Foreign labor costs and domestic employment: What are the spillovers? ☆

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ABSTRACT

This paper studies the international spillover effects of country-specific labor cost changes in the presence of labor market frictions. A two-country model with search frictions predicts that a cut in foreign labor costs leads to an *increase* in domestic employment, driven by a positive terms of trade effect on job creation. I find empirical evidence in support of this positive spillover effect, the terms of trade channel, and the dependence on the degree of labor market rigidity. This is done by a panel regression that estimates the effect of exogenous variation in foreign unit labor costs, instrumented by changes in foreign statutory social security contribution rates, on domestic employment and output.

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1. Introduction

What are the international spillover effects of country-specific shocks? The mechanisms that govern the transmission of shocks in open economies have been central to works in international macroeconomics. The objective of this paper is to study how labor market rigidities might influence the international transmission of supply-side policies and to evaluate the spillover predictions empirically.

In the existing literature, the issue of international spillovers has been studied especially in the context of country-specific monetary and fiscal policy. Important contributions include Mendoza and Tesar (1998, 2005), who focus on the spillover effects of tax reforms and emphasize the channel of cross-border capital flows. However, results in these papers are based on a model with a single homogenous good, abstracting from endogenous terms of trade effects. The adjustment of the terms of trade is central to works by Obstfled and Rogoff (2000), Corsetti and Pesenti (2001) and Clarida et al. (2002). These papers show that endogenous terms of trade have ambiguous implications for the international spillover of country-specific policy and productivity shocks, depending on key parameters of the model, in particular the inter-temporal elasticity of substitution in consumption.

Most importantly, the existing literature on policy spillover has so far focused on the transmission effects given full employment, i.e. with market clearing wages across countries. However, rigidities in labor markets and the existence of involuntary unemployment are realistic characterizations of most economies. The goal of this paper is to take labor market frictions seriously in analyzing the question of policy spillover. In particular, we can analyze whether differences in labor market rigidities across countries lead to differences in the nature and strength of inward spillovers, an aspect not studied so far.

I investigate the adjustment across countries following a permanent, country-specific shock to labor cost given the existence of equilibrium unemployment. I introduce shocks to country-specific labor cost with a payroll tax that directly enters the wedge governing the return to job creation. Capturing shifts in country-specific productivity with observable and quantifiable policy shocks rather than unobservable TFP shocks comes with two main advantages: first, it delivers direct policy implications and second, it allows for an empirical investigation of the mechanism. The analysis of this paper has therefore two components, a theoretical and empirical one.

The theoretical analysis incorporates the search and matching model of unemployment following Pissarides (2000) into a dynamic general equilibrium two-country, two-good model. My model therefore retains both channels for international transmission, namely the cross-border capital flows (as in Mendoza and Tesar, 1998) and endogenous terms of trade changes (as in e.g. Corsetti and Pesenti, 2001). The paper also builds on Hairault (2002), who incorporates labor market search into a standard international real business cycle model. The focus in Hairault (2002) is on international business cycle co-movement, given productivity shocks that are *themselves*

correlated across countries. The focus of my analysis is instead on a country-specific (i.e. internationally uncorrelated) policy shock and to study in particular how the labor markets across countries adjust to this. This exercise gives a sharper implication for the spillover mechanism since it is not confounded by the correlation of underlying shocks and is more conducive to empirical tests.

The model predicts that following a payroll tax cut in country 1, employment in both country 1 and country 2 increases. The mechanism works as follows. The tax cut in country 1 triggers a positive supply effect in country 1. This improves the terms of trade for country 2, which in turn, increases the return to a job match in country 2. In equilibrium, wages in country 2 also increase due to the rent-sharing mechanism of wage bargaining. However, common surplus maximization ensures that higher wages do not offset the increased return to hiring. Consequently, a positive supply shock in country 1 always entails a positive spillover effect on employment in country 2. Helpman and Itskhoki (2010) also analyze the impact of lowering domestic labor market frictions on the trading partner, but use a static Melitz-type trade model with search frictions in two sectors, endogenous firm entry and varying trade impediments. While the terms of trade channel is also present in their model, the main spillover mechanism relies on workers' inter-sectoral reallocation and firms' entry decision following a change in relative prices. Nevertheless, lower labor cost in the domestic economy also leads to lower unemployment in the foreign economy in their model, although the implication for welfare is more differentiated.

