Economic Modelling 29 (2012) 1338–1343

Contents lists available at SciVerse ScienceDirect

Economic Modelling

journal homepage: www.elsevier.com/locate/ecmod

Has Australia's floating exchange rate regime been optimal?

Anthony J. Makin *, Nicholas Rohde

Economics, Griffith Business School, Griffith University, Gold Coast, 4222, Australia

ARTICLE INFO

Article history:
Accepted 7 March 2012

JEL classification:
F31
F33
F41

Keywords:
Real shocks
Monetary shocks
National income
Exchange rate regime
Australia

ABSTRACT

This paper develops a straightforward theoretical framework for evaluating exchange rate regime choice for small economies. It proposes that a floating exchange rate minimises national income and employment variation when real macroeconomic shocks predominate, whereas a pegged exchange rate achieves this goal should monetary shocks predominate. It then shows econometrically that, in the case of Australia, a floating exchange rate best suited the economy for the period 1985 to 2010, because real shocks were more significant than monetary shocks. Moreover, consistent with the theory, further results showing that a stronger (weaker) exchange rate correlated with positive (negative) deviations from trend GDP affirm that a floating exchange rate regime was optimal for Australia over this time.

1. Introduction

Exchange rate regimes are pivotal to explaining macroeconomic behaviour in highly internationally integrated economies, irrespective of their level of development. Although an earlier literature explored the topic of exchange rate choice with reference to macroeconomic fundamentals (see for instance Bosco, 1987; Boyer, 1978; Eichengreen, 1995; Garber and Svensson, 1995; Genberg, 1989 and Melvin, 1985), with the exception of a few papers exploring why emerging countries choose not to float (see Calvo and Reinhart, 2002 and Hausmann et al., 2001), there has been a paucity of theoretical and empirical literature on this topic over recent years. This perhaps reflects the findings of influential surveys there were no simple prescriptions for adopting any particular regime (see Mussa et al., 2000 and Rogoff et al., 2004).

Yet the need to understand which exchange rate regime best suits an economy remains very important, especially since globalisation of goods, services and financial markets has increased the magnitude and frequency of external shocks over recent decades. Whereas central banks in some economies in the fast growing Asia-Pacific region, such as the United States, Australia and New Zealand, have allowed floating exchange rates to insulate their economies from external shocks, monetary authorities in others, such as China, Hong Kong SAR and Singapore, have maintained highly inflexible exchange rates.

Since Australia's exchange rate was floated in the early 1980s, the Australian dollar has become 1 of the 10 most actively traded currencies in the world, disproportionately higher than the economy's relative size in the global economy. Floating the Australian dollar afforded the central bank control of the domestic money stock which, under a pegged system, is endogenous. A large literature (for instance, see Branson and Henderson, 1985; Frenkel, 1976; MacDonald, 1999; Mark, 1995; Sarno and Taylor, 2003) suggests that the money demand–supply relationship is a key determinant of the exchange rate under a floating regime.

On the real side, a feature the Australian economy shares with many emerging economies is that it exports mainly primary and lightly processed agricultural and mineral commodities whose world prices are highly variable, yet mostly imports manufactured goods whose world prices are stable in the short run. As Australia is a relatively small trading nation, the value of its exports and imports depends on prices set in world markets. Volatility of its export commodity prices exposes the economy to major fluctuations in its terms of trade, the ratio of export to import prices.

This paper contributes to the literature on the macroeconomics of exchange rates in two ways. First, it proposes a theoretical basis for choosing a small economy's exchange rate regime, and second, it empirically examines whether Australia, as a case study, has adopted the regime that best suits its macroeconomic characteristics. The next section models the inter-relationships between the exchange rate and the real and monetary sectors of a small open economy. Section 3 establishes a criterion for choosing the optimal exchange rate system. Section 4 then empirically examines the behaviour of the Australian dollar between 1985 and 2010 showing, in two different ways, that a floating exchange rate best suited the economy over this period. The final section highlights the main findings and implications for policy.

* Corresponding author.
E-mail address: t.makin@griffith.edu.au (A.J. Makin).

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doi:10.1016/j.econmod.2012.03.006

2. An international macroeconomic framework

Contemporary international macroeconomic models are usually based on microeconomic foundations populated by optimising representative agents with rational expectations in the tradition of Obstfeld and Rogoff (1996). Dynamic stochastic general equilibrium (DSGE) models within this paradigm however are quite sensitive to underlying assumptions, such as the nature of utility functions (Sarno and Taylor, 2003), and their inherent complexity obscures lessons for macroeconomic policymakers about optimal exchange rate choice. In contrast, conventional aggregative approaches, such the still popular Mundell (1963)–Fleming (1962) model, yield straightforward results that remain central to the body of international macroeconomic theory.

