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Tax Competition and Foreign Direct Investment: Is there a Race to the Bottom?

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1 Introduction

In the globalized economy the issues of tax competition and coordination are becoming increasingly pressing for policy makers. It is especially relevant for the taxation of income from internationally mobile factors, such as the income generated by FDI. As the Economist (1997, pp. 17-18): succinctly puts it:

> "Globalization is a fax problem... First, firms have more freedom over where to locate... First, firms have more freedom over where to locate... This will make it harder for a country to tax [a business] more heavily than its competitors... Second, globalization makes it harder to decide where a company should pay tax, regardless of where it is based... This gives them [the companies] plenty of scope to reduce tax bills by shifting operations around or by crafting transfer-pricing..."

With internationally mobile factors, the tax base can shift from one (high-tax) country to another (low-tax) country, thereby creating a fiscal externality[1]. The latter externality can take also the form of a government trying to impose the burden of financing public goods onto non-residents such as foreign corporations. as with any externality, (tax) competition among countries may lead to inefficient incidence of taxes and inadequate public good provision; whereas tax coordination among them may enhance the welfare of all of them.[2]

[1] Similar phenomenon may occur among jurisdictions within a federation; see, for instance, Gordon (1983) and Mintz and Tulkens (1986).

[2] Again, this is true also within a federation of various local government; see, for instance, Zodrow and Mieszkowski (1986).

In this chapter we draw on the findings of the preceding chapter to shed some light on various aspects of international tax competition and coordination concerning the flows of FDI. Specifically, we take another look at the implications of FDI for the effects of taxation and for the tax bases in a source-host country setup. We analyzed in the preceding chapter the asymmetric mechanisms through which source and host taxation affect FDI. Here we analyze this asymmetry to explain the endogenous coexistence in a tax competition environment of high-tax, high public expenditure source countries and low-tax, low-public expenditure host countries[3]. Such differences may be a feature of the enlarged European Union characterizing the asymmetry between the old members countries and the new accession countries. In addition, we attempt to provide some indication about the magnitude of the gains from tax coordination and the implication for the "race to the bottom" hypothesis.

Two issues concerning taxing multinationals are: The first is that of trying to figure out where large multinational firms make their profits. The second is how to tax companies that are increasingly footloose. The more successful tax collectors are in preventing firms from shifting profit out of a country, the more they are likely to encourage firms to leave the country.

The organization of the paper is as follows. Section 1 develop a source-host country model of taxes and foreign direct investment. Section 2 analyzes tax competition. Section 3 analyzes tax coordination. Section 4 concludes.

2 A Source-Host Country Model of Taxes and Foreign Direct Investment

Consider a host country with a continuum of firms, each with a productivity level factor of ε, where $\varepsilon > -1$; the density and the cumulative distribution functions are denoted, respectively, by g and G. We normalize the number of firms to one. Unlike in Chapter Three, the productivity factor is not random. It is known to all before any economics decision is made. Firms are thus ex ante and ex post different in their productivity levels.

Assume for simplicity that the initial stock of capital of the firm is zero. A firm with a productivity factor ε (an ε-firm) employs a capital stock of K in the first period and produces an output of $A_H F(K)(1+\varepsilon)$ in the second period, where F exhibits a diminishing marginal productivity

[3]When there are also internationally immobile factors of production tax competition may affect also the relative tax burden falling on these factors in a way depending on their complementarity or substitutability with the mobile factors; see, for instance, Wildasin (2004).

of capital ($F' > 0, F'' < 0$). As before, there are setup costs of new investment. Therefore, only firms with a productivity factor above some threshold level (ε_0) will make new investments.

We continue to assume that foreign direct investors (from the source country) have a cutting edge advantage over domestic investors with respect to these setup costs, so that they acquire control over the domestic firms in the host country. Foreign direct investors compete among themselves for these firms. Therefore, the price they pay for an ε-firm (with $\varepsilon \geq \varepsilon_0$) to the original domestic owners is $V_H(\varepsilon, \tau_H) - C^*(1-\tau_S)$, where $V_H(\varepsilon, \tau_H)$ is defined by:

$$V_H(\varepsilon, \tau_H) = \max_K \left[\frac{A_H F(K)(1+\varepsilon)(1-\tau_H) + \tau_H \delta'_H K + (1-\delta)K}{1+(1-\tau_H)r} - K \right], \tag{1}$$

where C^* is the setup cost borne by the foreign direct investor. As before, this cost is born in the source country and tax-deducted there. The parameters δ and δ'_H denote, as before, the physical and the tax rate of depreciation, respectively, and τ_i denotes corporate tax rate in country $i = H, S$. As explained in the preceding chapter, the foreign direct investors do not pay any further tax at their home country. We assume that the two countries are open to the world credit market. This assumption fixes the rate of interest at the world rate, denoted by r.

The first order condition for the optimal stock of capital of an ε-firm is given by

$$A_H F'(K)(1+\varepsilon) = r + \delta + \frac{\tau_H}{1-\tau_H}(\delta - \delta'_H) \tag{2}$$

for firms with $\varepsilon \geq \varepsilon_0$. This condition defines the optimal stock of capital of a firm as a function $K^H(\varepsilon, \tau_H)$ of its productivity factor and the host corporate tax rate.

