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Simplifying complexity: Rationalising water entitlements in the Southern Connected River Murray System, Australia☆

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ABSTRACT

Water markets have the potential to greatly improve the productive use of water by reallocating entitlements to where they are most highly valued. However, water markets do not always function efficiently because the property rights structure initially was not designed for market transactions. A major challenge dominating Australia's water reform agenda is to rationalise the complex and inconsistent water entitlements within and across jurisdictions to facilitate markets. In this paper, a classification framework was developed to identify entitlement types and specify entitlement attributes, and alternative entitlements arrangement options are proposed to minimise transaction costs and streamline administrative processes. Although the study focuses on the reform of water entitlements systems in the Australian context, its broad implications are briefly discussed.

1. Introduction

Through the mid 1980s it became clear that existing institutional arrangements were inadequate for sustainable water use and management in Australia (Randall, 1981). In 1994, the Council of Australian Governments[1] (COAG) endorsed a national Water Reform Framework to make the necessary changes. The key element of the package in relation to water property rights was a recognition of the need to develop and implement comprehensive and consistent systems of water entitlements, which were ''backed by the separation of water property rights from land title, with clear specification of entitlements in terms of ownership, volume, reliability, transferability and, if applicable, quality'' (COAG, 1994). Government policies also identified establishing competitive markets as the most appropriate instrument to allocate scarce water among competing users (Pigram, 1993; Bjornlund, 2003).

In 1995, a cap[2] was introduced to limit surface water diversions from the Murray–Darling Basin (MDB)—the biggest catchment in Australia. Prior to the cap there was little incentive to trade because increased demands for water were largely met administratively through increased allocations to irrigators.[3] The cap effectively limited entitlement holders'

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[1] COAG comprises the Premiers of the various sovereign states, together with the Prime Minister of the Commonwealth of Australia. It debates matters of national significance.

[2] The cap set the use of water for consumptive purposes (e.g., for irrigated agriculture, stock and domestic and urban needs) to a level reflecting the 1993/1994 levels of development.

[3] As irrigated agriculture dominates water use in Australia, the scope of this paper is restricted to the consideration of irrigation water entitlements and trading.

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access to water, forcing them to meet any increases in demand through trade (Goesch, 2001).

In Australia, water trade sometimes is referred to as permanent trade of water entitlements (i.e., irrigators' access rights to a specific quantity of water each irrigation season) and sometimes is referred to as temporary trade of seasonal allocations (i.e., the proportion of water entitlements allocated by water utilities during an irrigation season). Markets for temporary water are relatively easy to administer, because the underlying property right in water remains with the seller, and only the right to use the water for a defined period of time is traded. In general, there are more trade restrictions on water entitlements than on seasonal allocations, and more restrictions on trades between irrigation districts than within a district (Bjornlund, 2003; Appels et al., 2004).

The existence of markets for both temporary and permanent water enables irrigators to manage the risk of increased supply uncertainty, and also facilitate a continued reallocation of water both within and between seasons (Crase et al., 2000). For example, some irrigators have sold permanent water to gain cash and in return accepted higher supply risk, which they try to manage by buying temporary water. Others have purchased permanent water to secure their production during periods of low supply, and then sell it on the temporary market when they do not need it. At the community level, water markets have the potential to maximise the economic benefits not only for individual irrigators, but also for agricultural regions (e.g., Young et al., 2006).

Markets for temporary water have achieved far wider adoption than markets for permanent water. For example, among 990 gigaliters (GL) of water traded in the MDB in 2001–2002, 913 GL (or 92%) was traded temporarily and the remaining was traded permanently (Productivity Commission, 2003). Differential tax treatment, considerable policy uncertainty related to the level of future supply, the administrative complexity and cost associated with markets for permanent water and irrigators' perceptions of water rights as an inherent part of their property, are significant factors driving the preference for markets in temporary water. Also, many buyers indicate that they are not able to pay the prices on the market for permanent water, simultaneously with making other considerable investments in farm improvements and expansions in response to increasing adjustment pressures within the irrigation industry (Bjornlund, 2003).

It often has been argued that in order to facilitate real structural change within the irrigation industry and encourage a move to more efficient and higher-value uses, permanent entitlements trade is essential, because irrigators are unlikely to invest significant amounts of money in irrigation infrastructure without the long-term security of water supply (Bjornlund and McKay, 2002). The slow uptake of the market for permanent water has been an impediment to maximising significant economic benefits from efficient and high value water uses (Marsden Jacob Associates, 1999; Crase et al., 2000).

A prerequisite for an efficient market is completely specified, enforced, and transferable property rights (Saliba, 1987). However, it has been recognised that current water entitlements are not well defined (Crase et al., 2000). Individuals in environments with such insecure property rights will choose to engage only in self-enforcing contracts, which provides less potential for the society to realise gains from trade and build a foundation for economic growth (e.g., invest in more efficient irrigation infrastructure) (Fuchs, 2003). As a result, water trading has been limited to spot sales of water or to the lease of water for a single year rather than to permanent sales of water entitlements (Freebairn, 2005). In addition, existing water entitlements systems are complex and inconsistent within and across jurisdictions, and restrictive of water transfers, which resulted in maintaining existing, possibly inefficient uses of water.

Australian water administrators are being called upon to develop nationally compatible water entitlement systems coupled with trading arrangements that minimise transaction costs to facilitate markets. The recent National Water Initiative[4] (NWI) represented strategic attempts to standardise approaches to water management at a national scale. By 2007, institutional and regulatory arrangements are required to be in place to facilitate ''intra and interstate trade, and manage differences in entitlement reliability, supply losses, supply source constraints, trading between systems, and cap requirements and to develop arrangements to facilitate effective and efficient water trading on the markets'' (COAG, 2004).

Simplified and consistent water entitlements will improve the efficiency of water markets, and increase the benefits of markets by reducing the transaction costs of trading. Beyond the general consensus, however, there is much less agreement about what the specific reforms should be. With this in mind, this paper attempts to:

- specify the feature of existing water entitlements arrangements in the study area;
- propose a water entitlements classification framework;
- explore opportunities to simplify and standardise entitlements to streamline administrative processes and facilitate water markets.

2. Property rights and water markets—a literature review

Over the past two decades, the establishment of tradable property rights in water and development of markets in these rights has received considerable attention around the world. Markets for permanent water have been introduced formally in the United States (Colby, 1995), Chile (Bauer, 1997), Mexico (Rosegrant and Binswanger, 1994), New Zealand (Sharp, 1996) and Australia (Bjornlund and McKay, 2002). Many other countries such as Canada, Spain and South Africa are working on their introduction (Easter et al., 1998).

However, there are considerable uncertainties and restrictions associated with the development of permanent water

[4] At the COAG meeting of 25 June 2004, the Commonwealth, the Australian Capital Territory, Queensland, New South Wales, Victoria, South Australia and the Northern Territory agreed to participate in an intergovernmental agreement on water allocation and management.