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The relative economic efficiency of urban water utilities in regional New South Wales and Victoria

Joel Byrnes^{a,1}, Lin Crase^{b,2}, Brian Dollery^{c,*}, Renato Villano^{d,3}

^a KPMG 147 Collins Street, Melbourne, Victoria, 3000, Australia

^b Department of Economics, La Trobe University, University Drive, Wodonga, Victoria, 3690, Australia

^c UNE Centre for Local Government, School of Business, Economics and Public Policy, University of New England, Armidale, NSW, 2351, Australia

^d School of Business, Economics and Public Policy, University of New England, Armidale, NSW, 2351, Australia

ARTICLE INFO

Article history:

Received 31 December 2008

Received in revised form 18 August 2009

Accepted 19 August 2009

Available online 26 August 2009

JEL classification:

Q25

L32

R51

Keywords:

Water policy

Urban water utilities

Relative efficiency

ABSTRACT

In recent times the relative economic efficiency of urban water utilities has been neglected as policymakers sought to secure urban water supplies. This paper is an effort to measure the efficiency consequences of a number of recent urban water policy initiatives. Data Envelopment Analysis (DEA) is employed in order to measure the relative technical efficiency of urban water utilities in regional New South Wales (NSW) and Victoria. We show that the almost universal policy of water restrictions is likely to reduce relative efficiency and the typically larger utilities located in Victoria are characterised by a higher degree of managerial efficiency. A number of implications for urban water policy are advanced.

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1. Introduction

Urban Australia had largely avoided the direct consequences of both intense irrigated agriculture and drought up until the turn of the 21st century. However, a combination of changed weather

* Corresponding author. Tel.: +61 2 67 73 2500; fax: +61 2 67 73 3596.

E-mail addresses: joelbyrnes@kpmg.com.au (J. Byrnes), l.crase@latrobe.edu.au (L. Crase), bgrant5@une.edu.au (B. Dollery), rvillan2@une.edu.au (R. Villano).

¹ Tel.: +61 3 9838 4312; fax: +61 3 9288 6666.

² Tel.: +61 2 6024 9850; fax: +61 2 6024 9833.

³ Tel.: +61 2 67 73 2027; fax: +61 2 67 73 3607.

patterns and population growth (Young et al., 2006; NWC, 2006) delivered water shortages of varying degrees to almost every capital city in Australia by early 2007. The 'drought' visiting the cities has seen unparalleled interest in solutions to the so-called 'water crisis' (Crase and Dollery, 2006). Water restrictions, bold engineering schemes such as recycling and desalination plants, and arguments regarding the moral attributes of a green suburban lawn have been debated (see, for instance, Brennan et al., 2007; Grafton and Kompas, 2006 and Watson, 2007).

Urban water policy has not always been such a frenzied arena. The earliest attempts at reform were relatively dull affairs aimed at blunting the effects of monopoly industry structures (see CoAG, 1994). Although the current state of urban water storages can justify to some extent this change in emphasis, turning a blind-eye to the relative operational efficiency of what are still in essence local monopolies may result in unintended consequences. Efforts to 'secure' urban water supplies through engineering efforts may well prove successful, yet will undoubtedly prove expensive to build, operate and maintain.

The intense focus on husbanding urban water supplies may allow relatively inefficient institutional arrangements to continue unchallenged. While the primary responsibility of policy makers is to ensure sufficient water resources exist to supply urban populations, the secondary aim of welfare enhancing policy should not be forgotten. This paper seeks to fill this particular gap in the analysis of urban water in Australia.

We examine 52 water utilities from regional New South Wales (NSW) and Victoria in order to measure relative technical efficiency and productivity over a four-year period 2000–2004. We also measure the determinants of relative efficiency with respect to a number of exogenous variables, including governance arrangements, network characteristics and the consequence of recent urban water policy instruments.

The paper is divided into five main parts. Section 2 describes contemporary Australian urban water policy to establish the need for an investigation of relative efficiency in urban water provision. Section 3 outlines the econometric techniques employed. Section 4 provides a synoptic review of the literature on relative efficiency measurement in the water and wastewater sectors. Section 5 outlines data and methodology considerations, with the results of the various models are presented in Section 6. The paper ends with some brief policy implications in Section 7.

2. Contemporary urban water policy in Australia

While the Australian Government's National Water Initiative (NWI) is considered in some sections to be 'world best practice' in terms of policies aimed at reforming water markets (see, for instance, WGCS, 2006, p. 1), in many respects the Australian urban water setting is not dissimilar to those in other developed economies. In particular, water delivery networks and sewerage treatment systems in the United Kingdom (UK) and the United States (US) share many similarities with their Australian counterparts. However, a significant difference resides in ownership structure.

Much of the water and wastewater sector in the UK is privately owned, whereas in the US, the water and wastewater industry consists of both publicly and privately owned utilities. In this respect, the Australian system is different. Although varying degrees of corporatisation exist, almost the entire urban water and wastewater sector in NSW and Victoria is owned by some form of government.

Water policy in Australia has largely focused on irrigated agriculture since about 60% of 'harvestable' water is consumed in that sector. However, each of the two most recent water policy landmarks – the 1994 'Water Resources Policy' (WRP) (CoAG, 1994) and the 2004 NWI (CoAG, 2004) – attempted reform in the urban water sector. Each bears the hallmarks of their era.

In 1994, COAG sought to reform 'Government Business Enterprises' as part of 'National Competition Policy' (NCP). In essence, utilities owned by governments were to adopt corporate structures and face market prices, or at least proxies of these prices. Water and wastewater utilities were to 'recover costs' and governments would reform institutional structures in order to allow GBE's to operate as though they were in the business of maximising profits. However, since water utilities were still monopolies, price regulators would attempt to ensure services were provided in accordance with the principles of economic efficiency.

As part of NCP, in Victoria the urban water sector was consolidated from around 130 local government water utilities to just 18 urban water authorities, owned by the state government, but

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