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Modelling the dynamics, structural breaks and the determinants of the real exchange rate of Australia[☆]

Khorshed Chowdhury*

School of Economics, University of Wollongong, Wollongong, NSW 2522, Australia

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ABSTRACT

This paper examines the dynamics, structural breaks and determinants of the real exchange rate (RER) of Australia derived from an inter-temporal general equilibrium model. Autoregressive Distributed Lag (ARDL) modelling results show that a one per cent increase in: (1) terms of trade appreciates the RER by 0.96–1.05 per cent in the long-run; (2) government expenditure appreciates the RER by 0.53–0.46 per cent in the long-run; (3) net foreign liabilities appreciates the RER by 0.18–0.22 per cent in the long-run; (4) interest rate differential depreciates the RER by 0.007–0.01 per cent in the long-run; (5) openness in trade depreciates the RER by 1.15–1.31 per cent in the long-run; and (6) per-worker labour productivity depreciates the RER by 0.38–0.55 per cent in the long-run. The two endogenously determined structural breaks are positive but are statistically insignificant. The speed of adjustment towards equilibrium is high with short-run disequilibrium correcting by nearly 39–47 per cent per quarter. These results add new insights to the literature on the determinants of RER in Australia. Apart from the terms of trade, the effects of other determinants of RER are contrary to the results obtained in previous studies.

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1. Introduction

The recent appreciation in the Australian nominal exchange rate (NER) and in the real exchange rate (RER) has prompted questions about the sustainable value of the exchange rate and its long-run

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* Tel.: +61 2 42214024; fax: +61 2 42213725.

E-mail address: khorshed@uow.edu.au

impacts. After falling briefly below US50c in the early 2000s, the NER quickly began to appreciate, later triggering speculation that it may reach parity with the US dollar. By July 2008, when Australia was experiencing the global financial crisis (GFC), the dollar had surged to US98c. However, Australia was soon caught up in the midst of a collapsing world economy, and the NER fell to US64c in March 2009. Unpredictably, the Australian dollar made a rapid recovery; within seven months it had risen again to US90c and ultimately touching US110c in July 2011. Australia's RER, measured by trade weighted index (TWI), has followed similar patterns. While there was a sudden and precipitous drop at the time of the GFC, both (NER and RER) have now exceeded their pre-GFC levels.

During the crisis, the Australian stock market lost 59 per cent and unemployment peaked at 5.7 per cent, but relatively speaking Australia had a free pass. Australia was the only developed country to avoid a technical recession. The stock market has bounced back since mid-July 2010 and house prices are higher now than in 2007. The Reserve Bank of Australia (RBA) has incrementally increased its cash rate by 1.75 per cent since October 2010 to its current level of 4.75 per cent. This is a clear indication that the danger in Australia is over.¹ In contrast, a key global structural imbalance has emerged by China pegging its currency with the US dollar at an undervalued rate. The peg poses a "double threat" during the GFC. The "threats" are described by Ferguson and Schularick (2009: 4) in the following words: "First, it limits US recovery by overvaluing the dollar in key Asian markets. Secondly, as the dollar weakens against other developed world currencies—notably the euro and the yen—the burden of adjustment falls disproportionately on Europe and Japan, since dollar depreciation translates automatically into renminbi depreciation, through the action of the peg. This is a recipe for protectionist responses and new distortions."

Against this backdrop, we emphasise that RER plays a pivotal role in macroeconomic adjustment because RER is a *price* that ensures internal and external equilibrium. RER also measures the degree of external competitiveness of a country and its misalignment can have adverse welfare and efficiency costs² on small, open economies like Australia. Therefore, it is imperative to understand how RER reacts to changes in its economic fundamentals. A desirable level of RER can be achieved through influencing the RER determinants.

Research on the determinants of RER in Australia was pioneered by RBA researchers (Blundell-Wignall et al., 1993; Gruen and Wilkinson, 1994; Gruen and Kortian, 1996; Tarditi, 1996; Beechey et al., 2000). In evaluating the RBA studies, Aruman and Dungey (2003: 67) observe that: "The RBA research represented in these studies can be interpreted as an attempt to fit the stylised empirical facts of a strong relationship between the Australian dollar exchange rate and the terms of trade into a cohesive theoretical framework." Subsequently, a handful of academics (Chand, 2001; Aruman and Dungey, 2003³; Bagchi et al., 2004) estimated RBA-type single-equation structural models. The 'structural models' have numerous weaknesses including forecasting failures in periods of major macroeconomic disruptions.

The forecasting failures coupled with the inability to accommodate the role of forward-looking behaviour of agents raise concerns about the validity of these models. Aruman and Dungey (2003: 57) rightly point out: "The results illustrate the evolution of research in exchange rate determination in the Bank, notably through several theoretical approaches. The extensions show why those particular models have (or should have) been abandoned in the ensuing years." Research on this topic seems to have ceased and no studies have been published since 2004.

The significance of this paper lies in the urgent need to analyse the determinants of RER of Australia because of the shortage of in-depth studies. Previous attempts at modelling equilibrium RER have

¹ Broadly speaking, the recovery from the GFC can be attributed to four main factors: (1) a mining boom generated by China; (2) a fiscal stimulus combined with an accommodating monetary policy; (3) resilience of Australian banks during the crisis because of their limited exposure to toxic debt compared to other nation's financial institutions; (4) a steady increase in population, fuelled mainly by migration, prevented the housing market from collapsing.

² Chile, Uganda and Mauritius in the 1980s and India and China in the 1990s have all benefited from competitive RER. In contrast, most Latin American and African economies have suffered due to exchange rate overvaluation (Mexico, Brazil and Argentina in the 1990s are good examples). Gala (2008) provides additional theoretical analysis and empirical evidence of channels through which RER can influence economic development.

³ This paper provides empirical analysis of each of the RBA models, over both the original periods of estimation and an updated dataset.

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