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Economic integration and redistributive taxation *

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Abstract

We set up a simple political economy model where economic integration raises the profitability of multinational firms. In this setting redistributive taxation may rise following economic integration, if the effects of the widened income gap dominate the higher excess burden of the tax.

Keywords: redistributive taxation; profit shifting

JEL Codes: H20; F23.

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1 Introduction

It has been argued that increasing capital mobility will lead governments to undercut each other's capital income tax rates, resulting in underprovision of public goods as well as relatively higher taxes on immobile factors (see Wilson, 1999 for a survey). Empirical evidence in support of the theoretical predictions is mixed, however. On the one hand statutory corporate tax rates have been significantly reduced since the 1980s, but on the other hand tax bases have simultaneously been broadened. As a consequence, effective tax rates on profits have fallen by much less than statutory rates and in several countries they have not fallen at all (see Devereux, Griffith and Klemm, 2002). Moreover, econometric studies provide some evidence of a negative relationship between corporate tax rates and different measures of economic integration. This relationship, however, is generally not robust to the precise specification used in the empirical model (see Rodrik, 1997; Bretschger and Hettich, 2002; Slemrod, 2004). The effect of economic integration on the level of public good supply is even less in accordance with the standard tax competition model. Rodrik (1998) as well as several empirical studies in the political science literature (see Swank and Steinmo, 2002 for a recent synthesis) find that globalisation increases, rather than reduces, the total size of the welfare state.

One possible reason for this divergence between theoretical and empirical results is that tax base mobility and economic integration have been accompanied by changes in the primary distribution of factor incomes. Economic integration, therefore, may increase the profits of multinational firms, either because it reduces the cost of intra-firm trade or because it allows the firm to produce with cheaper inputs (Helpman and Krugman, 1985). While the effect of economic integration on the profitability of multinational firms, in particular, has been an important topic in the international trade literature (e.g. Markusen, 2002), the existing literature on international taxation has usually taken the distribution of gross-of-tax factor earnings as given. This also applies to political economy models where the working majority is able to partly offset the downward pressure on capital tax rates, but economic integration still leads, in equilibrium, to an unambiguous decline in the level of redistributive taxation (Persson and Tabellini, 1992; Gottschalk and Peters, 2003.).

In this paper we incorporate rising profitability of a multinational firm, caused by economic integration, into a simple political economy model with an internationally mobile profit tax base. Our stylized model allows to derive reduced-form expression for the optimal redistributive tax rate in the political-economic equilibrium. In this framework globalisation increases both the redistributive gains, but also the efficiency

costs of taxation from the perspective of the median voter. Hence economic integration has a fundamentally ambiguous effect on the redistributive tax rate in the political economy equilibrium.

2 The model

We consider a small open economy with two types of individuals, rich capitalists (index R) and poor workers (index P). Each individual exogenously supplies one unit of the numeraire good labour so that wage income equals unity for both the rich and the poor. Poor individuals receive wage income only, whilst rich individuals receive additional profit income (π) from a multinational firm. The profit income is initially taken as exogenous, but will later be endogenised and linked to economic integration. The home country levies a proportional, comprehensive income tax (t) on wage and profit incomes. The representative firm can shift a share β of its profits to a low-tax country, which has a tax rate $t^* < t$. It is costly to engage in transfer pricing and the costs of profit shifting are convex in the total amount of profits shifted; $C(\alpha, \beta, \pi) = (\beta\,\pi)^2 / 2\,\alpha$, where $1/\alpha > 0$ is a parameter for the costs of profit shifting.