The cutoff level of the productivity factor is a function $\varepsilon_0(\tau_H, \tau_S)$ of τ_H and τ_S, defined implicitly by:

$$V_H(\varepsilon, \tau_H) - (1-\tau_S)C^* = 0. \tag{3}$$

That is, the ε_0-firm is indifferent between investing and not investing. Note that because of the setup cost advantage of the foreign direct investors, firms that are not purchased by these investors will not invest at all under domestic ownership, and their value is zero. (Recall that the initial stock of capital of the firm is zero.)

As we plausibly assume that the depreciation rate allowed for tax purposes (δ'_H) is below the true physical rate (δ), it follows from equation (2) that τ_H depresses the stock of capital of each investing firm. It also

follows from condition (3) that τ_H reduces the number of investing firms (that is, increases ε_0). Therefore the host corporate tax rate reduces the total stock of capital in the host country. In contrast, it follows from condition (3) that τ_S increases the number of investing firms (that is, lowers ε_0). Therefore, an increase in the source corporate tax rate raises the capital stock in the host country.

The source country is modeled similarly. As it is the differences in the production and cost parameters are key to the determination of the direction and magnitude of FDI flows, we simplify by assuming that the fixed costs in the source country are nil. Thus, all firms invest. The value of an $\varepsilon-$firm is

$$V_S(\varepsilon, \tau_S) = \underset{K}{\text{Max}} \left[\frac{A_S F(K)\,(1+\varepsilon)\,(1-\tau_S) + \tau_S \delta'_S K + (1-\delta)K}{1+(1-\tau_S)r} - K \right]. \tag{4}$$

The optimal stock of capital of an ε-firms is given by the marginal productivity condition:

$$A_S F'(K)\,(1+\varepsilon) = r + \delta + \frac{\tau_S}{1-\tau_S}(\delta - \delta'_S). \tag{5}$$

This equation yields the optimal stock of capital as a function, $K_S(\varepsilon, \tau_S)$ of ε and τ_S.

2.1 Private Consumption

A representative consumer in country $i = S, H$ has an initial endowment I_i in the first period and a utility function

$$u\,[v(x_1, x_2), P] \tag{6}$$

over first-period consumption (x_1), and second-period consumption (x_2), and public expenditures (P). These expenditures can represent public good provision. Weak separability is assumed between (x_1, x_2) and P, so that public expenditures do not affect private demands for first and second-period consumption. For simplicity, it is assumed that P is incurred in the first period. Note that we consider, purely for simplicity, a representative consumer model; it is straightforward to extend it to a many-consumer model in which the public expenditures can reflect redistributive transfers. The tax rate τ_i applies also to the interest income of the consumers, both at home and abroad.[4] Note that we assume identical preferences in the two countries; that, is the same u and v for

[4]Note that we assume that corporate income is taxed only at home - at the corporate level. Each country taxes individuals and corporations at the same rate.

the two countries. However, the identical preferences assumption does not mean that the two countries have a demand for the same quantity of the public good (P). This is because they do not have the same income. We assume that I_S is significantly higher than I_H. That is, the source country is rich and the host country is poor. Assuming plausibly that the public good is a normal good, the rich-source country will have a greater demand for the public good (namely, for tax revenues) than the poor-host country. We employ this specification in order to single out the cross-country income gap as the driving force for the ensuing cross-country differences in tax policy in the tax-competition equilibrium. (For this reason, we also specified the same production function F for the two countries.)

Utility maximization yields the individual consumption demands for the first and the second periods:

$$X_j\left[W_i,(1-\tau_i)r\right], \qquad j=1,2;\ i=H,S, \tag{7}$$

where W_i is the income of a representative consumer in country i. Note that the demand functions are identical for the two countries, as we assumed identical preferences.

The income of a representative consumer in the host country consists of the initial endowment, plus the proceeds from the sales of the domestic firms (with productivity factors above ε_0) to the foreign direct inventors. That is, W_H is given by:

$$W_H(\tau_H,\tau_S)=I_H+\int\limits_{\varepsilon_0(\tau_H,\tau_S)}^{\infty} V_H(\varepsilon,\tau_H)g(\varepsilon)d\varepsilon-(1-\tau_S)C^*\left\{1-G\left[\varepsilon_0(\tau_H,\tau_S)\right]\right\}. \tag{8}$$

(Note that the number of firms within a productivity factor above ε_0 is $1-G(\varepsilon_0)$.)

The income of the representative consumer in the source country (who retains also all the firms in this country) is similarly given by:

$$W_S(\tau_S)=I_S+\int_{-1}^{\infty} V_S(\varepsilon,\tau_S)g(\varepsilon)d\varepsilon. \tag{9}$$

Note that the representative consumer in the source country, who is the foreign direct investor in the host country, pays for the purchased firms prices that exhaust entirely the profits she gets from them. (This follows from the assumed perfect competition among the foreign direct investors.)

2.2 Government

Each government balances its budget: tax revenues must suffice to finance public expenditures. This is done over time in present value terms, given the free access to the world credit market. By Walras' law the government's budget constraint can be replaced by an economy-wide resource constraint.

