Economics Letters 136 (2015) 13–18

Contents lists available at ScienceDirect

Economics Letters

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

Labor market flexibility and the real exchange rate

Qingyuan Du [a,*], Qing Liu [b,1]

[a] Department of Economics, Monash University, 900 Dandenong Road, Building H, Room 4.49, Caulfield East, 3145, Australia
[b] School of Economics and Management, Tsinghua University, Beijing, 10084, China

HIGHLIGHTS

- We analyze how labor market flexibility affects the real exchange rate (RER).
- A more flexible labor market leads to a lower RER.
- Changes in labor market conditions can yield significant changes in the RER.

ARTICLE INFO

Article history:
Received 16 June 2015
Received in revised form
11 August 2015
Accepted 13 August 2015
Available online 21 August 2015

JEL classification:
F3
F4
J3

Keywords:
Real exchange rate
Labor market rigidity
Labor re-allocation

ABSTRACT

This paper studies how labor market flexibility can affect the real exchange rate. Both theoretically and empirically, we find that a more flexible (rigid) labor market is associated with a lower (higher) real exchange rate.

1. Introduction

The real exchange rate, one of the most important relative prices, has caused many debates in the world. To our knowledge, the current understandings of the determinant of the real exchange rate are far from complete. None of the papers in the literature have considered the role of labor market conditions. In this paper, we aim at filling this void and analyzing how labor market flexibilities can affect the real exchange rate.

We first build a theoretical model to analyze the relationship between labor market flexibility and the real exchange rate. In presence of the firm-level shocks, a country with a flexible labor market can reallocate labor across firms more easily than a country with a rigid labor market. This implies that more productive firms can take larger market shares. As a result, the country with a flexible labor market is associated with a higher average productivity, which in turn leads to a lower final good price and hence, a lower real exchange rate.

Using two measures for the labor market flexibilities (one from Global Competitiveness Report and the other from Doing Business Report (see Tables 1 and 2)), we provide cross-country empirical support to our theory. How important is the effect of labor market flexibility on the real exchange rate? As an application from our regression results, we consider one experiment: if a country with a rigid labor market such as Portugal improves its labor market flexibility to the level of Hong Kong (an economy with a flexible labor market), while keeping everything else constant, its real exchange rate will decline by around 15%–20%.

The rest of the paper is organized as follows. In Section 2, we build a model to illustrate the mechanism through which a more flexible labor market is associate with a lower real exchange

* Corresponding author. Tel.: +61 3 99034702.
E-mail addresses: qingyuan.du@monash.edu (Q. Du), liuqing@sem.tsinghua.edu.cn (Q. Liu).
[1] Tel.: +86 10 62773994.

http://dx.doi.org/10.1016/j.econlet.2015.08.012
0165-1765/

Table 1
Ten countries with the most flexible labor markets.

Country	GCR index	Country	DBR index
Denmark	6	Singapore	100
Singapore	5.8	Hong Kong	100
Switzerland	5.5	United States	100
Georgia	5.4	Maldives	100
Hong Kong	5.4	Marshall Islands	100
Kazakhstan	5.4	Australia	97
United States	5.4	Canada	96
Iceland	5.3	Jamaica	96
Azerbaijan	5.2	Palau	96
Nigeria	5.2	Georgia	93

Table 2
Ten countries with the most rigid labor markets.

Country	GCR index	Country	DBR index
Italy	2.1	Congo, the Dem Rep	22
Suriname	2.1	Guinea-Bissau	23
Venezuela	2.1	Niger	23
Namibia	2.2	Venezuela	24
Germany	2.3	Bolivia	26
South Africa	2.3	Central African Rep	27
Bolivia	2.5	Congo	31
France	2.5	Tanzania	33
Portugal	2.5	Sao Tome and Principe	33
Zimbabwe	2.5	Equatorial Guinea	34

rate. Section 3 presents the empirical evidence. Section 4 provides concluding remarks.

