

Best practice pricing principles vs. the politics of water pricing

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Abstract

Government response to water reform in Australia has included a buyback of water rights and public investments in irrigation infrastructure. In the case of the latter, a critically important but under-investigated feature of this policy response is that water users are subsequently not obliged to pay water prices that reflect the cost of gifted irrigation infrastructure. Thus, whilst considerable progress has been claimed towards establishing water prices that are cost-reflective, such as offering tradable water rights, much can still be done to improve the price signals received by rural and urban water users. This paper investigates the politics of establishing water charges that are cost reflective. More specifically, we discuss how political economy can potentially and markedly distort best practice water pricing. An assessment framework that draws from best practice pricing principles embodied in the National Water Initiative (NWI), Water Industry Regulatory Order (WIRO) and the Essential Services Commission (ESC) Act is used as a framework to consider areas of improvement with special attention given to arrangements in Victoria. Nonetheless, we argue that the results are applicable in most jurisdictions and suggest there is considerable scope for improving the efficiency of water prices.

Keywords: water prices, gifted assets, best practice pricing.

1 Introduction

Notwithstanding the progress of water reform in Australia, there remains much that still needs to be done to improve water pricing. The cost of providing water



is not nearly as transparent or driven by market forces as suggested by the National Water Commission (NWC). Pawsey and Crase [1] highlight the possibility of overstating the success of pricing reform in the Australian water sector. More specifically, they argue that the role played by political or bureaucratic forces is often understated. This has resulted in compromises to economic objectives in order to meet political concerns especially in the context of water pricing. Two of the main (unrelated) strategic approaches to water reform by the government have been a water entitlement buy-back of about \$3 billion and committing almost \$6 billion to upgrade national irrigation infrastructure. There has not been a public explanation of why these approaches were chosen and how the amount of \$3 billion and \$6 billion were established.

Many politicians have claimed that the public investment in irrigation infrastructure would be justified by environmental benefits and increased productivity for irrigated agriculture [2]. However, extensive controversy surrounds the \$6 billion allocated to irrigation infrastructure. To date, the most controversial and expensive project has been the \$2 billion commitment of the tax-payers' funds to the Northern Victorian Irrigation Renewal Project (NVIRP). From an efficiency perspective, government investment in this type of infrastructure that is not supported by a reasonable public good rationale has the potential to distort the price signals received by water users.

Notably, drought-proofing Australian agriculture has been portrayed as being a 'social responsibility' [2, p. 71], with a widely-held view that it is in Australia's long-term national interest to support agriculture in marginal areas. The gifting of irrigation assets has been cast in this mould. Therefore, it is perhaps not unexpected that many irrigators do not support paying 'full price' for the services they receive courtesy of tax payers [2].

Moreover, there is significant theoretical and empirical evidence on the efficiency gains of tradable water rights. For instance, economic analysis conducted by the NWC [4] suggests that interregional and intraregional water trading during the exceptionally dry years of 2007-8 and 2008-9 trade cushioned regional production by about \$1.05 billion and \$1.2 billion, respectively. Even in wetter years, such as 2010-11, trade was estimated to bring about \$0.5 billion in increased regional production. Consequently, it is difficult to reconcile recent policy choices that simultaneously seek to subsidise irrigation infrastructure [3]. Put differently, the gifting of assets leads to market prices that are not cost reflective and consequently distort the ability of water markets to function efficiently.

Against this background, it is difficult to consider water pricing in Australia and the construction of water supply infrastructure without reference to the politicisation of these responses to supply variability.

This paper investigates how the political economy can potentially and markedly distort best practice water pricing. In the interest of clarity, the scope of this paper is limited to water pricing arrangements in the state of Victoria, Australia, although there are broader national and international lessons.

This paper is comprised of five parts. The second section outlines the institutional modifications that were an integral component of the Australian

water reform process, which provides a basis for understanding water pricing. The third section summarises the price setting process for water in Victoria. A framework that reflects the best practice pricing principles embodied in the NWI, WIRO and the ESC Act is discussed in section four and the consequences of political influences on water pricing are highlighted. The paper ends with a discussion of the policy implications of a distorted pricing process and some concluding remarks.

2 National water reform

A significant milestone was reached in Australian water policy in 1994 when Council of Australian Governments (CoAG) agreed to the Water Resource Policy [5]. The policy was a national effort to restore the state of natural resources following a century of exploitation of water resources. It brought together two themes: the national drive for microeconomic reform, particularly in the state-owned enterprise arena, and the growing awareness of the need for sustainable natural resource management.