Consider first the host country. The representative consumer sells an ε-firm at a price $V_H(\varepsilon,\tau_H)-(1-\tau_S)C^*$. This price reflects the cash flow of the ε-firm, after taxes paid to the host country government. We emphasize that these taxes are paid to the host country government. Hence, from the point of view of the resources available to the host country, the price paid by the foreign direct investors must include also these taxes (which serve to finance public expenditures). Put differently, the host country extracts from the foreign direct investor the before-tax cash flow of the purchased ε-firm, that is $(1+r)^{-1}\{A_H F[K_H(\varepsilon,\tau_H)](1+\varepsilon)+(1-\delta)K_H(\varepsilon,\tau_H)-K_H(\varepsilon,\tau_H)\}-(1-\tau_S)C^*$. Therefore, the economy-wide resource constraint of the host country is

$$\begin{aligned} P_H = \; & I_H + (1+r)^{-1} \int_{\varepsilon_0(\tau_H,\tau_S)}^{\infty} \{A_H F[K_H(\varepsilon,\tau_H)](1+\varepsilon)+(1-\delta)K_H(\varepsilon,\tau_H)\}g(\varepsilon)d\varepsilon \\ & - \int_{\varepsilon_0(\tau_H,\tau_S)}^{\infty} K_H(\varepsilon,\tau_H)g(\varepsilon)d\varepsilon - (1-\tau_S)C^*\left\{1-G\left[\varepsilon_0(\tau_H,\tau_S)\right]\right\} \\ & -X_1\left[W_H(\tau_H,\tau_S),(1-\tau_H)\,r\right]-(1+r)^{-1}X_2\left[W_H(\tau_H,\tau_S),(1-\tau_H)\,r\right]. \end{aligned} \tag{10}$$

Note from equation (10) that the source country effectively subsidizes the host country through the tax deductibility of the fixed setup costs.[5] The magnitude of this subsidy is $\tau_S C^*\left\{1-G\left[\varepsilon_0(\tau_H,\tau_S)\right]\right\}$.

Similarly, the economy-wide resource constraint in the source country is given by

$$\begin{aligned} P_S = \; & I_S + (1+r)^{-1} \int_{-1}^{\infty} \{A_S F[K_S(\varepsilon,\tau_S)]+(1-\delta)K_S(\varepsilon,\tau_S)\}g(\varepsilon)d\varepsilon \\ & -\tau_S C^*\left\{1-G\left[\varepsilon_0(\tau_H,\tau_S)\right]\right\} - \int_{-1}^{\infty} K_S(\varepsilon,\tau_S)g(\varepsilon)d\varepsilon \\ & -X_1\left[W_S(\tau_S),(1-\tau_S)\,r\right]-(1+r)^{-1}X_2\left[W_S(\tau_S),(1-\tau_S)\,r\right]. \end{aligned} \tag{11}$$

[5] When the source country does manage to tax the (resident) parent company on its income from the FDI subsidiary, then it loses tax revenues to the host country through the foreign tax credit clause that is usually granted to avoid double taxation.

Note again the source country subsidizes the host country by the amount of tax deductions allowed for the fixed setup costs.

3 Tax Competition

Each government attempts to maximize the welfare of its representative consumer. In doing so, each government takes the policy of the other government as given. We thus look at a Nash-equilibrium of the two country tax competition game.

Formally, the government of the host country chooses the corporate tax rate (τ_H), so as to maximize the utility of the representative consumer,

$$u\left(v\{X_1\left[W_H\left(\tau_H,\tau_S\right),\left(1-\tau_H\right)r\right],X_2\left[W_H\left(\tau_H,\tau_S\right),\left(1-\tau_H\right)r\right]\},P_H\right), \tag{12}$$

where the quantity of the public good (P_H) is given by the economy-wide resource constraint (10). The source country tax rate (τ_S) is considered by the host government as exogenously given.

Similarly, the source government chooses τ_S so as to maximize

$$u\left(v\{X_1\left[W_S\left(\tau_S\right),\left(1-\tau_H\right)r\right],X_2\left[W_S\left(\tau_S\right),\left(1-\tau_H\right)r\right]\},P_S\right), \tag{13}$$

where P_S is given by the economy-wide resource constraint (11), and where τ_H in the latter constraint is taken as exogenously given.

The optimal policy (namely, the corporate tax rate) chosen by the host country depends on the source country tax rate (τ_S). Thus, this policy may be thought of as a best-response function of τ_S; denote it by $\hat{\tau}_H(\tau_S)$. Similarly, denote the best-response function of the source country by $\hat{\tau}_S(\tau_H)$. A Nash-equilibrium is a pair of tax policies, (τ_H^*,τ_S^*), such that $\tau_H^*=\hat{\tau}_H(\tau_S^*)$ and $\tau_S^*=\hat{\tau}_S(\tau_H^*)$.

We resort to numerical simulations in order to characterize the Nash-equilibrium and study the effect of the source-host income gap (I_S/I_H) and the setup cost (C^*) on the divergence or convergence the tax-expenditure policies.

In these simulations, we employ a Cobb-Douglas production function $F(K)=K^\alpha$, with $\alpha=2/3$. The parameter values for the productivity levels are $A_H=A_S=1$. We employ a Cobb-Douglas utility function, $u=\ln x_1+\beta\ln x_2+\gamma\ln P$, with $\beta=0.99$ and $\gamma=0.95$. The parameter values for the depreciation rates are $\delta_H=\delta_S=0.2$ and $\delta'_H=\delta'_S=0.1$. The world rate of interest is $r=0.05$. We also set the initial endowment at the host country (I_H) at unity.

