The Fiscal Impact of the Privatisation of the Victorian Electricity Industry

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Abstract
This paper is an analysis of the fiscal effects of the privatisation of the Victorian electricity industry. Privatisation is found to be approximately neutral in its effect on the net worth of the Victorian public sector. The buyers of electricity assets lost money, apparently because they anticipated more favourable regulatory treatment than they actually received. Electricity prices were increase prior to privatisation, and are still higher than those in states where the electricity industry has remained in public ownership, but consumers were not directly affected by privatisation as such. There were reductions in employment both before and after privatisation.

Introduction
The privatisation of the Victorian electricity industry is commonly regarded as a highly successful fiscal initiative, which rescued the Victorian government from a crippling level of debt, with an associated burden of interest payments. This view is supported by favourable as-

sessments from, among others, the Auditor-General's office (Victorian Auditor-General's Office 1996, 1997).

A simple arithmetic·exercise, however, suggests that the fiscal benefits of electricity privatisation are, at the least, problematic. The gross proceeds from the sale of the electricity industry assets was around $20 billion. At an interest rate of 6 percent (equal to the real bond rate at the time of privatisation), the use of this sum to repay debt would yield an annual saving of $1200 million per year. The earnings (before interest and tax) of the State Electricity Corporation of Victoria (SECV) in its last year of operation before privatisation were $1202 million (SECV 1993). On this simple calculation, the short run impact of privatisation on the net income of the Victorian public sector was almost exactly zero.

Although a full analysis of the fiscal implications of privatisation must take many factors into account, this simple calculation is the appropriate starting point. Thus, although the sale price of $20 billion was higher than that expected by many observers, claims that privatisation was fiscally beneficial must rest on other grounds. Equally, claims that the Victorian community as a whole suffered losses from privatisation must be based on factors not taken into account in a simple comparison of interest saved and earnings foregone.

The object of this article is to present an analysis of the fiscal effects of privatisation, taking into account both information available at the time assets were sold and observations of subsequent experience. First, a range of fallacious arguments about privatisation, mostly based on the cash accounting system formerly used in the presentation of government budgets, are described and refuted. The appropriate economic basis for assessment of the fiscal and distributive effects of privatisation is described. Next, privatisation is assessed on an *ex ante* basis, comparing the proceeds of privatisation to the value of the SECV in public ownership under the assumption that trends in productivity, prices and outputs observed prior to privatisation would have continued in the absence of privatisation. This basic assessment is then modified to take into account the effects of the National Electricity Market, and the restructuring of the Victorian electricity industry. Some evidence on the performance of the privatised successors of the SECV is presented and assessed.

Debt, net worth, earnings and dividends

In assessing privatisation, it is important to take account of economic reality rather than accounting conventions. Under the 'cash' system of accounting employed in Australia until the late 1990s, the proceeds of asset sales were treated either as current income or as negative expendi-

ture. Hence, a budget deficit could be converted to a surplus by selling assets. Such a procedure confounded the capital and current accounts of the government sector and was generally recognised as illegitimate by the early 1990s. An *ad hoc* solution was to develop measures of the 'underlying' deficit, excluding the impact of asset sales.

A more comprehensive response was the shift to accrual accounting, undertaken by Australian governments in the 1990s. The basic idea of accrual accounting was to separate current income and consumption from changes in holdings of capital assets, arising for example, from new public investments or the sales of existing assets. Under accrual accounting, asset sales are disregarded in determining measures of budget balance, except where assets are sold for more than their value in continued public ownership.

Although the idea that the proceeds from asset sales can be treated like current income has been generally recognised as fallacious, a more subtle form of the fallacy has influenced many assessments of electricity privatisation in Victoria. By convention, government business enterprises are located in the 'non-budget' sector of government. The earnings of these enterprises are therefore not counted as part of the government's budget income. Instead, budget income includes only dividends paid by government business enterprises into the government budget. Hence, analysts have frequently compared the flow of dividends foregone with the interest saved by using the proceeds of privatisation to repay debt. This method of comparing sale price and retention value involves an error which may be referred to as the dividend valuation fallacy. The dividend valuation fallacy is the claim that an enterprise should be valued by its owners solely in terms of the flow of dividends it generates and that retained earnings are in some sense 'locked up', and inaccessible to the owners.