Following the signing of this historic agreement between governments at the state and federal levels, CoAG decided in 1995 to add a financial incentive for the implementation of policy. An important aspect in convincing the states to reform their monopoly markets in water, gas and electricity as part of the National Competition Policy reforms was a series of 'competition payments', deliverable upon the completion of a number of microeconomic reforms. The High-Level Steering Group on Water (HLSGW) produced a report in 1999 assessing the states' progress in implementing the 1994 agreement [6]. The report indicated that the various states had made differing levels of progress.

It was decided at the 2003 CoAG meeting that the 1994 reform needed further development. Subsequently, the NWI was established as a means of addressing a number of challenges that had emerged from the 1994 reforms. In essence, three new measures formed the core of the Initiative: the development of institutional arrangements to deal with the catchment as a whole; the establishment of a robust and transparent regulatory water accounting framework; and a focus on urban water use as a whole rather than the relatively narrow focus on pricing that was evident in the 1994 framework.

The purpose of the NWI was to encourage reclamation, re-use and recycling of wastewater, increase water use efficiency and further improve pricing for metropolitan water, and render water trading between rural and urban users viable [7]. In the case of the latter, creating tradable water rights between sectors offered significant promise for delivering an efficient allocation of water resources across competing interests. Moreover, water markets have been recognised as a way of facilitating the establishment of more efficient water tariffs [3]. Crase *et al.* [3, p. 2] suggests that in the absence of such a market, the introduction of cost-reflective and/or volumetric pricing can create real and perceived expropriation of use rights, especially in established irrigation areas where historically costs have not been fully recovered. The process by which the states and territories were to achieve these objective were broadly categorised



into two areas: efforts designed to reduce demand; and policies to encourage 'innovation' in water use.

Relative to institutional reform, two new requirements for states were stipulated in the NWI. First, the states were to use independent bodies to determine whether the pricing of urban and rural water met the principles embodied in the NWI. Most states had long since transferred price setting responsibilities to independent bodies [8]. Second, the states were to develop a nationally consistent framework for the benchmarking of prices and service quality for metropolitan and non-metropolitan water delivery agencies. In this context, the NWC released the first nationwide performance benchmarking reports in May 2007 [8].

In order to make this analysis manageable, the remainder of this paper specifically focuses on water pricing in Victoria.

2.1 Institutional arrangements in Victoria

In total, there are 19 state owned Victorian water corporations in the urban and rural sectors. More specifically, these can be further categorised into metropolitan urban, regional urban and rural providers. These corporations hold monopoly power over water and wastewater services within a defined geographical area [9]. The ESC is responsible for regulating prices for retail water, bulk water, irrigation drainage, and diversion services. In regulating prices for these services, the ESC is directed by the ESC Act 2001 and WIRO 2003. In addition, the regulatory role of the ESC is also governed by the Water Act 2007. The Victorian institutional arrangements for the management of water are generally considered favourably compared to other jurisdictions [1], at least to the extent that they reflect compliance with the national reform agenda. Notwithstanding this, successive governments have been in a position to significantly influence water prices and water supply augmentation which has repeatedly proved detrimental to water users in both urban and rural areas.

In this context, some insight into the current price setting process used in Victoria is offered below.

3 Price setting process

As previously highlighted, the ESC must consider the objectives of the ESC Act 2001 when setting prices for prescribed water services. These objectives include promoting efficiency and competition, protecting the interests of consumers, preventing misuse of market power, ensuring consistency with other regulations, and promoting consistency with other States. Moreover, a number of additional objectives were developed specifically for the water sector. Thus, the ESC is also obliged to: 1) wherever possible, ensure the costs of regulation do not exceed the benefits; 2) ensure regulatory decision-making and regulatory processes have regard to any differences in the operating environments of regulated entities; and 3) ensure regulatory decision-making has regard to health, safety, environmental sustainability and social obligations of the regulated entities [10].



The WIRO was issued by the Minister for Water to offer more explicit guidance to the ESC in the economic regulation of the Victorian water providers. It offers regulatory and pricing principles that are consistent with the COAG principles. Specifically it highlights that prices should: 1) provide a sustainable revenue stream for publicly-owned water corporations that recover efficient costs; 2) recover expenditure on renewing and rehabilitating existing assets; 3) promote sustainable water use by providing appropriate signals about costs; 4) consider the interests of customers; and 5) provide incentive for efficiency improvements.