2. Model

We consider a small open economy Home which is endowed with $\bar{L}$ units of labor. Assume that labor is internationally immobile. For simplicity, we do not assume any dynamics in the model.[2] Consumers spend all their incomes on a final good. The final consumption good consists of two parts: tradable and non-tradable

$$C = \frac{C_T^{\gamma} C_N^{1-\gamma}}{\gamma^{\gamma} (1-\gamma)^{1-\gamma}} \tag{2.1}$$

where C_T and C_N denote the aggregate tradable and non-tradable good indices, respectively. We normalize the aggregate world tradable good price to be one. The national CPI is

$$P = P_N^{1-\gamma}. \tag{2.2}$$

The final tradable good is produced by a continuum of intermediate tradable goods from producers all over the world. For an intermediate tradable good producer i in Home, the demand curve is

$$y_T^D (i) = \xi \left(p_T (i)\right)^{-\varepsilon_T} \tag{2.3}$$

where ξ is a constant which captures the world demand conditions and $y_T^D (i)$ represents the individual demand for firm i's good in the tradable good sector.[3] ε_T (> 1) denotes the elasticity of substitution between any tradable intermediate goods. Every intermediate tradable good producer uses a linear technology

$$y_T^S (i) = e^{\pi_T^i} L_T (i) \tag{2.4}$$

where π_T^i represents the productivity shock and $y_T^S (i)$ represents firm i's supply in the tradable good sector. In this paper, we assume that π_T is drawn from an i.i.d. distribution with mean 0 and variance σ_T^2, and we use $G_T (\cdot)$ denote its distribution function.

The final non-tradable good in Home is produced by a continuum of intermediate goods according to the technology

$$C_N = \left[\int_0^1 y_N (j)^{\frac{\varepsilon_N - 1}{\varepsilon_N}} dj\right]^{\frac{\varepsilon_N}{\varepsilon_N - 1}} \tag{2.5}$$

where intermediate goods are gross substitutes, i.e., $\varepsilon_N > 1$. In this case, the demand for each intermediate good j $\left(y_N^D (j)\right)$ is

$$y_N^D (j) = \left(\frac{p_N (j)}{P_N}\right)^{-\varepsilon_N} C_N. \tag{2.6}$$

For simplicity, we also assume that each non-tradable intermediate good is produced with labor only:

$$y_N^S (j) = e^{\pi_N^j} L_N (j) \tag{2.7}$$

where π_N^j is another stochastic term with mean 0 and variance σ_N^2, and $y_N^S (j)$ represents firm j's supply in the non-tradable good sector. We use $G_N (\cdot)$ denote the distribution function of π_N^j.

In equilibrium, markets clear in both tradable and non-tradable good sectors, $y_T^D (i) = y_T^S (i)$ and $y_N^D (j) = y_N^S (j)$.

2.1. Flexible labor market

We first analyze one extreme case that Home has a fully flexible labor market. Similar to Cunat and Melitz (2012), in this case, all markets are competitive, the determination of all prices and the allocation of all resources take place after the realization of π s. This captures the idea that a flexible economy can costlessly reallocate resources towards their most efficient use. For simplicity, we assume *ex ante* free entry in both tradable and non-tradable intermediate good sectors. Then, all intermediate good producers earn zero profits. As a result, for firm i in the tradable good sector and firm j in the non-tradable good sector, prices are

$$p_T^{flex} (i) = \frac{w^{flex}}{e^{\pi_T^i}} \quad \text{and} \quad p_N^{flex} (j) = \frac{w^{flex}}{e^{\pi_N^j}} \tag{2.8}$$

where w^{flex} denotes the equilibrium wage rate in Home.

For simplicity, we assume $\varepsilon_T = \varepsilon_N \equiv \varepsilon > 1$ and $G_T = G_N \equiv G$ in the rest of this paper.[4] Then the aggregate price index for the non-tradable good is

$$P_N^{flex} = \left[\int_{-\infty}^{+\infty} \left(\frac{w^{flex}}{e^{\pi}}\right)^{1-\varepsilon} dG (\pi)\right]^{\frac{1}{1-\varepsilon}}. \tag{2.9}$$

In online Appendix A, we can show that

$$P^{flex} = \left(P_N^{flex}\right)^{1-\gamma} = \left(\frac{\xi}{\gamma \bar{L}}\right)^{\frac{1-\gamma}{\varepsilon}} \left(\frac{1}{\tilde{\pi}}\right)^{\frac{1-\gamma}{\varepsilon}} \tag{2.10}$$

where

$$\tilde{\pi} = \left[\int_{-\infty}^{+\infty} e^{\pi(\varepsilon-1)} dG (\pi)\right]^{\frac{1}{\varepsilon-1}}$$

represents the aggregate productivity level among all intermediate good producers in the non-tradable good sector when the labor market is fully flexible.

[2] We consider the equilibrium in our model as the long-run steady state in a dynamic model.

[3] This assumption means that the rest of world is in an equilibrium, therefore, the aggregate demand is a constant.

[4] Relaxing this assumption does not change any of the qualitative results.