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Unionized labor markets and globalized capital markets ☆

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A R T I C L E   I N F O

A B S T R A C T

This paper studies the effects of international integration of capital markets in a world where countries differ in their labor market institutions: one country has a perfectly competitive labor market while the other is unionized. We show that workers should favor autarky in the unionized country, but oppose it in the non unionized country and vice versa for owners of capital. Aggregate gains from integration, however, are negative. We also show that, under capital mobility, an increase in relative bargaining power of unions does not always improve workers' welfare.

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1. Introduction

Over the past decade, the increase in capital flows between industrialized countries has been about four time as large as the increase in trade flows. This large increase in international capital flows and the speed with which capital markets of industrial countries have become integrated represent one of the most striking recent changes in the world economy. However, economists have not yet reached a common stance with respect to costs and benefits of capital markets' liberalization (see, e.g., Rodrik, 1997; Bhagwati, 1998; Stiglitz, 2004).

The contribution of this paper is to uncover the effect of world integration of capital markets on factor incomes and welfare, when factor returns between countries differ due to different degrees of unionization of labor markets.

In recent years a number of authors have investigated the interaction between labor unions and foreign direct investment (FDI), mostly looking at the factors influencing multinationals' choice of location and at the welfare consequences for the host country (see, among others, Skaksen and Sorensen, 2001; Zhao, 2001; Naylor and Santoni, 2003). We abstract from FDI, and provide a simple formal model to analyze the distributional effects of international competition for capital services

between countries.[1] Thus, our set up differs substantially from those used in the unionization-FDI literature mentioned above, and is closer in spirit to early literature on factor market distortions and their impact for trade (see, e.g., Kemp and Negishi, 1970; Eaton and Panagariya, 1979).

The conventional approach in the literature, to explain international factor movements, is to assume perfect competition in all markets and account for differences in factor returns by appealing to differences in fundamentals (such as factor endowments, technologies or preferences). However, differences in market structure may also explain why factor returns vary across countries. In our model there are two countries, identical in all dimensions except for unions' bargaining power. Symmetry allows us to focus on how divergences in the labor market structure across countries, per se, affect income levels and their distribution between capital owners and workers when capital movements are liberalized. To simplify the analysis, we assume that in one of the two countries there is perfect competition in the labor market (that is union power approaches zero), while in the other there is efficient bargaining over wages and employment between unions and firms. Typically, in a closed economy, sufficiently strong unions are able, through efficient bargaining, to influence the distribution of income to the benefit of workers and at the expense of capital owners; while returns to capital become lower than the marginal productivity of capital. Accordingly, when international factor movements are

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[1] Although FDI inflows have considerably increased since mid 1980s', FDI inflows largely understate the extent to which foreign capital penetrates domestic markets. See, e.g., the UN World Investment Report, 2007.

liberalized, capital flows from the highly unionized country into the less unionized country (in our case, to the perfectly competitive country): in the unionized country output and workers' income decrease while capitalists' income increases, and vice versa in the non unionized country.

With fixed factors' supply and full employment, unions are not able to influence resource allocation at the autarkic equilibrium, and given that both countries have the same endowments and technology, the marginal productivity of capital is identical across countries. Hence, allocation of capital across countries is efficient under autarky. Allowing for capital mobility triggers inefficient capital flows and leads to a decrease in world output. Also, workers' share of world output and income per capita at the world level decrease. Therefore, international capital mobility would not benefit workers, even if the gains obtained by capital owners were efficiently redistributed among all individuals, both at the world level and in the unionized country. The paper also addresses the issue of the desirable level of union bargaining power when capital is internationally mobile. It is shown that there is a critical level of union power above which an increase in union strength reduces union members' income.

These second best results are at odds with the prediction of standard models in which capital mobility leads to overall welfare gains, and may explain unions' resistance towards globalization in a world with disparate workers' bargaining strength. Interestingly, the same effects would occur if we assume perfectly competitive labor markets and a redistributive capital tax, since in our set up the degree of unionization can be interpreted as a tax on capital returns. Hence, our work can also be related to the literature on tax competition, redistribution and capital mobility (see, e.g., Cremer et al., 1996; Wilson and Wildasin, 2004).

The remainder of the paper is as follows. In Section 2 we present the model. In Section 3 we contrast autarky and perfect capital mobility. In Section 4 we explore the effects of capital movements, and Section 5 concludes.

2. The model

There are two countries, A and B, identical in everything except for union bargaining power. In each country there are $\bar{K}$ capitalists and $\bar{N}$ workers, each exogenously supplying one unit of their respective factor service. Both countries produce the same single good, taken as numeraire, with identical technologies. In each country there is a large number M of identical firms, each producing y^j units of output under perfect competition, according to the production function $y^j = F(k^j, l^j)$ = $j = A, B$, where: k^j and l^j represent, respectively, the units of capital and labor used in production by a firm in country j; and F is a standard increasing, and concave-homogeneous of degree one function in k^j and l^j, with a constant elasticity of substitution $\sigma \in [1, \infty)$.[2] Capital is rented at the perfectly competitive rental rate r^j, while wages and employment are determined through efficient bargaining between unions and firms. Unions are firm specific, each one representing a fixed number of workers, $n^j \equiv \bar{N}/M$.[3] We assume that workers are also members of pension funds, and the latter diversify their portfolio, owning an equal amount of every domestic firm.[4] Accordingly, at a symmetric equili-

brium, each worker receives $1/\bar{N}$ of every firm dividends out of his/her contributions. For each union the objective is to maximize the income of their members (wage and dividend earnings), while firms' objective is to maximize profits.