(Figure 10.1 about here)

Figure 10.1 illustrates the effect of a rise in the initial endowment in the source country (I_S) on the optimal tax-expenditure policies at the Nash equilibrium. (The parameter value for the setup cost is $C^* = 1$.) The host tax rate (τ_H) and the public expenditures (P_H) are not effected by I_S. But, as the source country becomes richer, its tax rate and expenditures rise, thus yielding an equilibrium with low-tax, low-expenditures in the relatively poor host country, and high-tax, high-expenditures in the relatively rich source country.

(Figure 10.2 about here)

Figure 10.2 depicts the effect of the setup cost on the tax-expenditure policies. (The parameter value for initial endowment in the source country, I_S, is set to unity.) With $C^* = 0$, the two tax rates are equalized at about 23.5%. As the setup cost rises, both tax rates fall, but the host rate falls more sharply. Thus, we get an equilibrium with a low-tax, low-expenditure host country and a high-tax, high-expenditure source country.

4 Tax Coordination

5 Conclusion

The 2004 enlargement of the EU with ten new countries provides a stylized analogue of the predictions of the model. Table 10.1 describes the corporate tax rates in the 25 EU countries in 2003. It reveals a marked gap between the original EU-15 countries and the 10 accession countries. The latter have significantly lower rates. Estonia, for instance, has no corporate tax; the rates in Cyprus and Lithuania are 15%; and in Latvia, Poland, and Slovakia, 19%. In contrast, the rates in Belgium, France, Germany, Greece, Italy, and the Netherlands range from 33% to 40%.

(Table 10.1 about here)

Note, however, that the tax rates mentioned are the *statutory* rates. However, what matters from an economic point of view is the *effective* tax rates, which could be significantly different because if different

statutory tax bases, tax loss treatment, etc. Nevertheless, there are some indications that the effective tax rates are also lower in the accession countries than in the EU-15 countries. For instance, Jakubiak and Markiewicz (2005) show that the ratios of corporate tax revenues to GDP in the former countries are on average lower than in the latter countries; see their Figure 2.

Given the fiscal externalities, tax normalization is naturally beneficial to all countries involved. However, depending on the actual specifics of the harmonization, it may benefit some countries at the expense of others. In the EU, some of the original six founding countries may push for tax harmonization, whereas most of the 2004 accession countries are reluctant. Furthermore, given the built-in revenue transfer mechanism within the EU, the former countries feel they are financing the tax cuts of the latter countries. Gerhard Schroder, the former German Chancellor, stated in April 2004 that it was unacceptable "that Germany, as the EU's biggest net payer, finances unfair tax competition against itself".

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Figure 10.1: The Effect of the Income Gap (I_S/I_H) on the Tax-Expenditure Policies

