Economics Letters 142 (2016) 78–82

Contents lists available at ScienceDirect

Economics Letters

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

Financial market segmentation and choice of exchange rate regimes☆

Vipul Mathur [1], Chetan Subramanian *

Department of Economics & Social Sciences, Indian Institute of Management, Bangalore 560076, India

HIGHLIGHTS

- We study a small open economy model with segmented asset markets and financial sector shocks.
- We show analytically that the state-contingent optimal monetary policy facilitates risk sharing between participants and non-participants and is countercyclical.
- We compare welfare analytically across fixed and flexible exchange rate regimes.
- Flexible exchange regime mimics dynamics under optimal policy and welfare dominates the fixed regime.

ARTICLE INFO

Article history:
Received 11 October 2015
Received in revised form
5 February 2016
Accepted 29 February 2016
Available online 11 March 2016

JEL classification:
E52
F41
G12
G15

Keywords:
Exchange rates
Financial shocks
Segmented asset markets
Optimal monetary policy

ABSTRACT

We study the choice of exchange rate regime in a small open economy with segmented asset markets subjected to financial sector shocks. We show that the state-contingent optimal policy facilitates risk sharing between asset market participants and non-participants, and is countercyclical. Our results establish that contrary to existing literature, flexible exchange rates mimic optimal policy and welfare dominates fixed exchange rates.

1. Introduction

There is a growing interest in how monetary policy should respond to shocks originating in the financial sector as distinct from shocks originating in other sectors (productivity and monetary). These shocks have been modeled largely as exogenous fluctuations in the supply and demand for capital in the financial sector. Jermann and Quadrini (2012) and Christiano et al. (2008), show that financial shocks contributed significantly to the observed dynamics of real and financial variables in the US. In this paper, we extend Zervou's (2013) closed economy segmented markets[2] framework to a small open economy and compute welfare analytically across exchange rate regimes under financial sector shocks.

Our work compliments Lahiri–Singh–Vegh (LSV) (2007) who in a seminal paper, show that the Mundell (1963) –Fleming (1962) results are overturned when the source of the friction is in the asset markets as opposed to the product markets. Specifically, they demonstrate that when real shocks affect both financial market participants and nonparticipants symmetrically, then optimal policy is procyclical and fixed exchange rates outperform flexible exchange rates. By contrast, we show that if such shocks are specific to the financial sector, then optimal policy is countercyclical and flexible exchange rates are preferable.

☆ The authors are listed in the alphabetical order of their last names.
* Corresponding author. Tel.: +91 80 26993345.
E-mail addresses: vipul.mathur@iimb.ernet.in (V. Mathur), chetan.s@iimb.ernet.in (C. Subramanian).
[1] Tel.: +91 888 453 3598.

[2] Typically, in such a set-up only a fraction of agents have access to asset markets (see Alvarez et al., 2009, 2001).

http://dx.doi.org/10.1016/j.econlet.2016.02.035

2. Environment

There is a small open economy with agents who consume a single consumption good c, which can be perfectly traded in world markets at a fixed world price of unity. Under purchasing power parity, the home price of consumption good is equal to the nominal exchange rate, S. Further, $\theta_t = (\frac{S_t - S_{t-1}}{S_{t-1}})$, the devaluation rate at time t is also the rate of inflation in the economy. The households' intertemporal utility function is

$$W_t = E_0 \sum_{s=t}^{\infty} \beta^{t-s} u(c_s). \tag{1}$$

Markets are segmented such that only a fraction $\lambda \in (0, 1]$ of the population, called traders, have access to the stock and bond market and the rest, $(1 - \lambda)$, called non-traders, can only hold domestic money.

Following Zervou (2013), while both groups receive a fixed endowment $\tilde{y}$ every period, the traders additionally receive a share of the stochastic real dividend ϵ_t. The dividend shock ϵ_t follows an *i.i.d.* process with mean $\bar{\epsilon}$. The total output in the economy is therefore given by

$$y_t \equiv \epsilon_t + \tilde{y}. \tag{2}$$

The mean output can therefore be written as $\bar{y} \equiv \bar{\epsilon} + \tilde{y}$.