We consider a two-stage game and assume that in the first stage firms pre-commit to a given level of capital (k^j) knowing that the wage, w^j, and employment, l^j, will be negotiated afterwards, in the second stage of the game. To obtain the efficient bargaining solution we solve the generalized Nash bargaining problem, where the firm and union returns are net of their respective fallback (that is, net of the level of their returns in case no agreement is reached and production does not take place). Since, in case of disagreement, firms' return is $-r^j k^j$ and workers' return is the income from their private pension assets, w^j and l^j are the solutions of the following problem

$$Max_{w^j,l^j} \left[F\left(k^j, l^j\right) - w^j l^j \right]^{1-\gamma^j} \left[w^j l^j \right]^{\gamma^j}; \text{ s.t. } l^j \leq n^j,$$

where $1 > \gamma^j \geq 0$ represents country j's union bargaining power. The solution to this problem is: $l^j = n^j$ and $w^j = \gamma^j F(k^j, n^j) \frac{1}{n^j}$. By anticipating this bargaining outcome, the representative firm will choose to commit to the level of capital that maximizes profits, $(1-\gamma^j)F(k^j, n^j) - r^j k^j$, which leads to the first order condition: $r^j = (1-\gamma^j)F_k(k^j, n^j)$.[5] Using the Euler relations for the production function, it is easy to obtain the equilibrium levels of profits: $(1-\gamma^j)F_l(k^j, n^j)n^j$. Hence, at the symmetric equilibrium, income per worker becomes: $w^{*j} = \gamma^j \frac{F(k^j, n^j)}{n^j} + \left(1-\gamma^j\right)F_l\left(k^j, n^j\right)$.

At a symmetric equilibrium, $K^j \equiv Mk^j$ and $L \equiv Ml^j = \bar{N}$ represent countries' total capital and labor services utilization. Exploiting the property of homogeneity of the production function, aggregate output is given by $Y^j = F(K^j, L^j)$ and equilibrium values of income, per capitalist and per worker, can be written as

$$r^j = \left(1 - \gamma^j\right)F_K\left(K^j, \bar{N}\right) \tag{1}$$

$$w^{*j} = F_L\left(K^j, \bar{N}\right) + \gamma^j F_K\left(K^j, \bar{N}\right)\frac{K^j}{\bar{N}}, \tag{2}$$

while the respective (domestic) income shares correspond to

$$s_K^j \equiv \frac{r^j K^j}{F^j} = \left(1 - \gamma^j\right)\frac{F_K\left(K^j, \bar{N}\right)K^j}{F(K^j, \bar{N})} \tag{3}$$

$$s_L^j \equiv \frac{w^{*j}\bar{N}}{F^j} = 1 - \left(1 - \gamma^j\right)\frac{F_K\left(K^j, \bar{N}\right)K^j}{F(K^j, \bar{N})}. \tag{4}$$

Note that when $\gamma^j = 0$ we recover the case of perfectly competitive markets; the rental rate of capital and the income per worker corresponding to their marginal products and, given the joint assumptions of constant returns and perfect competition, zero equilibrium profits.[6] Compared to the perfectly competitive case, worker's income is above its marginal product and the return to capital is below its marginal product. Indeed for fixed amounts of capital and output, unions, through efficient bargaining, are able to

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[2] Accordingly, it is important to keep in mind for further results that $F_k, F_l > 0$, while $F_{kk}, F_{ll} < 0$, and $F_{kl} = F_{lK} > 0$, for $k, l > 0$. Note also that the elasticity of substitution satisfies the relation $\frac{1}{\sigma} = -\frac{F_{kk}k}{F_k} \Big/ \left(1 - \frac{F_k k}{F}\right)$.

[3] In many developed countries' labor markets wage bargaining occurs at increasing decentralized levels. Katz (1993), among others, reports evidence of the decetralization in the structure of collective bargaining in most developed economies since the early 1980s.

[4] Private pension funds (and other means of private old-age maintenance) are particularly widespread among workers in anglo-saxon countries; while in many other countries, inside and outside the OECD, private funded pensions are increasingly taking over. The strong home bias displayed by pension and other institutional assets in OECD countries is widely documented. See, e.g., Davis (2002).

[5] Identical results would have been obtained had we considered that unions and firms only negotiate over wages, the level of employment having been previously fixed by firms. This is a special scenario of the right to manage model with a reverse timing, where firms chooses employment before bargaining takes place. See Lingens (2007), that rationalize this approach for countries where, due to substantial firing costs, employment cannot be adjusted quickly.

[6] In fact, with $\gamma^j = 0$ the labor market is characterized by a monopsony; with wages equal to zero and profits per worker corresponding to the marginal productivity of labor. However, since profits are distributed to workers, their income is exactly identical to that obtained in the case of a perfectly competitive labor market.