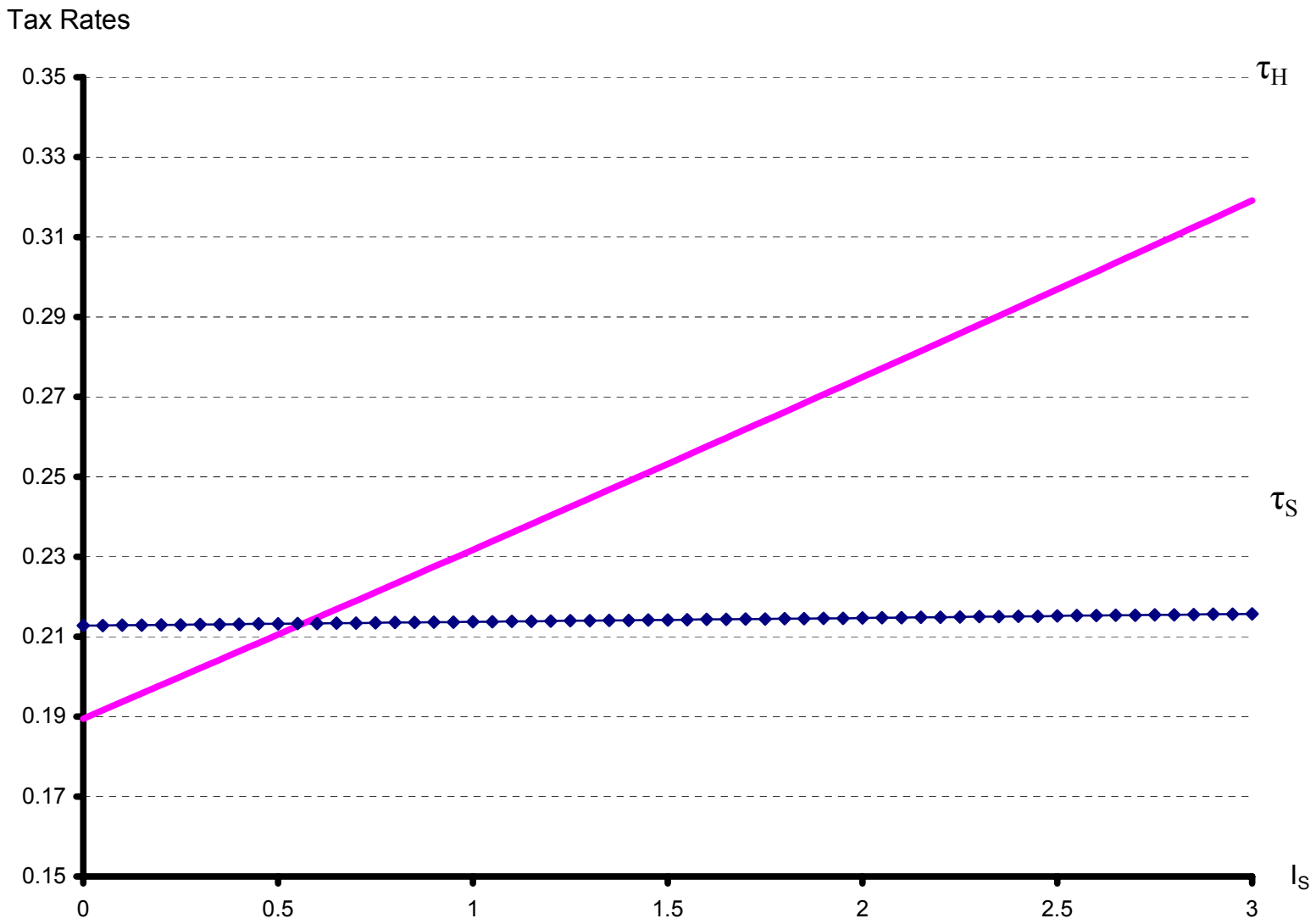

Figure 10.2: The Effect of the Setup Cost on the Tax-Expenditure Policies

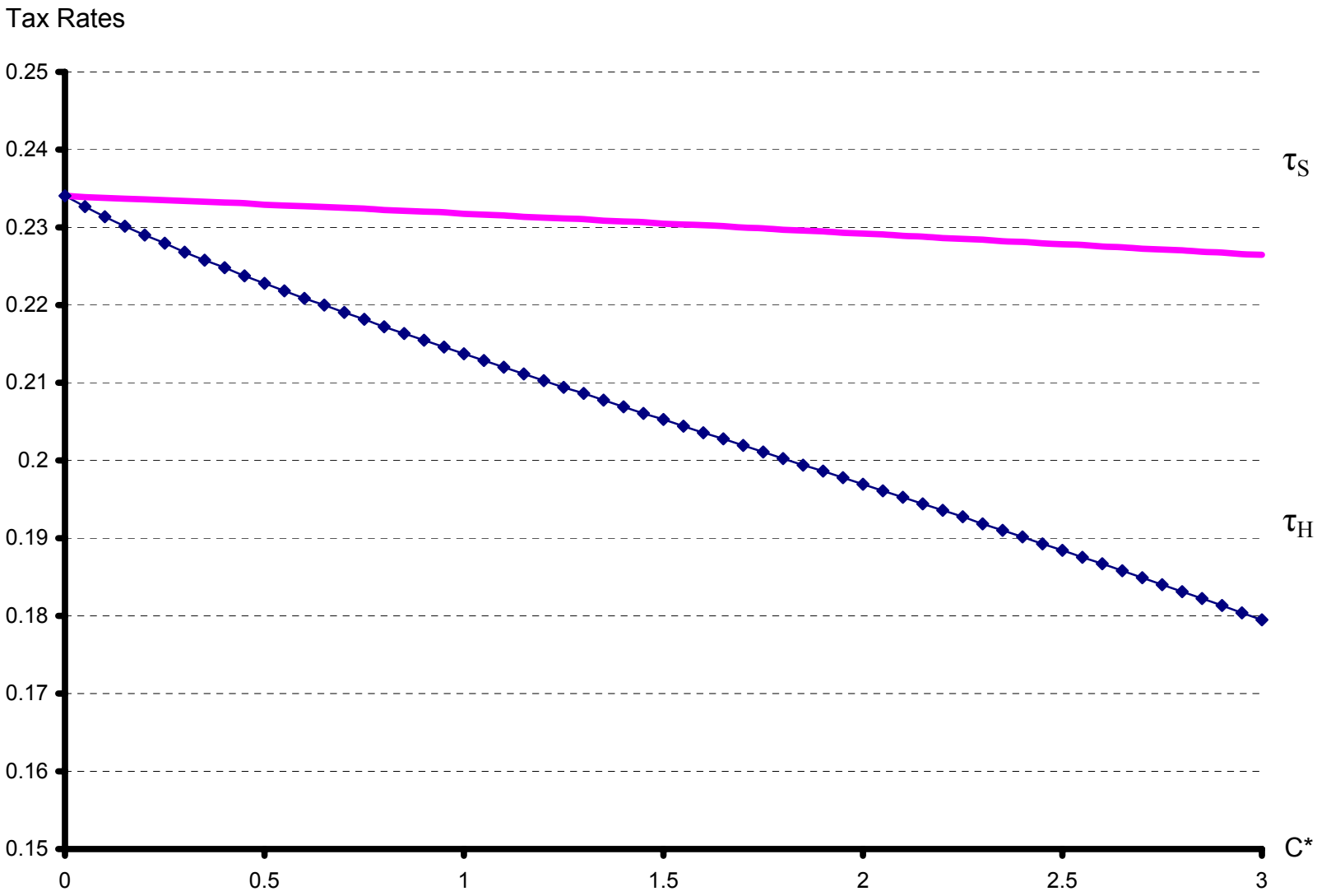

Table 1: Statutory Corporate Tax Rates in the Enlarged EU, 2003.

Country	Tax Rate (%)
Austria	34
Belgium	34
Cyprus*	15
Czech Republic*	31
Denmark	30
Estonia*	0
Finland	29
France	33.3
Germany	40
Greece	35
Hungary*	18
Ireland	12.5
Italy	34
Latvia	19
Lithuania*	15
Luxembourg	22
Malta*	35
The Netherlands	34.5
Poland*	27
Portugal	30
Slovakia*	25
Slovenia*	25
Spain	35
Sweden	28
United Kingdom	30

References

[1] Admati, Anat R. and P. Pfleiderer (1988), "A Theory of Intraday Patterns: Volume and Price Variability", *Review of Financial Studies*, 1, 3-40.