In general, dividends are less than earnings since some earnings are retained to finance future investments. However, there is no reason why dividends cannot exceed earnings. In 1995-96, for example, Telstra paid a special dividend of $3 billion in addition to its ordinary dividend of $1 billion, even though earnings for that year were only around $2 billion. A number of state government corporations, in the electricity sector and elsewhere, have paid similar special dividends. These occurrences illustrate the point that dividends can be set at any level, either above or below the level of earnings. This simple observation ought to be sufficient to refute the idea that public enterprises should be valued in terms of dividends rather than earnings.

A focus on dividends rather than earnings is avoided if a 'whole-of-government' approach to public accounting is adopted. Since dividends

from government business enterprises are simply a transfer between parts of government, they are netted out, and attention is focused on the economically relevant measure, namely earnings.

The whole of government approach, based on accrual accounting, is not a panacea. In some cases, cash flows give a better indication of reality than do changes in measures of net worth. Similarly, in assessing the fiscal framework for public expenditure and taxation, it is generally preferable to focus on the general government sector, and treat public trading enterprises separately.

In the case of privatisation, however, long-lived assets located in the public trading enterprise sector are sold and the proceeds used to repay general government debt. The only sensible way to assess transactions of this kind is to apply accrual accounting methods on a whole-of-government basis. In this framework, the relevant comparison is that between the interest savings that would be realised if the entire proceeds were used to repay debt and the earnings foregone as a result of privatisation.

Assessing the fiscal impacts of privatisation

The simplest way in which to assess the impact of privatisation on the fiscal position of the public sector as a whole, is to compare the interest saved by selling an asset and repaying debt with the earnings foregone as a result of privatisation.

An alternative, equivalent procedure is to compare the sale price with the present value of the stream of earnings that would have arisen under continued public ownership. The present value of future earnings is the amount that would have to be invested now to realise those earnings. For example, if the real rate of interest is 5 percent, an investment of $100 now will be worth $105 in one year's time. Hence, the present value today of $105 next year is $100.

Present value calculations are more flexible than comparisons between interest saved and earnings foregone because it is possible to consider earnings that vary over time rather than remaining constant or growing steadily. Hence, the calculations below will use a present value approach.

Although it is not always recognised, debates about privatisation typically turn on the question of the interest or discount rate that should be used in comparing the price received for assets and the flow of earnings foregone as a result of their sale. Common sense suggests that the appropriate rate is the interest rate the government pays, that is, the rate of interest on bonds (Walker 1994, Walker and Walker 2000). Economic

analysis, based on standard economic models suggests that it is appropriate to raise this rate very slightly, by less than half a percentage point, to take account of the riskiness of returns in the aggregate economy.

On the other hand, advocates of privatisation such as Hathaway (1997) and Officer (1999) typically take the superiority of the market as given and therefore suggest that the appropriate rate of discount in evaluating private enterprises is the rate that would be used by a private firm. For a typical enterprise, this rate is four to six percentage points higher than the bond rate, reflecting the so-called 'equity premium', that is, the extra return demanded by private equity investors in return for taking on risk.

This is a complex issue, and is still being debated by economists. However, most studies of the subject suggest that the high rate of return to risky private sector investments is a reflection of weaknesses in private sector methods of spreading risk rather than a true reflection of the social cost of risk. This implies that the equity premium is not relevant in assessing the fiscal costs and benefits of privatisation (Grant and Quiggin 2002a, b, c)

In addition to the general equity premium, private investors may expect additional returns as compensation for 'regulatory risk', that is, the possibility that the rules of the National Electricity Market may be changed in a way that reduces their profitability. Under public ownership, regulatory risk is 'internalised'. That is, if a government directs a public enterprise to keep prices low, it bears both the costs, in the form of lower earnings, and the benefits, in the form of lower prices to electricity users, who are also voters or employers. Hence, regulatory uncertainty does not generate real social costs.

By contrast, under privatisation, regulatory risk generates real social costs. High prices involve transfers from consumers to producers, and low prices involve transfers from producers to consumers. The resulting conflicts will result in the consumption of resources in litigation, lobbying and risk management strategies. The role of regulatory risk is discussed further by King and Pitchford (1998).

