

**Submission
No 13**

INQUIRY INTO STATUS OF WATER TRADING IN NEW SOUTH WALES

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Submission to the NSW Legislative Council inquiry into the status of water trading in NSW

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Background

We are a team of economists (Maruge and Tiho) and a hydrologist (Willem). Tiho and Willem have a long-standing interest in water markets and hydrology in the MDB, and have previously published a number of peer-reviewed studies on these topics. Maruge is a PhD candidate at the University of Sydney and has been working primarily with the MDB water market for her thesis. We have recently drafted a paper titled 'Market microstructure of the Australian water market: lessons from the last decade', which provides a more complete empirical assessment of the performance of the sMDB water market by investigating multiple water market attributes in major trading zones from NSW and VIC within a ten-year timeframe. The NSW trading zones included in the studies are NSW Murray 10 and 11, and NSW 13 Murrumbidgee. The market attributes we investigate include price and price volatility, volume traded, number and the average size of transactions and net imports of water. This submission is written based on the empirical findings of this working paper.

Comments regarding the status of water trading in NSW

Entitlement and allocation prices

Our results suggest that entitlement and allocation prices can be largely explained by observed factors such as water availability, crop type and seasonality. Specifically, we found strong evidence in our study that entitlement (both high-security and general-security) and allocation prices are negatively driven by water availability and positively driven by the with the proportion of irrigation water devoted to high-value crops (i.e. fruit and nut trees and cotton) in a trading zone. In other words, the entitlement and allocation prices increase with water scarcity and with relative importance of high-value crops in irrigation in a trading zone. These results indicate that the price mechanism in sMDB water market is functioning reasonably well as the prices are highly responsive to the level of scarcity of water resources and reflect the value that can be derived from the use of the water.

Price volatility

We found that price volatilities of both entitlements and allocations are negatively associated with trading volume in the water market, which is contradicting with the findings in financial markets, where larger trading volume often corresponds to larger price volatility. It is possibly because water markets, especially entitlement markets, are

generally much thinner than financial markets. There are often only a few transactions in a month, or even in a quarter in the entitlement market. With infrequent transactions, the prices can be highly scattered. The increased trading volume therefore, may contribute to decreased volatility. Given that volatility in entitlement prices often stands for uncertainty and potential risk for irrigators to invest in and manage entitlements, our result highlights the importance of encouraging and facilitating more active entitlement trading that may lead to less volatile prices and reduce investment and management risk that irrigators bear. It is also worth noting the potential contribution of the participation of non-water users (such as financial investors) in terms of increasing trading activities and thus reducing uncertainty in the water market. We also found decreasing trends in price volatilities over time, especially for the lower-security entitlements and allocations. This may be a sign of the maturing of the sMDB water market.

Trading volume

Our results suggest that both the volume traded and number of transactions of high-security entitlements show decreasing trends over time, beyond the impacts of the included explanatory variables such as water availability and crop type. We tend to believe that the decreasing trends indicate that high-security entitlements are increasingly transferred to and owned by long-term holders, who are also very likely high-value users such as horticultural irrigators. These results provide direct evidence against the recent suspicion that speculative investors have been disturbing MDB water market by performing high-frequency trading as raised by Hamilton and Kells (2021). At the same time, the trading volume and frequency of temporary allocation were found to have increasing trends over time. This provides another evidence that the water market is functioning well in the sense that products designed for long-term investment purposes like high-security entitlements have been increasingly owned by long-term users who are also likely high-value users, such as horticultural irrigators. On the other hand, products designed to meet temporary and seasonal demand like allocations have been traded increasingly actively, indicating increased adoption of water market in sMDB.

Summary

In response to the committee's interest in "understanding whether the water trading market is being abused through practices like playing the market, cornering the market or fixing the market", we conclude based on our empirical findings using NSW water market trading data that there is no significant sign of market distortion. The price, price volatility, trading volume and trading frequency in MDB water market can largely be explained by factors such as water availability, crop type and seasonality. The market is functioning reasonably well in serving its primary goal of effectively allocating scarce water resource towards high-value users. There are indeed some unexplained variations in these key market attributes especially for the entitlement market, but direct investigation would require data that is not currently publicly available, such as data on the financial investors' activities in the market. Disclosure of relevant information will aid deeper understanding of the role that non-water users play in the market and their

impacts. So far, our results suggest that non-water users including institutional investors should not have had significant impacts on the water prices, but might in fact have contributed to the decreased price volatility by increasing trading volume and trading frequency in the water market.

Work cited

Hamilton, S. and, Kells, S. (2021). *Sold Down the River: How Robber Barons and Wall Street 880 Traders Cornered Australia's Water Market*. The Text Publishing Company, Melbourne, Australia