Understanding the relationship between spatial information, property markets and macroeconomic policy

Nilofer Tambuwala, Rohan Bennett, Abbas Rajabifard, Ian Williamson
Centre for Spatial Data Infrastructures and Land Administration, Department of Infrastructure Engineering, University of Melbourne
Parkville, VIC 3010
nilofert@unimelb.edu.au, rohanb@unimelb.edu.au, abbas.r@unimelb.edu.au, ianpw@unimelb.edu.au

ABSTRACT
An important relationship exists between property markets, macroeconomic policy and spatial information. This relationship is often constrained by institutions, policy and the lack of technology. Increasingly intergovernmental cooperation and advancement in spatial technologies enables spatial enablement, offering the potential to include authoritative spatial information generated by a country’s land administration system, in government macroeconomic decisions. A review of literature shows both disciplines of land administration and macroeconomics advocating the role of secure property rights as key to economic progress. However the link between the agencies that support secure market transactions and generate land information, and those that use the information to manage the economy is not made. As a result, suboptimal governmental fiscal and monetary decisions can occur.

Two case studies of the Australian context, with a focus on managing land taxes and administering interest on debt financing, illustrate this. Results of the case studies are used to derive a simplified empirical model that aims to articulate and promote the role of government spatial information in policy and decision-making. Practical implementation will require determination of the legal, institutional, and technical requirements of the model.

KEYWORDS: spatial information, property markets, macroeconomic policy, land administration

1 INTRODUCTION
Spatial information is increasingly important for evidence-based macroeconomic policy. Information about land, one of three factors of production in classical economic theory, is collected and maintained by land administration agencies. In many federated countries economic management and land administrative responsibilities are divided between different levels of government. Both disciplines operate independently and their interdependence is not reflected in literature.

In the United States for instance, the financial collapse of the late 2000s that resulted in the global financial crisis (GFC) is suggested to have emanated in part from a lack of integration between the information processes of land administration and macroeconomic policy making (Roberge and Kjellson, 2009 and Buhler and Cowen, 2010).

In Australia, states and territories run successful Torrens land registration systems that generate secure titles to parcels. The transferability of rights in land underpins an active and secure land market that plays a key role in the country’s economic progress. Australia’s spatial information systems that record information about transactions in land are supplied...
by independent land administration agencies. The link between these agencies and those that are responsible for economic management is unclear.

The capacity of spatial information to support macroeconomic policy making is in need of new evaluation. To achieve this, existing theory and practices within the disciplines of macroeconomics and land administration are presented. The short comings of these theories in practice are demonstrated by presenting the results of two case studies from the Australian context. The outcomes of the case studies lead to the articulation of a simplified empirical model that links macroeconomics, land administration and spatial information about land market transactions. The model is aimed at policy and decision makers in higher levels of national government. It aims to emphasize the necessity for seamless land administration and macroeconomic processes.

2 BACKGROUND

According to classical economic theory, there are three means of generating wealth in an economy – capital, labour and land (Dale and McLaughlin, 1999). Transactions in land form a significant part of the GDP of any market economy. Formal land transactions are only possible through the existence of land administration infrastructures that allow for private land ownership to be registered, land values to be established, and rights in land to be exchanged in a market environment. As such, these administrative structures have a critical impact on the national economy as a whole.

The relationship between economic policy and its impact on local and national land or property markets has been well documented (McKenzie and Betts, 2006; Poterba, 1992 and Joshi, 2006). However, the role that spatial information about property market transactions, should play in economic policy making is not well understood. Central governments in most market economies employ principles from institutional and Keynesian economics to support government management of aggregate demand in the economy. Government macroeconomic policies are intended to combat the instabilities that a pure market structure may cause. However, the land or property market is formalised by land administration systems whose importance in macroeconomic policy is not yet clearly understood. This is particularly significant in federated nations, such as Australia, where land administration and the collection of spatial information about transactions in land is the constitutional authority of the state and territory governments, while macroeconomic policies are administered at federal level.