An *ex ante* assessment

One way of assessing privatisation is to look at the performance of the enterprise in the period leading up to privatisation, and to use this performance as a basis for estimating the earnings likely to have been realised under continued public ownership. This approach has the advantage of not relying on the wisdom of hindsight. In cases where privatisation has been rejected or delayed, projections using this approach have gen-

erally proved conservative.

The tendency for growth in profitability to be underestimated in *ex ante* assessments reflects the fact that, in the lead-up to privatisation, both governments and the managers of government business enterprises are particularly concerned to improve profitability, through both organisational changes, such as reductions in employment, and policy changes such as increases in prices. The 10 percent electricity levy imposed in Victoria in 1992 is an example.

The last full year of operation of the old SECV was 1992-93. Earnings before interest and tax in that year were $1.2 billion, a figure that had remained broadly stable since 1989. The stability of earnings may reflect the offsetting effects of, on the one hand, the severe recession that began in 1990-91 and, on the other hand, cost-cutting and productivity improvements associated with corporatisation. In addition, it appears that changes in prices were designed to stabilise earnings. After declining for some years, prices were raised in 1991-92 and 1992-93. Finally, it is possible that, like many private enterprises, the SECV employed accounting devices to smooth out fluctuations in reported earnings.

Having held earnings stable during the recession it seems reasonable to assume that, in the absence of privatisation and market restructuring, the SECV would have experienced steadily increasing earnings and net profits during the 1990s, as did other state electricity enterprises. This was a period of economic recovery, declining interest rates and steady growth in productivity in the electricity industry.

The business plan targets set out by the SECV in its 1992-93 annual report called for a decline in real prices at a rate of about 2 percent per year, combined with a steady increase in profitability. These targets are consistent with the general rate of total factor productivity growth in the publicly-owned electricity sector, which was around 4 percent per year in this period, enough to support both lower prices and higher profits.

The SECV also expected to benefit from increases in capacity utilisation. This is consistent with the observation that planned capital expenditure was covered by the allowance for depreciation, while total revenue was increasing.

Using the information in the SECV business plan, it is possible to estimate the value of the earnings the SECV would have generated in continued public ownership. For this purpose it is assumed that the productivity and price changes in the business plan would have applied for a period of ten years, after which earnings would have remained constant in real terms. The net present value of earnings is calculated using a real rate of 4 percent, which is about the average for the period, though slightly higher than that used by the Regulator-General. (The effect is to

slightly reduce the value of the enterprise in continued public owner-ship.) To test the sensitivity of the analysis to the discount rate, an alter-native rate of 6 percent is also used.

At a real discount rate of 4 percent, the present value of earnings un-der the business plan scenario would have been around $30 billion. At a discount rate of 6 percent, the present value falls to $21 billion, a little more than the amount actually realised. This is consistent with the ob-servation in the introduction that the interest savings at the time of priva-tisation were about equal to the earnings foregone.

Outcomes after privatisation

The *ex ante* assessment presented above took no account of the introduc-tion of the National Grid and the National Electricity Market (NEM). Although the agreements leading to the establishment of the NEM were made in 1991, the SECV projections referred to above did not take the NEM into account explicitly.

Under the NEM, the electricity industry was broken up into three main components: generation; transmission and distribution; and whole-saling and retailing. The core of the NEM was the creation of markets in which generators sold electricity to wholesalers and retailers or directly to customers. The transmission and distribution function, which is a natural monopoly was regulated with charges being set so as to allow a commercial return to capital.

The picture was complicated by the fact that distributors were also retailers, and, initially, were the only retailers in the markets they served. Under the reform process, classes of customers were gradually made 'contestable', that is, other retailers were allowed to serve them. Con-testability was applied to large customers immediately, but to house-holds only in 2002, by which time early reductions in prices had been replaced by price increases.

To undertake an assessment of the income foregone as a result of privatisation, it is therefore necessary to examine the impact of the NEM on the profitability of electricity enterprises. This is relatively straight-forward in the case of the regulated transmission and distribution enter-prises, but much less so in the case of electricity generation enterprises.