The after-tax income of the rich household is

$$I^R = [1 + (1-\beta)\,\pi]\,(1-t) + \beta\pi(1-t^*) - \frac{(\beta\,\pi)^2}{2\alpha}, \tag{1}$$

where the first term is the after-tax income from wages and profit income reported at home, the second term is after-tax income from profits reported abroad, and the last term gives the costs of income shifting. Maximizing (1) with respect to the share of profits shifted to the low tax country (β) yields

$$\beta = \frac{\alpha\,(t-t^*)}{\pi}\ . \tag{2}$$

Poor workers make up the majority of voters, and we normalize the total population to unity. There are μ workers and $(1-\mu)$ capitalists, where $1 > \mu > 0.5$. The proportional income tax falls on the wage income of both income groups and on the share of profit income of the rich that is reported domestically. Using the multinational firm's optimal tax avoidance policy (2), total and per capita tax revenues are

$$T = t\,\{1 + (1-\mu)\,[\pi - \alpha\,(t-t^*)]\}\,. \tag{3}$$

A representative poor individual derives utility from her after-tax income $(1-t)$ and a quasi-private public good. There are no economies of scale in the provision of the public good, thus making our results comparable for countries of different size. Both the private

and the public good enter the poor individual's utility function linearly.[1] The constant marginal benefit of the public good is $\gamma < 1$, implying that the poor individual suffers a utility loss when one unit of her private consumption is exchanged for one unit of the public good. With these specifications, and using (3), the utility of a poor individual is

$$U^P = (1-t) + \gamma t \left\{1 + (1-\mu)\left[\pi - \alpha\left(t - t^*\right)\right]\right\}. \tag{4}$$

Given that the median voter is a poor individual, the equilibrium policy maximizes U^P with respect to the proportional income tax t. This yields an equilibrium tax rate of

$$t = \frac{\gamma\left[1 + (1-\mu)(\pi + \alpha\, t^*)\right] - 1}{2\alpha\,\gamma\,(1-\mu)}\,. \tag{5}$$

The equilibrium tax rate is positive, if the value of additional units of the public good that is financed by the tax contributions of the rich, $\gamma(1-\mu)(\pi+\alpha t^*)$, exceeds the utility loss for the poor individual of transforming one unit of private income into one unit of the public good ($\gamma - 1 < 0$). This is assumed in what follows.

Our simple model yields several comparative static results.[2] In particular, changing tax base mobility, as given by the ease with which multinationals can shift profits between jurisdictions (α), yields

$$\frac{\partial t}{\partial \alpha} = \frac{1 - \gamma[1 + (1-\mu)\pi]}{2\gamma(1-\mu)\alpha^2} = \frac{t^* - 2t}{2\alpha} < 0, \tag{6}$$

since $t^* < t$. Hence lower costs of profit shifting reduce the equilibrium tax rate.

On the other hand, the effect of an exogenous change in profit income on the tax rate is

$$\frac{\partial t}{\partial \pi} = \frac{1}{2\alpha} > 0. \tag{7}$$

Thus an increase multinational profit income unambiguously raises the redistributive gains from the proportional income tax. These effects are summarized in

Proposition 1 *The equilibrium level of a redistributive income tax is rising in* (i) *the cost parameter for profit shifting* $(1/\alpha)$*;* (ii) *the level of profit income* (π)*.*

The next section combines these two effects and links them to economic integration.

[1] A well-defined optimal tax rate is obtained in our model, despite the linearity of the objective function in both arguments, because the excess burden of taxation is strictly convex in the tax rate.

[2] It is directly inferred from (5) that the home country's optimal tax rate will rise if either the foreign tax rate t^* rises, or if the preference parameter for public goods (γ) is increased.

3 Economic integration

A standard effect analysed in the tax competition literature is that economic integration increases the mobility of the capital tax base. In our setting this corresponds to an increase in α, which lowers the costs of shifting profits to the foreign country.[3] The increased mobility of the capital tax base is not the only effect of globalisation, however. A common result in the modern trade literature is that economic integration increases the profits of multinational firms, either because it reduces the cost of intra-firm trade or because it allows the firm to produce with cheaper inputs, in particular lower costs of labour (Helpman and Krugman, 1985).