[2] Admati, Anat R. and P. Pfleiderer (1991), "Sunshine Trading and Financial Market Equilibrium", *Review of Financial Studies*, 4, 443-481.

[3] Akerlof, George. A. (1970), "The Market for Lemons: Quality Uncertainty and the Market Mechanism", *Quarterly Journal of Economics*, 84, 488-500.

[4] Albuquerque, Rui (2003), "The Composition of International Capital Flows: Risk-Sharing through Foreign Direct Investment",

Journal of International Economics, 61(2), 353-383.

[5] Alfaro, Laura, Areendam Chanda, Sebnem Kalemli-Ozcan, and Selin Sayek (2004), "FDI and Economic Growth: The Role of Local Financial Markets", *Journal of International Economics*, 64(1), 89-112.

[6] Amiti, Mary (2005), "Location of Vertically Linked Industries: Agglomeration versus Comparative Advantage", *European Economic Review*, 49(4), 809-832.

[7] Antras, Pol (2004), "Advanced Topics in International Trade: Firms and International Trade", Lecture Notes (Harvard University).

[8] Auerbach, Alan J. and Kevin Hassett (1993), "Taxation and Foreign direct Investment in the United States: A Reconsideration of the Evidence", in: Alberto Giovannini, R. Glenn Hubbard, and Joel Slemrod (eds.) *Studies in International Taxation,* University of Chicago Press, 119-144.

[9] Blonigen, Bruce A. (1997), "Firm-Specific Assets and the Link between Exchange Rates and Foreign Direct Investment", *American Economic Review*, 87(3), 447-465.

[10] Bolton, P. and E. L. von Thadden (1998), "Blocks, Liquidity, and Corporate Control", *Journal of Finance*, 53, 1-25.

[11] Borenzstein, Eduardo, Jose De Gregorio, and J. W. Lee, (1998), "How Does Foreign Direct Investment Affect Economic Growth?", *Journal of International Economics*, 45, 115-35.

[12] Bosworth, Barry, and Susan Collins (1999), "Capital Flows to Developing Economies: Implications for Saving and Investment", *Brookings Papers on Economic Activity*, 1, 143-69.

[13] Brainard, S. Lael (1997), "An Empirical Assessment of the Proximity-Concentration Trade-off Between Multinational Sales and Trade", *American Economic Review,* 87(4), 520-544.

[14] Caballero, Ricardo and Eduardo Engel (1999), "Explaining Investment Dynamics in US Manufacturing: A Generalized (S;s) Approach", *Econometrica*, July, 741-82.

[15] _____ (2000), "Lumpy Adjustment and Aggregate Investment Equations: A "Simple" Approach Relying on Cash Flow "Information", mimeo.

[16] Carr, David L., James R. Markusen and Keith E. Maskus (2001), "Estimating the Knowledge-Capital Model of the Multinational Enterprise," *American Economic Review*, 91(3), 693-708.

[17] Caves, Richard E. (1971), "International Corporations: The Industrial Economics of Foreign Investment", *Economica*, 38, 1-27.

[18] Chan, L. and J. Lakonishok (1995), "The Behavior of Stock Prices

around Institutional Trades", *Journal of Finance,* 50, 1147-1174.

[19] Chari, A., P. P. Ouimet and L. Tesar (2005), "Acquiring Control in Emerging Markets: Evidence from the Stock Market", Working Paper, University of Michigan.

[20] Chuhan, P., G. Perez-Quiros and H. Popper (1996), "Do Short-term Investment and Direct Investment Differ?", World Bank Policy Research Working Paper No. 1669.

[21] Dadush Uri, Dipak Dasgupta, and Dilip Ratha (2000), "The Role of Short-Term Debt in Recent Crises", *Finance and Development*, 37, 54-57.

[22] De Mooij, R. A., and S. Ederveen (2001), "Taxation and Foreign Direct Investment: A Synthesis of Empirical Research", CESifo Working Paper No. 588.

[23] Desai, Mihir A. and James R. Hines (2001), "Foreign Direct Investment in a World of Multiple Taxes", University of Michigan.

[24] Devereux, Michael P. and R. Glenn Hubbard (2003), "Taxing Multinationals", *International Tax and Public Finance*, 10(4), 469-488.

[25] Devereux, Michael P. and Rachel Griffith (2003), "Evaluating Tax Policy for Location Decisions", *International Tax and Public Finance*, 10(2), 107-126.

[26] Diamond, Peter A., and James Mirrlees (1971), "Optimal Taxation and Public Production: I and II," *American Economic Review* (March and June), 8-17 and 261-278.

[27] Diamond, D. W. and P. H. Dybvig (1983), "Bank Runs, Deposit Insurance, and Liquidity", *Journal of Political Economy*, 91, 401-419.

[28] Djankov, Simeon, and Bernard Hoekman (2000), "Foreign Investment and Productivity Growth in Czech Enterprises", *The World Bank Economic Review*, 14 (1), 49-64.

[29] Eaton, Jonathan, and Akiko Tamura (1994), "Bi-lateralism and Regionalism in Japanese and U.S. Trade and Direct Foreign Investment," *The Journal of The Japanese and International Economies*, 8, 478-510.