A large part of macroeconomics is about land. For instance, the availability of money in the economy, especially unrestricted mortgage financing, managed by monetary policy tools, has a significant impact on land or property markets. Operations in the secondary mortgage market also influence purchasing power (Carper et al., 2007). For this reason, analysis of how property markets work is predominantly carried out in the language of economics. However in a land or property market the product is formalised by a land administration system that determines the type of title and land right through the tenure system, and other functions of land value, land use and land development (Enemark, 2007). The land administration system identifies the complex real property right that is the foundation of formal property markets. It also collects and maintains authoritative spatial information about ownership and sale. These core land administration functions are not necessarily reflected in economic literature that deals with property markets.

Property or real estate economics endeavours to account for the unique characteristics of property markets, by linking the actions of people to their effect on the value of property. This discipline tries to apply general economic theory to the realities of real estate practices. Interactions within the property market are founded in economic theory however; property markets come from a nation’s capacity to create ‘property rights institutions’ (North and Thomas, 1973). These are often within the domain of land administration. This interaction between the two disciplines is not well reflected in literature.
Economic theory does recognise the role of land administration systems in national wealth creation. For instance North and Thomas (1973), Deininger and Binswanger (1999) and DeSoto (2000) argued for the importance of the capacity of a nation to build land and property rights. Some land administration theory too promotes the importance of this discipline to the creation of wealth. Wallace and Williamson (2006) suggested that in a property system the rights are the commodities, not just the land itself, and successful land markets derive strength from creating and marketing land rights and complex commodities. Williamson et al. (2010) and Wallace et al. (2010) convey the importance of land administration processes that are influenced by national land policy and economic systems. They emphasise that infrastructures that manage land data should allow access, interoperability and multipurpose use of that data.

However much of this land administration literature deals with developing nations, with a focus on establishing land administration systems and recording land parcels, for the purposes of basic taxation and the construction of formal land markets. In most federated countries the land administration systems and consequently the property markets are already well established, relying on a complex set of interrelated institutions, formal and informal, to promote information flow. In Australia for instance, land registration and property valuations department forms part of the state governments. Often property valuation methods can be as varied as the property laws in various jurisdictions. For instance, Queensland, New South Wales and some Victorian councils value and tax unimproved land. Other states tax land and buildings based on capital improved values. Valuations data is collected either by in-house or private valuers hired by the state or local governments. Data relating to ownership and value of properties is generally stored in multiple jurisdiction-based databases.

Consequently, the land or property market is impeded by information asymmetries (Garmaise and Moskowitz, 2004). One function of market-supporting institutions is to ensure that information flows smoothly (McMillan, 2003). Of this, spatial information about land transactions flowing up to the central government is essential in the management of national wealth. However there is a lack of understanding at higher levels of government about the role that spatial information collected and maintained by established state-based land administration systems should play in macroeconomic policy making.

The shortcomings of economic and land administration theory in supporting the link between property markets, spatial information and macroeconomic policy is evident within the literature. The following case studies further explore this link in practice, by looking at two macroeconomic processes, taxation of land and setting of interest rates, in the context of property markets in Australia. The information flows between these functions and the land administration processes of tenure and value that directly underpin property markets (Enemark, 2007) are studied, for this federated country. The property object approach, introduced by Bennett et al. (2008), is used to distinguish each tax or complex commodity derived from a land parcel as a separate attribute of the land. This permits an in-depth analysis of the information flows to the levying authority of each instrument or attribute of the land parcel. The case study approach gives a clearer understanding of the spatial information needs of federal policy makers in a federated market economy.

