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## On the differential impact of monetary policy across states/territories and its determinants in Australia: Evidence and new methodology from a small open economy<sup>☆</sup>

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### ABSTRACT

Monetary shocks largely affect economic activity in Western Australia. In smaller proportion, those shocks generate contractions in New South Wales, Victoria and South Australia, while economic activity in Queensland is significantly less affected. Finally, we develop a new approach to uncover the determinants of the differential state/territory responses to monetary shocks. Our estimation validates the theoretical assumptions that differences in industrial composition, exposure to international trade and household debt across states/territories are important determinants of these differences.

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### 1. Introduction

The impact of monetary policy in Australia has traditionally been studied at aggregate macro-level; however, it is unlikely that monetary policy decisions have uniform impact across Australian states/territories. The international empirical literature suggests that monetary policy actions may affect each state/territory differently and attributes this effect to regional differences in industrial composition, the proportion of household debt and sensitivity to exchange rate variations.

In the Australian context, economic structures in states/territories do indeed appear to exhibit differences. The economies of Western Australia (WA) and the Northern Territory (NT), for example, largely depend on the mining industry and international trade, whereas economies in New South Wales (NSW) and Victoria (VIC) are more dependent on manufacturing, property development, financial services and tourism industries, while Queensland (QLD) has a more diverse industrial composition.

South Australia (SA) and Tasmania (TAS) both have a large manufacturing industry and proportionally large agricultural, forestry and fishing industries with less exposure to international trade. The Australian Capital Territory (ACT) depends more on the public sector and the economy of the state of NSW which geographically surrounds the ACT.

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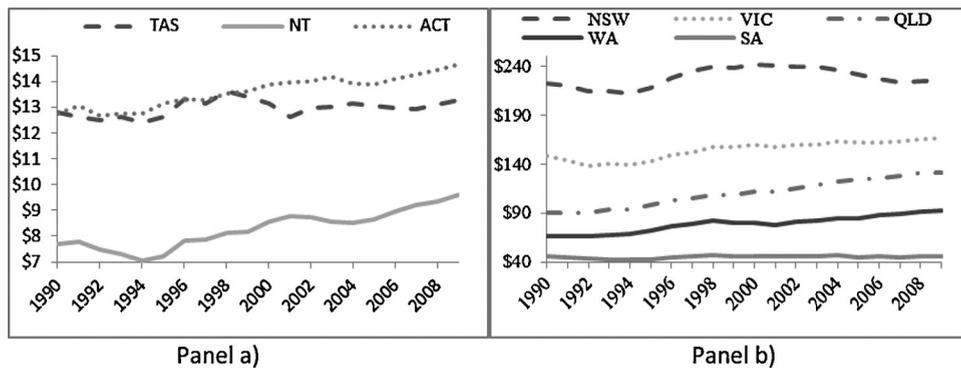


Fig. 1. Real GDP by state/territory, 1990–2009 (A\$'000 millions).

The major concern regarding the differential impact of monetary policy is that while the Reserve Bank of Australia (RBA) mainly focuses on the aggregate gross domestic product (GDP) and aggregate consumer price index (CPI) to make monetary policy decisions, the impact of those policies may affect the economies of the states and territories differently.

In Fig. 1, the evolution of the real gross state product (GSP) by state/territory is plotted for the period 1990–2009. Panel (a) shows the real GSP for the smallest states/territories, indicating that while the real GSP of NT and ACT has grown substantially (about 25% and 15%, respectively during this period), growth in TAS is only about 4%. The main cause of these differences is that in the period 1992–2009,<sup>1</sup> the population grew by approximately 35% in NT and 17% in ACT, but by only some 7% in TAS.

In panel (b) the real GSP of the large states/territories for the same period is plotted. QLD and WA show the largest growth in real GSP, which is driven also by population growth (around 46% and 35%, respectively). On the other hand, NSW, VIC and SA exhibit a moderate real GSP growth due to smaller population growths of 19%, 22% and 11%, respectively. This is because although international migration is positive for those states (particularly NSW and VIC), their interstate migration is negative.

These changes in population generally take place as economic conditions or standards of living change across states/territories. The most notable economic condition to impact economic growth and, as a consequence, migration paths across states/territories during this period was the mining boom, which was responsible for the movement of the labour force from NSW, VIC, SA and TAS to mining areas in WA, NT and QLD.<sup>2</sup>

Given these structural economic differences across states/territories in Australia, the objective of this paper is to develop an empirical model to estimate the effect of monetary policy in Australia across state/territory economies. In addition, a novel approach to uncover the determinants of the different responses across states/territories to monetary shocks is proposed in Section 6.

## 2. Literature review

One of the earliest investigations to address the issue of differential regional and/or state response to monetary policy was conducted by [Carlino and DeFina \(1998\)](#), using the United States (US) quarterly data from 1958 to 1992. The authors use a vector autoregressive (VAR) analysis to estimate the different state/region responses to monetary policy shocks. For state models, the authors estimate an independent VAR model for each state using the variables of the state's personal income growth; the personal income growth for the state's region less the state's income; each of the other regions' personal income growth; the change in the log of the relative price of energy; and the change in the federal funds rate.

[Carlino and DeFina \(1998\)](#) found that the individual state response is often different from the average response of its region, and from the response of other states in that region. They argue that the main reason for these differences is the diverse mix of interest-sensitive industries in each state. The main contribution of this paper is the finding that manufacturing-intensive states are more responsive to changes in monetary policy than less manufacturing-intensive states.

[Arnold and Vrugt \(2002\)](#) investigated the differential regional effect of monetary policy in the Netherlands from 1973 to 1993 using a VAR model with annual data. In this model, the authors use four endogenous variables to estimate a separate VAR model for each region. These variables are the aggregated Dutch real production growth (subtracting the production of the region estimated), the CPI, the estimated real production growth of a particular region, and the short term nominal interest rate. The main results are consistent with most studies, indicating that there is a differential response across the Netherlands which is related to regional industrial composition.

<sup>1</sup> For information see ABS cat. 5220.0, Australian National Accounts: States, Household Income Account and Per Capita, Current Prices, Several Tables.

<sup>2</sup> For detail on this issue see 3412.0 Migration, Australia, 2008–2009. Trends in Net Interstate Migration (NIM).

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