Transmission and distribution

The analysis is simplest in relation to transmission and distribution. Un-der the institutions of the NEM, the returns to transmission and distribu-tion enterprises are regulated. The procedure adopted in Victoria was to

set prices for transmission and distribution that would allow enterprises to cover the costs of efficient operation and earn a commercial rate of return to their capital assets. This price was adjusted annually using a CPI-X approach. That is, prices were increased in line with inflation except for a discount of X percentage points designed to reflect achievable increases in efficiency.

The crucial variables in a determination of this kind are the determination of the initial capital base, the choice of the rate of return and the level of the efficiency factor X.

The price paid for the distribution and transmission assets of the SECV was \$10.9 billion. The Regulator-General however, estimated the real value of the assets on a Depreciated Optimised Replacement Cost (DORC) basis at only \$5.3 billion. After some adjustments which benefited some companies but harmed others, prices were set on the basis of adjusted asset values totalling \$5.2 billion.

Table 1. Fiscal impacts of the sale of Victorian electricity distribution and transmission (\$m)

Company	Eastern	Powercor	Solaris	CitiPower	United	Powernet	Total
Sale price	2080	2150	950	1580	1550	2550	10860
Book value	828	1,066	422	611	879	na	5259
Adjustments	-218	-161	61	129	136	na	-53
DORC	1,046	1,227	361	482	743	1400	5206
Interest saving	83.2	86	38	63.2	62	102	434.4
Buyers return	58.0	74.6	29.5	42.8	61.5	128.8	395.2

Sources: Victorian Auditor-General's office (1996, 1997), Office of the Regulator-General (2000)

These points are illustrated in more detail by Table 1. Row 1 shows the sale price for the five distributors (Eastern, Powercor, Solaris, Citipower and United Energy) and for the transmission business Powernet. Row 2 shows the book value of regulated assets. Row 3 shows the value of adjustments and Row 4 shows the DORC value attributed to the regulated asset base.

Thus the asset values on which the distributors were allowed to recover regulated returns (Row 4) represented less than half of the amount paid for the businesses (Row 1). What the Regulator-General took with one hand, however, he gave back with the other. The real rate of return allowed to the private buyers, about 7 percent, was around twice the real rate of interest on public debt, around 4 percent. Similarly, the transmis-

sion enterprise Powernet was sold for \$2.56 billion. The regulated asset value was about \$1.4 billion and the pretax real rate of return was 9.2 percent. Since prices are adjusted in line with inflation, it is real rates of return that are of interest.

The results are shown in the final two rows of Table 1. Row 5 shows the real interest saved as a result of the asset sale, assuming a real interest rate of 4 percent. Row 5 shows the amount paid to the buyers as a return on capital. In some, but not all, cases, interest savings exceed the payments to the buyers. However, the net impact is very small. On these estimates the total interest saving was \$434 million per year and the total amount paid as a return on capital was \$395 million. The difference is within the margin of error associated with estimates of the real interest rates.

Thus, from the viewpoint of the public sector, the transmission and distribution assets were sold for a price that just offset the income they would have generated. On the other hand, because private buyers expect a higher rate of return to capital, the returns allowed by the Regulator-General were not sufficient to justify the prices paid. A rough rule of thumb is that, given the standard procedures adopted by Australian regulators, the market value of a regulated asset is about 50 percent more than the valuation set by the regulator, reflecting the fact that other elements of the regulatory process, such as the treatment of risk, are typically favorable to the regulated firms. That is, if the decisions of the Regulator-General had been known in advance, the sale price of the distribution assets would have been around \$6 billion, rather than the \$8.3 billion actually paid. Similarly, Powernet would have been valued at \$2.1 billion rather than \$2.55 billion

This estimate must be adjusted to take account of the value of the retail enterprises associated with the distribution enterprises. Valuation of electricity retail enterprises is problematic at this stage of development of the market, but it seems reasonable to suggest that the retail business would raise the value of the distribution enterprises by around 10 percent.

This estimate seems consistent with observations of cases in which assets were subsequently resold. The most representative is that of Powernet for which the resale price was 17 percent less than the purchase price, an estimate consistent with that given here.