The simplest way to capture these effects is to consider a monopolist who sells output at price p in its home market. Inverse demand is given by the linear function $p = a-(x+x^*)$, where $a > 0$ is a market size parameter and aggregate output can either be produced at home (x) or abroad (x^*). In each country, one unit of (internationally immobile) labour produces one unit of output. The exogenous wage rates and therefore the unit costs of production are w in the home country and w^* abroad, where $w^* < w$. Producing abroad adds extra transport costs for the firm. By analogy to the costs of profit shifting, we model these costs as being quadratic in the volume of foreign production, $D = (x^*)^2/2\alpha$.[4] Hence the transaction costs of producing abroad are reduced by economic integration. The monopolist's profits are then given by $\pi = (a - x - x^*)(x + x^*) - wx - w^*x^* - (x^*)^2/(2\alpha)$. Differentiating yields the profit-maximizing levels of production at home and abroad, $x = [a - w - 2\alpha(w - w^*)]/2, \quad x^* = \alpha(w - w^*)$. Substituting this back into the profit function yields maximized profits $\tilde{\pi} = (a - w)^2/4 + \alpha\,(w - w^*)^2/2$.

The effect of economic integration on the multinational firm's profits are then given by

$$\frac{\partial \tilde{\pi}}{\partial \alpha} = \frac{(w - w^*)^2}{2} \,. \tag{8}$$

Hence economic integration increases both the level and the elasticity of the multinational firm's profits. Following a common procedure in the literature (see Gresik, 2001), we assume that the profit shifting decision can be separated from the decision of where to produce. In this case the effects on the optimal redistributive tax rate can simply be

[3]For example, it may be argued that the representative firm in our model undertakes both domestic and foreign operations. As integration proceeds, a larger share of profits derives from international operations, where profits can be shifted abroad.

[4]Transport costs are interpreted in a wide sense, including administrative hurdles and information costs. The assumption that these costs are convex in the size of the foreign production unit corresponds to some of the findings in the new theory of the multinational firm (e.g. Marin and Verdier, 2003).

added up. Using (6), (7) and (8), the total effect is given by

$$\frac{dt}{d\alpha} = \frac{\partial t}{\partial \alpha} + \frac{\partial t}{\partial \pi}\frac{\partial \tilde{\pi}}{\partial \alpha} = \frac{2(t^* - 2t) + (w - w^*)^2}{4\alpha} \tag{9}$$

The first effect in equation (9) is the direct effect of increased tax base mobility, which is unambiguously negative. The second effect, which works through the change in the profit level of the multinational firm, is instead positive. Hence economic integration may either raise or lower the redistributive tax rate chosen by the median voter. The increased sensitivity of the tax base will be the dominant effect of economic integration if the international tax differential is large and the motive for international profit shifting is accordingly strong. In contrast, if the international wage differential is large, then the increased profitability of the multinational firm will be the principal effect of economic integration. Our results are summarised in

Proposition 2 *Economic integration will tend to* <u>*increase*</u> *the redistributive income tax rate, if* (*i*) *the tax differential between the home and the foreign country is small; and* (*ii*) *the wage differential between the domestic and the foreign country is large.*

4 Conclusion

The possibility that economic integration may increase the tax rate is not present in standard models of tax competition, where the effects of globalisation are confined to increased tax base mobility (e.g. Persson and Tabellini, 1992). Here we have incorporated, in the simplest possible way, the stylized fact that economic integration is simultaneously accompanied by an increase in the gross profitability of firms. Despite the simplicity of our model, this additional model element introduces a fundamental ambiguity into the relationship between economic integration and the level of redistributive taxation. This finding may provide a simple way to reconcile the results from the theoretical tax competition literature with the mixed empirical findings quoted in the introduction. For empirical work this suggests that a robustly negative effect of globalisation on the redistributive tax rate can only be expected, if the level of pre-tax profitability is controlled for.

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