents create an inincentive for non-rural residents to adopt a rural "identity" so as to claim benefits. There is an increased incentive to distort facts, since the transfe is cash rather than some in-kind service.

Vouchers, acceptable for payment of welfare or infrastrucrture services, are one variation of the direct cash transfers. Again, however, the identification of target recipients in difficult, and likely to be administratively costly.

Welfare programs in many of the United State illustrate direct cash transfers. The level of grant is frequently defined from the cost of a market basket of basic goods for food and shelter; recipients are permitted freedom in making their own consumtion choices. The widespread abuse of these programs is well documenented. Voucher-base "food stamp" programs, which provide vouchers for purchase of basic foods, have been instituted as a safeguard against welfare misuse; widespread misuse of these programs is also reported.

Indonesia has institued a relatively effective program for directed payments called the inpres Desa Tertinggal (IDT) program that targets specific villages (as opposed to households). However, aspointed out in chapter 6, the poorest households in Indonesia do not be effective to subsidize low income electricity consumers.

Direct Goverment Funding Of Enterprises and Inputs

The critique to alternative transfer mecanisms make the dierect funding of enterprises and inputs more appealing. Although Indonesia's curent economic crisis argues againnst any increase in the goverment's budgetary responbility, the argguments in favor of direct funding are worthy of serious consideration.

Direct funding, which has been employed by GOOI in eklectricity sector (and still employmend to a limited extent), can reduce the efficiency distortions associated with cross-subsidies, and maintains the required barries to entry. Further, there is a much greater incentive to scrutinize annual budget allocations than there is to montor user-funded cross-subsidies. (Of Coure, difficulties in accurate monitoring remain.)

Fuel subsidies are one form of direct fiunding of inputs supported by the Goverment of Indonesia. Indonesia today, GOI-mandated petroleum rice understate worl market price on the orter of 100 percent. The cost of this subsidy is paid directly out of the Indonesian state budget. Resulting electricity tariffs based on "official" fuel pries understate the true economic cost cost of electricity supply, and distort the pricing of fuel-consuming activities throughout the economy. While the primary fuel subsidy may be teransparent, the cost and effects of this in terms of electricity consumtion are not.

More sophicated direct funding mecanisms are available that have less distorting effect in other parts of the economy and are more transfarent. In Australia, the provicial and national, goverments are committed to a policy of public funding for so-called community service Obligations, i.e., Goverment-mandated programs which a public enterprise would not elect to do on a purely commercial basic, or which it would only elect to do commercialially at higher prices.

Once the goverment is committed to fund these activities, it is also free to create compretition between potential suppliiers for the provision of services; private contractors as well as public enterprises are often permitted compete, as, for example, in the provisoion of bus services. This competition, im turn, can help to control the overall cost of service delivery.

Of coure, direct goverment funding can only lead to higher taxes, and it is often argued that increased taxation also has an impact on efficincy in resource use. Overall, the choice between clearly targeted cross-subsidies and direct funding involves jugments on the most efficient form of allocation.

One variation of direct funding of CSO obligation is an explicit goverment commitment to reirabuse an enterprise for losses. GOI equity contributions to PLN in past years have effectively guaranteed the solvency of company. As a persero, it is less desirable that PLN should remain depent on unplanned bailouts necessitated by inadequate tariff leels. Direct funding based on the cost of "Community Service Obligations" would be a far more transparent methode of funding.

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Of course, direct funding of CSO obligations is, to say the least, a concept subject to interpretation. Clear loss-making invesment (and recurring operating losses) in rural electrification would probably qualify, if the data were avaible to identify their separate as s CSO; yet the lack of regular and systematic tariff increases is the single largest cause for PLN's current financial crisis.

Accepting Lower Rates Of Return

When the goverment mandates loss-making services from an enterprise wihich the goverment cannot afford to fund directly (e.g., rural electrification), the obvious result is an inability to meet financial targets. Given severe constraints on budgetary funding, some goverments have adopted the option of accepting a lower rate of return from publik enterprises. The obvious reasoning is that the non-commercial obligation drags down overall performance.

The Australian Commonwealth Treasury has suggested that the easisest way to account for non-commercial expenses that are not budget funded is to add them to income of interprise for purposes of calculating rate of return. The costs of services provided at commerscial prices are unaffected by the accounting, so the resulting imputed rate of return can be compared directly with the target return set for enterprise. His process also takes into account the higher asset base required to meet additional service obligation incurred. In effect, this accounting is an indirect funding mecanism. The goverment is accepting a lower rate of return in exchange for realizing its sicial objectives. Notionally, the concept is similiar to direct funding in terms of adding earning to the income statement.

Acritical difference, however, is that imputed earning do not contribute cash. If the amount of cash involved is small relaticve to the overall operation, this difference may not be important. However, the concept fails if the amount of funding required is large, and the enterprise has project monitoring is unlikely to involve the same level of scrutiny that is applied in annual budget reviews when real cash outlays are involved.

The understatement of asset vales is a more hidden form of type of subsidy. Fortunately it is not used in Indonesia. Sometimes a goverment may use non-revalues in calculating rate of return. In one flagrant examples in early past-communist Poland, very large, new coal-fired power stations were being valued at approxiamately $ 100 per kW base on book values and exchange rate distortions. The redults was to vastly understate the revenue requiretment of system.

Regulatory Implementation

In order to properly regulate tariff, it is generally necessary to have an independent regulator. This means that although the regulatory board may be appointed by politician, they serve a fixed term and do not refórt to politicans. This is convenient for the politicans, in that they are feree aof blame from the voting public for the iunpopular (but often necessary) decisions that the regulator may take. The regulator is expected to represent the public good in setting prices and administering codes. They must balance the need to ensure the financial cviabillity of the operating entities in the power sector, economic efficiency, and socio-economic development concerns.

In addition, though, the power of the regulator must be based in law. A new electricity law is under preparation in Indonesia which the basic legal institutions exits in Indonesia that can support the impartial and timely resolution of disputes that may arise from time between the regulator and the regulaed entities.