The regulatory framework developed by the WIRO requires water providers to form a Water Plan that establishes their tariff proposals over a 5-year regulatory period. It is the role of the ESC to determine if the tariffs presented in each Water Plan complies with the WIRO pricing principles. The ESC uses a 'building block' approach to determine the revenue requirement to provide proposed service standards and outcomes over the regulatory period [1]. Consistent with the building block approach, an annual revenue requirement is calculated, based on estimates of the funds the business requires to efficiently provide its required services while achieving its regulatory and other obligations [10]. The revenue requirement establishes what needs to be recovered from customers for a particular regulatory period. This is comprised of a return on capital (regulatory asset base x the weighted average cost of capital), a return of capital (regulatory depreciation on the regulatory asset base), and operating and maintenance expenditure [10]. Using the building block approach, new capital expenditure increases a water business' regulatory asset base except if it is funded from external contributions, such as government funding. Notably, gifted assets are omitted from the regulatory assets that underpin the determination of water tariffs.

4 Best practice pricing principles

Water providers in Victoria need to comply with the principles established in the WIRO. If they fail to be compliant, there is a significant risk that the planned tariffs will not be accepted by the ESC. These principles are akin to pricing principles used by economic regulators in other jurisdictions and those embodied in inter-jurisdictional agreements, such as the NWI and COAG 1994.

The purpose of this section is to describe a set of generic criteria that reflect key characteristics of best practice pricing that draws from best practice pricing principles embodied in the NWI, WIRO and the ESC Act and discuss how political forces can distort outcomes. These criteria include: economic efficiency, revenue adequacy, administrative simplicity, transparency, flexibility, and equity.

4.1 Economic efficiency

Efficient pricing principles require the beneficiaries of water services to face tariffs that reflect the cost of service provision. Frequently, it is difficult to assign



costs because of common network costs. In such instances, efficient prices may fall within a range [10].

The pricing principles within the WIRO and ESC Act and the NWI advocate this efficiency objective. The NWI support efficient resource use and espouses user pay principles and WIRO recognises the need for appropriate signals about costs.

Theoretically, consumers' unlimited wants and universally limited means with which to satisfy those wants imply the need for efficiency in the use of resources. Efficiency, therefore, is a core consideration in the allocation of resources and decreases the burden of scarcity [11]. For instance, the achievement of economic efficiency in the context of water distributes the burden of water shortage to maximise the surplus of benefits over costs, however defined. In practice, this is difficult to achieve.

Economic efficiency can be viewed from three key dimensions, namely productive, allocative, and dynamic efficiency [12]. Notably, these types of efficiency are not necessarily mutually exclusive. First, productive or technical efficiency refers to goods or services being produced in the most technologically efficient way [13]. That is, resources are used to produce the maximum possible output at the lowest cost. A policy of subsidised infrastructure is not consistent with this concept unless supported by clear grounds, such as spill-over effects or public goods. For instance, the \$2 billion public investment in irrigation infrastructure in northern Victoria adds to the capital costs of irrigation networks and unless matched by payments from end-users, the true opportunity cost of provision will be disguised.

Second, allocative efficiency is a measure of economic efficiency which represents the efficient distribution of productive resources that will ultimately achieve the optimal combination of output. The gifting of assets discourages the movement of water to the highest value users, where the highest value user may be urban users rather than rural users. Crase *et al.* [3] highlights the major role that water markets play in increasing the efficiency of the allocation of water resources. The gifting of assets also distorts the efficient distribution of capital across sectors and regions in Victoria.

Third, dynamic or intertemporal efficiency [14], which refers to the economically efficient use of scarce resources through time and embraces allocative and productive efficiency in an inter-temporal dimension [12]. Whilst it may be possible to argue that public subsidies to reduce the prices faced by irrigators has some long term strategic advantages, this can only hold to the extent that the public sector has more knowledge about the future than private farmers. The evidence on this in the case of Australian agriculture is hardly complementary.

4.2 Revenue adequacy

Revenue adequacy involves ensuring that the costs of providing water services are recovered over the life of the asset and consumables. These costs should comprise capital costs, operating costs and an appropriate return that is adequate to cover the commercial and regulatory risks involved. Clause 64(ii) of the NWI



commits parties to “ensuring sufficient revenue streams to allow efficient delivery of the required services (but avoiding monopoly rents)”. Moreover, the ESC Act requires the ESC to assist regulated entities in achieving financial viability. An additional part of revenue adequacy is managing revenue risks that arise from changes in external condition and unforeseen events.