2.1. Households

2.1.1. Trader households

The traders begin any period with assets in the form of money balances, bond and stock holdings carried over from the previous period. Asset markets open first where the trader rebalances the household's asset position, which, for any period t, can be represented as

$$\begin{aligned}\hat{M}_t^T = M_t^T + \frac{T_t}{\lambda} + (1 + i_{t-1})\frac{B_t}{\lambda} - \frac{B_{t+1}}{\lambda} \\ + S_t(1 + r)f_t - S_t f_{t+1} + q_t z_t - q_t z_{t+1}\end{aligned} \tag{3}$$

where $\hat{M}_t^T$ and M_t^T respectively denote the money balances with which the trader leaves and entered the asset market. B denotes aggregate one-period nominal government bonds which pay a nominal interest rate, i; f are foreign bonds which pay an exogenous and constant world real interest rate r; T are aggregate lump-sum transfers from the government, q is the price of a stock and z is the number of stocks. Armed with this nominal cash $\hat{M}_t^T$, the trader household then proceeds to the goods market to purchase consumption for the period t. The cash-in-advance constraint is

$$S_t c_t^T \leq \hat{M}_t^T. \tag{4}$$

The trader household also sells its endowment $\tilde{y}$ and encashes the dividend ϵ_t, both of which become the cash which it carries over in the next period $t + 1$

$$M_{t+1}^T = S_t\tilde{y} + S_t z_t \epsilon_t. \tag{5}$$

Combining (3) and (4) (assuming that the cash-in-advance constraint binds, see Alvarez et al., 2001) we get the budget constraint as

$$\begin{aligned}S_t c_t^T = M_t^T + \frac{T_t}{\lambda} + (1 + i_{t-1})\frac{B_t}{\lambda} - \frac{B_{t+1}}{\lambda} \\ + S_t(1 + r)f_t - S_t f_{t+1} + q_t z_t - q_t z_{t+1}.\end{aligned} \tag{6}$$

2.1.2. Non-trader households

The non-trader household uses cash, M^N, carried over from the previous period to procure current period consumption. The cash-in-advance constraint is

$$S_t c_t^N \leq M_t^N. \tag{7}$$

The non-trader also sells its endowment for cash which is carried over to the next period

$$M_{t+1}^N = S_t\tilde{y}. \tag{8}$$

Combining (7) and (8), we get the budget constraint as

$$M_{t+1}^N = M_t^N + S_t\tilde{y} - S_t c_t^N. \tag{9}$$

2.1.3. Government

The government's budget constraint is given by

$$\begin{aligned}M_{t+1} - M_t = S_t h_{t+1} - S_t(1 + r)h_t + (1 + i_{t-1})B_t \\ - B_{t+1} + T_t\end{aligned} \tag{10}$$

where h_t is the foreign bonds that the government enters with in period t. Importantly, monetary policy impacts only traders directly as they are the only ones in the economy with access to asset markets.

2.2. Equilibrium

In the money market, the equilibrium condition is given by

$$M_t = \lambda M_t^T + (1 - \lambda)M_t^N. \tag{11}$$

Combining (5), (8) and (11) we get

$$S_t = \frac{M_t}{y_t} = \frac{M_t}{\bar{y} + \epsilon_t - \bar{\epsilon}}. \tag{12}$$

In the stock market, the total stocks of the firm which are distributed among the traders should sum up to unity, i.e.

$$\lambda z_{t+1} = 1. \tag{13}$$

Using (2), (11), (13) one obtains the goods market equilibrium

$$\lambda c_t^T + (1 - \lambda)c_t^N = y_t + (1 + r)k_t - k_{t+1} \tag{14}$$

where $k \equiv h + \lambda f$ denotes the total foreign bonds in the economy.

The consumption of non-traders is obtained using (7) and (8) is given by

$$c_t^N = \frac{1}{1 + \theta_t}\tilde{y}. \tag{15}$$

It follows from (15), that an increase in the inflation tax θ, redistributes resources away from the non-trader and thereby lowering their consumption. For traders' consumption, we use equations, (6), (10) and (12) to get

$$c_t^T = \tilde{y} + \frac{\epsilon_t}{\lambda} + (1 + r)\frac{k_t}{\lambda} - \frac{k_{t+1}}{\lambda} + \frac{1 - \lambda}{\lambda}\left(\tilde{y} - \frac{\tilde{y}}{1 + \theta_t}\right). \tag{16}$$

The component $\frac{1-\lambda}{\lambda}\left(\tilde{y} - \frac{\tilde{y}}{1+\theta_t}\right)$ captures the redistribution caused due to changes in monetary policy in the economy.