[30] Fedelstein, Martin (2000), "Aspects of Global Economic Integration: Outlook for the Future", NBER Working Paper no. 7899 (Cambridge, Massachusetts: National Bureau of economic Research).

[31] Feenstra, Robert C. (1999), "Facts and Fallacies About Foreign Direct Investment", in Martin Feldstein, ed.: *International Capital Flows*, (University of Chicago Press, Chicago, III).

[32] Feliciano Z. and Lipsey, Robert E. (1999), "Foreign Ownership and

Wages in the United States, 1987-92", NBER Working Paper No. 6923.

[33] Foster, F. D. and S. Viswanathan (1990), "A Theory of the Interday Variations in Volume, Variance, and Trading Costs in Securities Markets", *Review of Financial Studies*, 3, 593-624.

[34] Frankel, J. A. and A. K. Rose (1996), "Currency Crashes in Emerging Markets: An Empirical Treatment", *Journal of International Economics*, 41, 351-366.

[35] Frenkel, Jacob A., Assaf Razin and Efraim Sadka (1991), *International Taxation in an Integrated World Economy*, MIT press.

[36] Froot, K. (1991), "Japanese Foreign Direct Investment", in Feldstein, Martin S. and Y. Kosai (eds.), *US-Japan Economic Forum*.

[37] Froot, K. A. and J. C. Stein (1992), Exchange Rates and Foreign Direct Investment: An Imperfect Capital Markets Approach", *Quarterly Journal of Economics,* 106(5), 1191-1217.

[38] Ghironi, Fabio and Marc J. Melitz (2004), "International Trade and Macroeconomic Dynamics with Heterogenous Firms," NBER Working Paper 10540.

[39] Goldstein, Itay and Assaf Razin (2006), "An information - based Tradeoff between Foreign Direct Investment and Foreign Portfolio investment", *Journal of International Economics*.

[40] Gopinath, Gita (2004), "Lending Booms, Sharp Reversals and the Real Exchange Dynamics", *Journal of International Economics*, 62 (1), 1-23.

[41] Gordon, Ruger H. (1983), "An Optimal Taxation Approach to Fiscal Federalism", *Quarterly Journal of Economics*, 98, 567-586.

[42] Griffith, Rachel and Helen Simpson (2003), "Characteristics of Foreign-Owned Firms in British Manufacturing", NBER Working Paper No. 9573 (March).

[43] Gordon, R. H. and A. Lans Bovenberg (1996), "Why Is Capital So Immobile Internationally? Possible Explanations and Implications for Capital Income Taxation", *American Economic Review*, 86, 1057-1075.

[44] Hall, Robert E. and Dale W. Jorgenson (1967), "Pax Policy and Investment Behavior", *American Economic Review*, 57, 391-414.

[45] Hanson G. Mataloni R. and M. Slaughter (2001), "Expansion Strategies of U.S. Multinational Firms", in Dani Rodrick and Susan Collins (eds.), *Brooking Trade Forum* 2001, 245-282.

[46] Harberger, Arnold C. (1962), "The Incidence of The Corporation Income Tax", *Journal of Political Economy*, 70, 215-40.

[47] Hart, O. (2001), "Financial Contracting", *Journal of Economic Literature*, 34, 1079-1100.

[48] Haufler, Andreas (2001), *Taxation in a Global Economy*, Cambridge University Press.
[49] Heckman, James. J. (1979), "Sample Selection Bias as a Specification Error", *Econometrica*, 42, 153-168.
[50] Heckman, James. J. (1974), "Shadow Prices, Market Wages and Labor Supply", *Econom*trica, 47, 153-161.
[51] Helpman, Elhanan (2006), "Trade, FDI, and the Organization of Firms", NBER Working Paper No. 12091.
[52] Helpman, Elhanan, Mark Melitz, and Steve Yeaple (2004), "Exports vs FDI", *American Economic Review*.
[53] Helpman, Elhanan (1984), "A Simple Theory of International Trade with Multinational Corporations", *Journal of Political Economy*, 92, 451-471.
[54] Hennart, J., D. Kim and M. Zeng (1998), "The Impact of Joint Venture Status on the Longevity of Japanese Stakes in U.S. Manufacturing Affiliates", *Organization Science*, 9, 382-395.
[55] Hertzel, M. and R. Smith (1993), "Market Discounts and Shareholder Gains for Placing Equity Privately", *Journal of Finance*, 48, 459-485.
[56] Hines, James R. (1999), "Lessons from Behavioral Responses to International Taxation", *National Tax Journal*, 53, 305-22.
[57] Hines, James R. (2001), "Corporate Taxation", in Neil J. Smelser and Paul B. Balts (eds.), *International Encyclopaedia of the Social and Behavioral Sciences*.
[58] Holthausen, R. W., R. W. Leftwich and D. Mayers (1990), "Large-Block Transactions, the Speed of Response, and Temporary and Permanent Stock-Price Effects", *Journal of Financial Economics*, 26, 71-95.
[59] Jakubiak, Malgorzata and Malgorzata Markiewicz (2005), "Capital Mobility and Tax Competition in the EU after Enlargement", CASE (mimeo).
[60] Jensen, M. (1986), "The Agency Costs of Free Cash Flow: Corporate Finance and Takeovers", *American Economic Review*, 76, 323-330.
[61] Kahn, C. and A. Winton (1998), "Ownership Structure, Speculation, and Shareholder Intervention", *Journal of Finance*, 53, 99-129.
[62] Keane, Michael, Robert Moffit and David Runkle (1988), "Real Wages over the Business Cycle: Estimating the Impact of Heterogeneity with Micro Data", *Journal of Political Economy*, 96(6), 1232-66.
[63] Klein, M. W. and E. S. Rosengren (1994), "The Real Exchange

Rate and Foreign Direct Investment in the United States", *Journal of International Economics*, 36, 373-389.