The effectiveness of price determinations in ensuring revenue adequacy can be measured with reference to a range of conventional accounting measures. Collated financial data provided by the NWC [4] reveals a stark contrast in the relative performance of the different water sectors. Over the periods 2008/09 through 2010/11, water providers in the metropolitan sector reported strong profits enabling the government to claim \$428 million worth of dividends from these entities. The situation was much different in the regional urban and rural sectors. Many in this sector, including Goulburn-Murray Water (G-MW), GWM, Southern Rural, Central Highlands Water, and Coliban reported losses in at least two of the last three financial periods. The Victorian Auditor-General’s Office (VAGO) [15, p. 11] 2010/11 water entity review rated the sustainability of metropolitan entities as being “relatively stable”, and generally rated regional urban entities as being “relatively well placed”. The review, however, warned that the results of the rural sector were “unsustainable and overshadowed the results”. Overall, 5 of the 19 water entities were assessed by the VAGO [15] as having either a medium or high financial sustainability risk.

The ability to make an accurate assessment of the revenue adequacy of Victorian water providers is constrained by a number of issues. Firstly, as per Ministerial Reporting Direction requirements, not all water entities are required to report on the same Financial Performance Indicators. Specifically, unlike their metropolitan counterparts, regional urban and rural providers are not required to disclose Return on Asset or Return on Equity Ratios. Secondly, the recent significant multi-billion dollar infrastructure revaluations performed on the reported assets of water entities have made it difficult to make meaningful and reliable financial comparisons over time, between water providers and against private sector benchmarks [1].

4.3 Administrative simplicity

Administrative simplicity is concerned with ensuring that an approach is practical to implement. Put differently, the resources needed to implement a pricing approach are at least commensurate to the benefits of the approach. Implementation costs also need to be considered in terms of administration, compliance, enforcement and information costs [10]. To some extent, this objective is implied in the general requirement that the ESC ensures the costs of regulation do not exceed the benefits.

The extensive community consultation that has taken place across all of the water sectors during attempts to achieve water reform has not only created an inordinate expense, but has substantially increased the complexity of the pricing approach.

In addition, all of the Victorian water providers are subject to a number of layers of regulation regarding compliance with pricing processes. Providers are



required to employ two different approaches to account for financial performance, namely regulatory and statutory accounts. The ESC 2009 *Water Industry Regulatory Code* mandates that water providers complete regulatory accounts. In contrast, statutory accounts are required by the Department of Treasury and Finance Financial Reporting Directives and the Australian Accounting Standards Board accounting standards. Furthermore, the Victorian Water Minister Ministerial Reporting Directives require water providers to report on additional, specific performance indicators.

4.4 Transparency

Transparency in the pricing process means that water users and others can understand the price determination processes and outcomes. Cummins *et al.* [10] suggest that transparency increases confidence in pricing arrangements. Indeed, from a public accountability perspective [16, 17], citizens have a right to such information. Increasing transparency involves ensuring that decision making is evidence based, such as ensuring that prices are cost reflective, and include customer consultation on the level of service.

The WIRO requires that the way prices are set should allow customers or potential customers to easily understand the prices charged by the water authority. Moreover, the NWI outlines the significance of achieving price transparency in water storage and delivery systems [10].

A number of issues raise questions about the transparency of the ESC price setting process. Firstly, whilst a key part of the price determination process is the regulatory accounting prepared in accordance with the ESC 2009 guidelines, they are not publically available. Water Plans and Price Determinations are available, but there is no way to directly map these against regulatory accounts.

In terms of immediate transparency, there is anecdotal evidence from G-MWs customer Water Service Committees that the complexity and terminology associated with their water bills makes it difficult to understand how customers are being charged.

As an aside, from a metropolitan sector perspective, given the issues surrounding the treatment of operating costs associated with the Wonthaggi Desalination Plant by Melbourne Water and subsequent overcharging of customers by more than \$300 Million [18], a closer look at water price transparency might be timely.

Improved transparency need not significantly increase compliance costs by water providers across rural and metropolitan Victoria as it could largely be achieved through the disclosure of information already available together with a simplification of current requirements.

4.5 Flexibility

Pricing mechanisms need to offer flexibility to accommodate changing supply and demand for water, changing consumer preferences and technologies. In the context of water pricing, the ESC requires water providers to set their prices based on five-year water plans. The high variability in Australia's water supply



means that this five-year projection can be problematic. For instance, the potential for water to be under-priced in dry years was raised by the VAGO [15] in their recent analysis of 2010-11 Water Entity annual reports. This report highlighted that the current water plans, covering the period 2008-2013, were developed during a period of severe drought. This dilemma was compounded by the subsequent periods of above average rainfall experienced post 2008 which further reduced demand for potable water. The VAGO [15, p. xi] advised that “in the event that revenue further reduces due to reduced demand for water, financial stability [of Water Entities] may be adversely affected”. Given these issues and the impact on financial sustainability, the VAGO [15, p.xii] has recommended a review of the ESC pricing framework, namely to revisit “the appropriateness of the funding model and its flexibility in times of unpredictable weather patterns”.