The main contribution of my paper is empirical. Since the key result of the model is the positive spillover effect on employment across countries, it is natural to investigate whether this prediction is in fact consistent with data. There are inherent difficulties in identifying exogenous shifts in tax policies. Most studies, e.g. Blanchard and Perotti (2002), essentially rely on a cyclical adjustment of government spending and tax revenues using long run elasticities of these fiscal components with respect to output fluctuations. This paper uses another approach to identify country-specific tax variation. Instead of relying on measures of effective aggregate tax rates or cyclically adjusted tax revenues, I use a statutory tax rate that enters directly the firm's labor cost, namely the statutory rate of employer social security contribution.

To evaluate the main implication of the model, I use a panel of 17 OECD countries from 1981 to 2006 to estimate the impact of exogenous variation of foreign unit labor costs on domestic output and employment. I instrument exogenous variations in the foreign unit labor costs with statutory social security contribution rates of trading partner countries. Consistent with the prediction of the model, lower foreign labor costs lead to improved terms of trade and an *increase* in the domestic employment rate. Furthermore, in line with the model prediction, countries with higher average unemployment rates experience stronger positive spillovers, implying that labor market rigidity indeed plays an important role for cross-country spillovers.

The paper is organized as follows. Section 2 describes the model, Section 3 discusses the simulation results for the spillover analysis and some sensitivity checks. Section 4 presents the empirical analysis and Section 5 concludes.

2. The model

The theoretical framework is a dynamic general equilibrium two-country model. I incorporate search and matching frictions in the labor market following Pissarides (2000). In particular, I assume that firms can create jobs and vary the extensive margin of labor by posting vacancies while job destruction takes place exogenously, and that wages are determined by Nash bargaining once a match occurs. Trade takes place in the intermediate goods which are then bundled into final goods for consumption and investment at the country level.

2.1. The final good

The world consists of two symmetric countries that are indexed by 1 and 2. Country 1 specializes in the production of good *a*, while country 2 produces good *b*. In country 1, these intermediate goods are bundled into a final consumption and investment good f_1 according to the CES aggregator

$$f_1 = \left[\omega^{1/\sigma} a_1^{(\sigma-1)/\sigma} + (1-\omega)^{1/\sigma} b_1^{(\sigma-1)/\sigma} \right]^{\sigma/(\sigma-1)} \tag{1}$$

where $\omega > 0.5$ measures the degree of home bias in domestic demand and σ is the elasticity of substitution between the two traded goods. The bundling technology in country 2 is analogous and given by

$$f_2 = \left[(1-\omega)^{1/\sigma} a_2^{(\sigma-1)/\sigma} + \omega^{1/\sigma} b_2^{(\sigma-1)/\sigma} \right]^{\sigma/(\sigma-1)} \tag{2}$$

Hence, the representative final good producer in country 1 faces the objective:

$$\max_{a_1,b_1} \left(f_1 - p_1^a a_1 - p_1^b b_1 \right) \tag{3}$$

with p_1^a and p_1^b being the relative price of the intermediate good *a* and *b* in terms of the final good in country 1. By symmetry, unless otherwise stated in the following, the model is described in terms of country 1 variables.

2.2. The household

In each country, there is a representative household with many identical members of measure 1. Each member can be employed or unemployed, but the family insures its members perfectly against idiosyncratic employment risk, such that consumption is equalized among household members, as is commonly assumed in the literature (Merz, 1995). I assume that each family member either works a fixed number of hours (normalized to 1) or searches for a job at constant search effort, so that there is no flow in or out of the labor force. This focus on the extensive margin is consistent with the empirical evidence that a majority of the variation in total hours is explained by the variation in the employment rate as opposed to hours per worker. The household chooses the path of consumption, investment and international asset holding to maximize:

$$E_0 \sum_{t=0}^{\infty} \beta^t \left[\frac{1}{1-\mu} C_{1t}^{1-\mu} \right]. \tag{4}$$

With $\bar{n}_{1t}$ being the fraction of employed members of the household (equal the economy-wide employment rate), the *pooled* budget constraint is given by[1]:

$$C_{1t} + I_{1t} + p_{1t}^a \frac{Q_t}{(1-\Gamma_{B,t})} B_{1,t+1} = \bar{n}_{1t} \bar{w}_{1t} + r_{1t} K_{1t} + TR_{1t}$$
$$+ (1-\bar{n}_{1t}) z_{1t} + p_{1t}^a B_{1t} \tag{5}$$

On the left hand side, we have expenditure for consumption, investment and purchase of international bonds. In either country, each unit of this bond pays out one unit of good *a* (the numeraire) in period $t+1$ and is traded at the equilibrium price Q_t. Moreover,

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[1] Capital letters denote aggregate variables; variables with bars stand for economy-wide averages which, in equilibrium, equal the representative firm's values (i.e. variables without bars).