Generation

Analysis of the post-privatisation performance of the electricity generation sector is considerably more difficult than for the regulated transmission and distribution sectors. Under the NEM, spot prices for generation

are set at five-minute intervals in a kind of auction market. In the short run, generators submit bids specifying their willingness to supply electricity at particular prices. These bids are matched with demand from purchasers of electricity to determine the spot price. The spot price not only equilibrates the market in the short term, but also provides firms with information on the likely profitability of investments in new generating capacity. Further discussion is given by Quiggin (2001).

There are a number of other complications. First, during the transition to full contestability, which was not completed until 2002, generators were awarded 'vesting contracts' to supply non-contestable customers (households and small businesses) at prices ranging from $37/MWh to $40/MWh.

Second, prior to privatisation the Victorian government, through the SECV, had entered into a number of long-term arrangements including commitments to purchase electricity from the privately-owned Loy Yang B power station, and commitments to supply electricity to the Portland aluminium smelter. These arrangements, which were generally costly to taxpayers, were not transferred to private buyers.

Third, the sales included some assets other than generating plant. The most important were the Loy Yang coal mine associated with the Loy Yang A Power Station and a smaller coal mine associated with the Hazelwood power station.

Outcomes in the period immediately following privatisation suggested that the sale of electricity generation enterprises had been beneficial. On the one hand, prices in the contestable markets fell further than many commentators had expected. This reflected both the general oversupply and, it appears, the willingness of market participants to use the cash flow from vesting contracts to subsidise unprofitable or marginally profitable contracts in contestable markets. To the extent that prices were lower than anticipated by buyers, the government benefited from their mistakes, as in the case of distribution and transmission.

A second noteworthy point was an increase in the availability of generating capacity and the successful refurbishment of some plants previously scheduled for closure, such as that at Hazlewood. These outcomes supported the view that private sector operation would lead to improvements in technical efficiency.

Subsequent events have cast doubt on the apparent benefits of privatisation. With the disappearance of excess supply, electricity prices have risen and there have been accusations of improper market behavior designed to drive prices up. Similar accusations, with stronger supporting evidence are currently under investigation with respect to the failed Californian market. The likelihood that electricity prices will remain high for

some time to come suggests that, in the medium term, the sale prices will prove to have been a good deal for buyers and a bad one for the public.

In addition, a series of large-scale failures in privatised or corporatised infrastructure services has cast doubt on claims about the superior efficiency of the private sector. Apart from recent blackouts in Victoria and South Australia, these failures include the Longford gas explosion and the lengthy electricity crisis in Auckland (both in 1998). It appears that, whereas the spare capacity maintained by public infrastructure enterprises may have been excessive, private enterprises tend to maintain too little capacity, reflecting the fact that most of the costs of system failure are borne by the community as a whole.

Given these complexities, it is difficult to make an unambiguous estimate of the value of the generation assets in continued public ownership. Some relevant evidence is presented in Table 2. Column 1 shows the main generation enterprises that were privatised, and Column 2 the sale price. Column 3 shows the generating capacity and Column 4 the price per MW of capacity. Column 5 shows the date at which the plants were brought into full service.

Table 2. Sale prices for Victorian electricity generating plants

Plant	Price ($billion)	Capacity (MW)	Unit price ($/kW)	Completion date
Yallourn	2.43	1450	1676	1981
Hazelwood	2.36	1600	1475	1971
Loy Yang A	4.75	2000	2375	1984
Loy Yang B	2.3	1000	2300	1993

Source: Victorian Auditor-General's office (1996, 1997)

The prices for the Loy Yang stations appear to be fairly close to the construction cost of new generating capacity, as would be expected. Recent world experience suggests that construction costs for coal-fired generating plants are between $US1200/kW and $US1500/kW. If the exchange value of the Australian dollar is estimated at 60 US cents, about the average over the 1990s, this converts to a range from $A2000 to $A2500.

The older plants sold for a substantial discount, as would be expected given their depreciated condition. As noted above, Hazelwood in particular required substantial refurbishment, which might not have been undertaken if the plant had been retained in public ownership. However,

if the prices for the Loy Yang plants are taken as representing fair market value, any premium associated with sale of Yallourn and Hazelwood must have been fairly modest. A combined premium of $1 billion appears to be an upper bound.