Evidently, flexibility in this context is not only challenged by situational forces such as variable climate, output prices and other structural forces [19], but it is also limited by the required regulations regarding pricing projections and revenue requirements.

4.6 Equity

The ESC Act addresses the social obligations of water authorities. In addition, the WIRO requires the ESC to consider the interest of customers, including low income and vulnerable water users. This highlights the need for water providers to consider equity in the pricing process.

The introduction of equity or fairness considerations into economic analysis raises complex challenges [20]. Three generic approaches to fairness can be taken, namely distributive processes, opportunities and outcomes [21]. Contemplation of equality of opportunity also involves complex interpersonal judgements on the inherited abilities of individuals and their socioeconomic backgrounds. Therefore, supporting Victoria’s farming community could perhaps be justified on equity grounds.

Generally, equity in pricing for services such as water is related to its impact on vulnerable customers and their ability to pay. Intergenerational equity is also of concern in that consideration about how costs are allocated and recovered between current and future customers is relevant. Moreover, there is also a need to account for the impact of changes in the approach used to recover the cost of investment and maintenance of shared assets.

Byron [2] suggests that substantial inequities exist within the rural sector. For instance, numerous irrigators have received their water entitlement as a gift from governments, perhaps in response to political suasion; however newcomers have purchased their rights at the current market values. Moreover, there are no equity criteria for selection of investments by government in irrigation infrastructure [22]. Thus, some industries and regions are favoured at the expense of others with NVIRP being a case in point. Crase *et al.* [3] also highlights the empowerment inequities that subsidies for infrastructure bestow. In the context of irrigation infrastructure subsidies, the distribution of empowerment is unpredictable, with political forces playing a major role. For instance, the assignment of \$2 billion of public money to irrigators in northern Victoria was



made with limited reference to the status or rights of irrigators in other parts of the basin [3].

Questions about the equality of pricing between different water sectors are raised by the measurement of RABs. As reported by Pawsey and Crase [1], compared to their regional urban and rural sectors in Victoria, the RABs of the metropolitan water providers are much more closely aligned with statutory accounting asset values. This gap has been driven by the ESCs initial measurement of legacy assets on entering the regulatory phase together with the on-going exclusion of newly gifted assets. There is some evidence to suggest that the initial measurement of legacy assets were based on ‘back-solving’ using an acceptable rate of return, also determined by the ESC, and ensuring that final prices would be acceptable [22, p. 42].

It is also important to note that in the context of this research, subjecting all water users to the same water pricing structure should not be confused with equity.

5 Policy implications and concluding remarks

Many decisions made by politicians in water pricing have centred on gaining political support. For instance, government investment in irrigation infrastructure is often justified by the need to secure Australia’s food supply. However, Crase and Watson [23, p.2] suggest that most of the concern about food security in Australia is ‘scaremongering’ and the Australian agricultural sector is not in a state of permanent crisis. Extensive community consultation regarding setting water prices is another example of unnecessary processes driven by political agendas to at least appear to be responsive to constituent’s concerns. Moreover, one of the most controversial recent political acts is the extensive public investment in irrigation infrastructure, which distorts efficient pricing. From an economic perspective, the efficiency gains that water markets have provided make it problematic to support the policy choice that simultaneously seeks to subsidise irrigation infrastructure. These underlying political agendas have meant that best practice pricing principles have often been thwarted in the water sector.

Achieving best practice pricing principles in the context of water is not only obscured by political influences on water pricing, but it is also disrupted by the contradictions between some of the criteria required to achieve best practice. Put differently, there is often perceived trade-offs between the best practice pricing principles. For instance, achieving allocative efficiency may require compromises in securing revenue adequacy. Similarly, achieving efficiency may come at the expense of compromising equity. Community consultation may improve equity by allowing for freedom of speech, but serious questions remain about whether the most vocal forces are also the neediest. There might also be trade-offs within a single criteria itself, such as between achieving efficiency on different grounds.

The best practice pricing principle criteria has provided a sound framework for analysing the merit in current pricing approaches to water in Victoria. Whilst Australia is often considered to be at the forefront of water reform, there are still



numerous improvements to the pricing process that can be made. More specifically, there is scope to improve the pricing process in terms of efficiency, revenue adequacy, administration simplicity, transparency, flexibility, and equity.

Limitation embodied in water reform in the past should provide grounds for caution to water policy makers so they are not repeated in the future. Importantly, reviewing best practice pricing principles in the context of water pricing in Australia highlights the pervasive influence of political forces in water economics. Improved transparency into the pricing process may help to limit the impacts of these forces.

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