3 RESULTS OF CASE STUDY 1: MONETARY POLICY IN AUSTRALIA – INTEREST RATES

Macroeconomic policy tools such as taxation and the setting of interest rates assist in the management of national wealth. Monetary policy is generally controlled by a country’s central bank. Monetary policy decisions require authoritative information about transactions in capital, labour and land to effectively judge the status of the economy. Information about the land market is collected and maintained by land administration agencies.
Official interest rates, set by the Reserve Bank of Australia (RBA), depend upon how the economy is functioning at a certain time. Monetary policy decisions are expressed in terms of a target for the cash rate, which is the benchmark overnight rate for bank lending. Most banks charge a separate, slightly higher rate for debt financing.

The property or land market in Australia plays a significant role in the national economy. Of this, the housing market is the largest (West, 2010). Due to the size of the investment, most property purchases require debt financing. Kohler and Rossiter, (2005) found that an important consideration for property ownership is the ability to make financial commitments towards purchasing property and to meet any repayment obligations if a loan is taken out to purchase the property. Since the interest rates set by banks generally follow the official RBA cash rate, changes to the cash rate affect affordability and hence investment in the property market. This consequently impacts on supply and demand. Since the land or property market, especially the housing market, contributes significantly to national wealth in Australia, timely and accurate spatial information about property market transactions is essential to macroeconomic policy decisions that aim to effectively manage national wealth. In Australia authoritative spatial information about the property market, such as ownership, value and property sale information is maintained by the state and territory land administration agencies. There is no central database that records property and prices (West, 2010).

The situation in Australia with regard to the access to authoritative land market information by monetary policy makers is illustrated by Figure 1.

Figure 1: The relationship between spatial information about market transactions and interest rates in Australia

Using the property object approach mentioned earlier, effective interest requires an interest payer, an instrument or interest object, a levying authority and authoritative information. In the figure above, the interest object attached to the land is a mortgage levied by a mortgage provider. The mortgage provider adjusts its interest rate on debt financing to closely follow the Reserve Bank’s official cash rate. Information flows between these three entities, the individual, mortgage provider and RBA, are already established.

Currently in Australia, though spatial information about market transactions is eventually available at federal government level, it is held in separate state databases. As Figure 1 shows, there is currently limited or no access to these authoritative data stores at federal level. Connectivity needs to be established between the government creators and users of market information.

Authoritative implies publically sourced, timely and accurate data. As the RBA pointed out, ‘data timeliness’ is a major problem with access to housing price data (RBA, 2004 and 2005). This is attributed to the lack of consistency in transaction reporting requirements between the states. In most states, there is an absence of reporting requirement at the time of sale. Reporting generally occurs when documents are lodged for registration which is after settlement and can be up to three months after the contract of sale. From the perspective of
efficient economic policy, it is desirable for market analysis on house price data to be based on the period in which the price was determined, rather than when the transaction was later settled (RBA, 2005). Due to insufficient and untimely information flows and poor data integration at a national level, the RBA collects sale and transaction data from the private sector. For instance, the RBA collects information about the commercial property sector, including vacancy rates, property prices, and rents from the Australian Bureau of Statistics and other organisations such as Jones Lang LaSalle, the Property Council of Australia, and Savills Research (RBA, 2009). For sales transactions, the Bank also relies primarily on the Australian Property Monitors (APM). Private sector sourced information is neither authoritative nor assured.

In summary, the flow of accurate, authoritative, and assured land information from state government to macroeconomic policy decision makers is impeded resulting in policy decisions being based on less than optimal datasets. This may ultimately result in fiscal policies being potentially out of kilter with the fiscal reality of the jurisdiction.

4 RESULTS OF CASE STUDY 2: FISCAL POLICY IN AUSTRALIA – LAND TAXATION

The setting of tax rates form part of a nation’s fiscal policy that manage national wealth. Higher transaction taxes may cause otherwise affordable transactions, to become unaffordable. Similarly, higher taxation on the holding of property increases the cost of ownership and consequently increases the incentive to sell. These taxes in turn affect supply and demand in the market place.