Assessment

Before the sale of the Victorian electricity industry, privatisation in Australia had almost invariably yielded low returns while giving up valuable income streams. Notable examples include the sales of the Commonwealth Bank, the NSW State Bank and the first-tranche Telstra sale. In all these cases, a simple comparison of interest saved and earnings foregone yielded the unambiguous conclusion that the public was worse off (Quiggin 1995).

The Victorian privatisations yielded returns significantly larger than most analysts expected. Moreover, as has been shown above, the fiscal impacts were roughly neutral. It is, therefore, important to consider why the Victorian privatisations performed as well as they did, and to assess the implications for privatisation policy in the future.

First, citizens of states other than Victoria subsidised the privatisation process through a range of concessions to investors in private infrastructure. The taxation treatment of private infrastructure assets more generally has been tightened as concessions designed by the Hawke–Keating government to encourage privatisation have been withdrawn.

A more important point, established beyond reasonable doubt by the Victorian experience, is that privatisation should always be undertaken by trade sale, without restrictions on foreign ownership. Privatisation by public float invariably involves substantial discounts, in addition to those that typically arise in the case of private floats. The abandonment of restrictions on foreign ownership may appear to be a matter of concern. However, this concern is misplaced. If an asset is too important to be placed in the hands of foreigners it is also too important to be turned over from the public as a whole to individual Australian citizens.

The differences in return between privatisations by trade sale and privatisations by public float have tended to diminish over time. The spectacular underpricing of the Telstra and Commonwealth Bank floats has been replaced by more modest discounts, particularly in the later stages of multi-tranche floats where there is an established market price for the shares. Conversely, as was noted above, the buyers of Victorian electricity assets mostly concluded, after the fact, that they had paid too much, a trend which was observed in a number of countries. Buyers have become more circumspect and a number of countries have had to

abandon planned privatisations because they were unable to obtain the sale prices they expected. Nevertheless, it remains true that returns from trade sales are generally superior to those from privatisation by public float.

Finally, it is necessary to consider impacts on consumers and workers. In most cases, the effects of privatisation, considered in isolation, are relatively modest, since the behaviour of corporatised government business enterprises is fairly similar to that of private firms. However, since every stage of the process in which government agencies have been converted into commercial public enterprises has been accompanied by reductions in employment and job security, it seems reasonable to assume that this trend will continue under privatisation, leaving workers worse off.

It is similarly difficult to disentangle the impact of privatisation on consumers from the general process of regulatory change that has gone on at the same time. Clearly the prospect of privatisation encouraged the Victorian government to raise electricity prices in the early 1990s. However, these higher prices have been taken into account in computing the income foregone by the government. Moreover, the general pattern observed under the NEM, in which prices are increased for households and reduced for large businesses, has been most pronounced in Victoria.

In general, the effect of privatisation and regulatory change has been to replace uniform prices, based on a rather vague notion of equity, with highly differentiated prices, driven by market incentives. Consumers seen as 'desirable customers', such as businesses and high-income households have benefited from greater choice and, in many cases, lower average prices. By contrast, suppliers have sought to dump less desirable customers or to force them into residualist arrangements designed to minimise the costs of serving them. However, this issue is beyond the scope of the present article.

Concluding comments

The fiscal impact on the Victorian public sector of the privatisation of the electricity industry was, in broad terms, neutral. That is, the interest savings realised by selling electricity assets were about equal to the earnings those assets would have generated under continued public ownership. Compared to other instances in which governments have sold public infrastructure or government business enterprises providing infrastructure services, this is a favorable outcome. Most such privatisations and private infrastructure deals, including Victorian examples such as the CityLink project, have generated substantial losses in public sec-

tor net worth.

Three main factors explain the relatively favorable outcome of electricity privatisation in Victoria. First, the privatisation process was designed to maximise fiscal returns, whereas many privatisations have been focused on a range of political objectives, some of which are mutually inconsistent. Second, the Commonwealth government subsidised the deal. Finally, and most importantly, the buyers paid too much. In particular, the buyers of regulated transmission and distribution assets clearly expected more favorable treatment from regulators than they actually received.

Compared to other privatisation exercises in Australia, the sale of the Victorian electricity industry was a success. But if even a successful sale barely yields a break-even outcome, the viability of privatisation as a method of improving public finances must be regarded as doubtful.

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