The following model focuses on exchange rate behaviour with reference to those key macro variables of most interest to policymakers, without recourse to microeconomic foundations, and so is in the aggregative tradition. At the same time, it examines exchange rate choice in a way that also parallels Poole's (1970) classic analysis of monetary policy choice between interest rate and money stock targets. In developing the framework, we begin with the real side and then move to the monetary side, invoking numerous standard macroeconomic behavioural relations.

2.1. Real sector linkages

National income equals expenditure on consumption, investment, and exports less imports. Hence,

$$y = c(y) + i(r) + x(e, p_X^*) - m(e, y, p_M^*) \tag{1}$$

where

- y is real gross national income
- c is private and public consumption
- i is public and private investment
- r is the real interest rate
- x is exports of goods and services
- e is the effective exchange rate
- p_X^* is an index of world prices received for exports
- m is imports of goods and services
- p_M^* is an index of world prices paid for imports

Next real consumption, investment, exports and imports are assumed to behave as follows.

$$c = \bar{c} + \alpha y \quad 0 > \alpha > 1 \tag{2}$$

$$i = \bar{i} - \gamma r \tag{3}$$

$$x = \bar{x} + \xi e + \lambda p_X^* \tag{4}$$

$$m = \bar{m} + \mu y - \varsigma e + \nu p_M^* \quad 0 > \mu > 1 \tag{5}$$

where

- $\bar{c}, \bar{i}, \bar{x}, \bar{m}$ represent autonomous consumption, investment, exports and imports in constant price terms,
- α is the marginal propensity to consume,
- γ gauges the responsiveness of investment to the real interest rate,
- ξ is the responsiveness of export volumes to the exchange rate,
- λ is the pass-through of world export prices, p_X^*, to the value of exports,
- μ is the marginal propensity to import,
- ς is the responsiveness of import volumes to the exchange rate,
- ν is the pass-through of world import prices, p_X^*, to the value of imports

Eq. (2) conventionally suggests that apart from an autonomous component, which includes government spending, movements in national income influence short run consumption spending, whereas Eq. (3) proposes that the real term interest rate affects investment. Eqs. (4) and (5) show that real export and import values respond to exchange rate movements which alter competitiveness in the short run, so that currency depreciation raises exports and lowers imports. World prices received for exports and world prices paid for imports also influence exports and imports according to the degree to which they pass-through to export and import values.

Summing relations (2)–(5), and solving for y yields

$$y = \frac{(\bar{c} + \bar{i} + \bar{x} - \bar{m} + (\xi + \varsigma)e - \gamma r + \lambda p_X^* - \nu p_M^*}{(1 + \mu - \alpha)} \tag{6}$$

Since we assume short run variation in the terms of trade arises from export commodity price volatility, consistent with the experience of many commodity exporters, rather than from import prices, the foreign currency price deflator for importables is set at its base year value ($p_M^* = 1$).

Dividing (6) through by p_M^*, noting that for a small open economy the exogenous terms of trade, ToT, is the ratio P_X^*/P_M^* and that, via interest parity, the domestic interest rate equals the world interest rate, r^*, expression (6) becomes

$$y = \frac{(\bar{c} + \bar{i} + \bar{x} - \bar{m}) - \gamma r^* - \nu + (\xi + \varsigma)e + \lambda ToT}{(1 + \mu - \alpha)} \tag{7}$$

Partially differentiating (7) with respect to the effective exchange rate yields

$$\partial y / \partial e = \frac{\xi + \varsigma}{1 + \mu - \alpha} > 0 \tag{8}$$

This result implies national output and employment is positively related to the exchange rate in the short run and that the terms of trade is a shift factor since

$$\partial y / \partial ToT = \frac{\lambda}{1 + \mu - \alpha} > 0 \tag{9}$$

Expression (7) provides a basis for analysing short run national income and employment determination in exchange rate - national income space. Since $\partial y/\partial e > 0$, this allows us to draw an upward sloping schedule, labelled the YY schedule in Fig. 1.

2.2. Monetary sector linkages

On the monetary side of the economy, the real demand for cash balances, L, equals the real money supply, so that

$$L(y, r) = \frac{M}{P} \tag{10}$$

Money demand depends positively on national income according to the parameter, κ, and negatively on the short run interest rate, according to the parameter η, such that,

$$\frac{M}{P} = \kappa y - \eta r \quad \kappa > 0, \quad \eta > 0 \tag{11}$$