In a market economy, anything that is tradable or disposable is taxable. Taxation involves taking processes that have value and extracting part of that value for government. The ownership and sale of property make up the main processes within a land market. In the context of this study, we can define taxes on land to be government charges on the transactions and holdings of property that form part of a land market (derived from FIG, 1995 and CCH Editors, 2010) As with any other form of tax, taxes on land are compulsory contributions levied by the state on a taxpayer (individual or legal entity). The main taxes on land in Australia are: Capital Gains Tax (CGT), stamp duty, land tax, Goods and Service Tax (GST) and rates.

2009-10 values from the Australian Bureau of Statistics indicate that GST accounts for about 27% of total tax revenue for all levels of government. Taxes on property make up about 10% of total tax revenue. Of this, taxes on immovable property account for 6% and taxes on financials and capital transactions about 4%. Taxes on property were the largest source of taxation revenue (37%) for state governments in the same time period and were also the sole source of income for local governments (ABS, 2011).

In Australia, property is taxed at different levels of government. According to the earlier definition of a tax on land, an effective taxation system needs a taxpayer, an instrument being taxed, a levying authority, and authoritative information about the taxpayer and the value of the instrument being taxed. For effective fiscal policy concerning land, the governments at each jurisdictional level need authoritative information about the ownership and value of property: Figure 2.
The relationship between spatial information about taxable transactions and taxation in Australia’s land market

The figure above shows five tax objects levied by the various governments in Australia. Within the respective state governments, the revenue offices collect land tax and stamp duty, while the land administration agencies maintain the data stores of spatial information about the land. In Australia, though publically sourced spatial information about property ownership and value is available to the state taxation offices and local councils, it is generally maintained in separate databases by independent levying authorities. Duplication is evident. Additionally, as the dotted line in Figure 2 shows, the Australian Taxation Office (ATO) has limited or, in some cases, no access to the authoritative data stores of tenure and value information. It relies on information declared in tax returns and on data purchased from the private sector in order to collect capital gains tax and GST on real property. This brings the reliability and accuracy of this information into question.

There is clearly information asymmetry in operation here. This relates to the gap between information available within land administration agencies and what is actually shared with the Australian Taxation Office. The problems associated with information asymmetries within property markets have been well studied (Clapp et al., 1995, Dolde and Tirtiroglu, 1997, Milgrom and Stokey, 1982 and Garmaise and Moskowitz, 2004). However, much of this literature deals with horizontal information asymmetries between agents, brokers, buyers and sellers, or between neighbourhoods or over time. However literature does not adequately account for the problems associated with information asymmetries between different levels of government within a federated economy, in the context of managing national wealth.

What policy makers need is national spatial information about taxable objects related to land in order to meet broad policy needs such as assessing tax revenue capacities and meeting economic productivity challenges. This includes land tenure information, particularly ownership of taxable properties, and the value of the property or transaction to be taxed. For better management of national wealth in Australia, the large federal departments and agencies such as the ATO and RBA need authoritative, publically sourced property market information, collected and maintained by state land administration agencies.

The following section presents a simple, empirical model that links spatial information, land administration processes and macroeconomic functions. Triangulated (c.f. Golafshani, 2003) from the results of the case studies, the model is aimed at policy makers in higher levels of government, to initiate a better understanding of the need for seamlessness between the two disciplines, and a holistic spatial information management approach for a better informed government.
The need for Evidence-based Policy (EBP) is gaining a strong hold, particularly in Australia:

“The primary goal is to improve the reliability of advice concerning the efficiency and effectiveness of policy settings and possible alternatives” – Head, 2009.

Good data or ‘high-quality information bases’ is one key component of this (Head, 2009). To achieve this within a property market context requires links between the institutions that manage national wealth and those that support land market transactions to be established. If the information available to national agencies about the real state of the market is inaccurate, their ability to make sensible policy interventions is jeopardised.

The case studies clearly illustrate the missing link between authoritative land market information and elements of monetary and fiscal policies in Australia. The situation in other federated market economies such as the United States and India is similar, and potentially worse given the size and complexity of their respective federations. Where fiscal and monetary policies are used to manage a county’s wealth, policy makers need authoritative spatial information about market transactions to judge the state of the nation’s economy and make evidence-based policy decisions.

In countries with a tiered government structure where constitutions divide responsibilities, there is a need to initiate a paradigm shift regarding the importance of better information flows between the government creators and users of spatial information. The Property Market Tree represents a new model to illustrate better links between spatial information generated by land administration processes, property markets and macroeconomic functions, for better informed government: Figure 3.
many federated countries. Co-ordination and integration require continuous, constructive action.

The Property Market Tree aligns well with Australia’s Spatial Data Infrastructure initiatives by ANZLIC since 1996, and the National Government Information Sharing Strategy (AGIMO, 2009) which promotes information sharing between government agencies in Australia. The strategy envisions that

“timely, reliable, and appropriate information sharing is the foundation for good government and has the capacity to deliver a better way of life for all Australians.”

Benefits to government agencies such as improved capacity for evidence-based policy and decision making and greater confidence in data quality and accessibility, are expected to ensue from agencies sharing information with each other (AGIMO, 2009).

Emerging practical approaches also support the paradigm shift recommended by the Property Market Tree. In Europe the INSPIRE Directive has led to the development of legally established ‘key registers’ of addresses and buildings in Netherlands use of which is mandatory for all public agencies in the Netherlands. Sedunary (1984), in his nodal approach to land database configuration, showed the need for high levels of communication between the primary nodes of legal/fiscal and geographic or land information. Additionally the popular and well-known concept of the multi-purpose cadastre to integrate land related data from individual land administration sectors was explained in the early 1980’s (NRC, 1980; Kaufmann and Steudler, 1998). More recently, Roberge and Kjellson (2009) and Buhler and Cowen (2010) showed how the absence of a reliable property rights infrastructure and national cadastre in the United States contributed to the collapse of its land market.

Like the United States, in Australia too, spatial information datasets maintained by state land administration agencies cater primarily for internal information needs within individual agencies, and co-ordination at a national level is very limited. Land is an integral component of national wealth. Government policies formulated to manage national wealth should be based on authoritative information, a key component of which is spatial information about transactions in land. What federated market-based nations need is a better recognition of the role of accurate, authoritative and assured property market transaction information in macroeconomic policy making, and a seamless approach to land information access and delivery at higher levels of government.

6 CONCLUSION

Current economic and land administration literature does not adequately exemplify the importance of a seamless approach between property markets, spatial information and macroeconomic policy. In practice, the information flows between the tools of macroeconomic policy and market-supporting land administration functions are also problematic. This is particularly the case in many federated mixed capitalist nations where property market information is collected and maintained by state agencies, and macroeconomic policies are made at central government level. This paper presents a starting point to emphasise the importance of a holistic approach to land information management, at higher levels of government. The Property Market Tree illustrates that the tools for management of national wealth need authoritative information flows between land administration and federal policy making institutions. A national property market information infrastructure is the next step to achieving this goal. Future research should take a more detailed look at individual states within a federated country to identify the areas where access to spatial information by higher levels of government is impeded. Research is also required on the technical, institutional and legal requirements of national property information
infrastructure. While technical issues will also play a part, the governance, coordination and cooperation required for data sharing and integration is likely to be most challenging.

7 ACKNOWLEDGEMENTS

The authors are grateful for the assistance of our colleagues in the Centre for Spatial Data Infrastructures and Land Administration, Department of Infrastructure Engineering at The University of Melbourne in preparing this article. We would also like to thank our research partners, Land and Property Management Authority, Land Victoria, Landgate, PSMA Australia Limited and the Australian Research Council for their support. The views expressed in this article are those of the authors and may not represent those of the research partner organisations. Additionally, the authors would like to acknowledge that an extended version of this paper has been accepted for publication by the journal of Environment and Planning C: Government and Policy.

REFERENCES