[64] Klein, M. W., J. Peek and E. S. Rosengren (2002), "Troubled Banks, Impaired Foreign Direct Investment: The Role of Relative Access to Credit", *American Economic Review*, 92, 664-682.

[65] Korajczyk, R. A., D. J. Lucas and R. L. McDonald (1991), "The Effect of Information Releases on the Pricing and Timing of Equity Issues", *Review of Financial Studies*, 4, 685-708.

[66] Krugman, Paul (2000), "Fise-Sale FDI", in Edwards, Sebastian (ed.), *Capital Flows and the Emerging Economies: Theory, Evidence, and Controversies*, University of Chicago Press.

[67] Kyriazidou, Ekaterini (1996), "Estimation of a Panel Data Sample Selection Model," *Econometrica,* 65, 1335-1364.

[68] La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R. W. Vishny (1998), "Law and Finance", *Journal of Political economy*, 106, 1113-1155.

[69] Lipsey, Robert E. (2000), "The Role of Foreign Direct Investment in International Capital Flows", NBER Working Paper # 7094.

[70] Lipsey, Robert E. (2000/2001), "Foreign Direct Investment and the Operations of Multinational Firms", *NBER Reporter*, winter, NBER, Cambridge, USA.

[71] Lipsey, Robert E. (2001), "Foreign Direct Investors in Three Financial Crises", NBER Working Paper # 8084.

[72] Lipsey, Robert E. (2002), "Home and Host Country Effects of FDI", NBER Working Paper # 9293.

[73] Loungani, Prakash, and Assaf Razin (2001), "How Beneficial Is Foreign Direct Investment for Developing Countries", *Finance and Development*, 38(2).

[74] Lucas, Robert E. (1990), "Why Doesn't Capital Flow from Rich to Poor Countries?", *American Economic Review: Papers and Proceedings*, 80(2), 92-96.

[75] Markusen, Lames R. (2002), *Multinational Firms and the Theory of International Trade*, Cambridge, MIT Press.

[76] Maug, E. (1998), "Large Shareholders as Monitors: Is There a Trade off Between Liquidity and Control?", *Journal of Finance*, 53, 65-98.

[77] Mikkelson, W. H. and M. Partch (1985), "Stock Price Effects and Costs of Secondary Distributions", *Journal of Financial Economics*, 14, 165-194.

[78] Melitz, Marc, J. (2003), "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity," *Econometrica*, 71(6), 1695-1725.

[79] Mintz, Jack M. and Henry Tulkens (1986), "Commodity Tax Competition between Member States of a Federation: Equilibrium and Efficiency", *Journal of Public Economics*, 29, 133-172.

[80] Obstfeld, M. and A. M. Taylor (2002), "Globalization and the Capital Markets", NBER Working Paper No. 8846.

[81] OECD (1997), *Model Tax Convention on Income and on Capital*, Paris, OECD Committee on fiscal Affairs.

[82] Perez-Gonzalez, F. (2005), "The Impact of Acquiring Control on Productivity", Working Paper, Columbia University.

[83] Razin, Assaf (2004), "The Contribution of FDI Flows to Domestic Investment in Capacity, and Vice Versa", in Ito, Takatoshi, and Andrew K. Rose (eds.), *Growth and Productivity in East Asia*, NBER-East Asia Seminar on Economics, Vol. 13, 149-167.

[84] Razin, Assaf, and Efraim Sadka (2003), "Gains from FDI Inflows with Incomplete Information", *Economics Letters,* 7, 71-77.

[85] Razin, Assaf, and Efraim Sadka (2003), *Labor, Capital and Finance: International Flows* (New York and Cambridge, England: Cambridge University Press).

[86] Razin, Assaf and Efraim Sadka (forthcoming), "Corporate Transparency, Cream-Skimming and FDI", *European Economic Review.*

[87] Razin, Assaf, Yona Rubinstein and Efraim Sadka (2004), "Fixed Costs and FDI: The Conflicting Effects of Productivity Shocks", NBER Working Paper No. 10864.

[88] Razin, Assaf, Yona Rubinstein and Efraim Sadka (2005), "Corporate Taxation and Bilateral FDI with Threshold Barriers", NBER Working Paper 11196.

[89] Razin, Assaf, Efraim Sadka, and Tarek Coury (2003), "Trade Openness, Investment Instability, and Terms-of-Trade Volatility," *Journal of International Economics*, 59 (2).

[90] Razin, Assaf, Efraim Sadka and Hui Tong (2005), "Bilateral FDI flows: Threshold Barriers and Productivity Shocks", NBER Working Paper 11639.

[91] Razin, Assaf, Efraim Sadka, and Chi-Wa Yuen (1998), "A Pecking Order Theory of Capital Flows and International Tax Principles", *Journal of International Economics*, 44, 45-68.

[92] Santos, Joao Silva, and Silvana Tenreyro (2003), "Gravity-Defying Trade," Working Papers 03-1, Federal Reserve Bank of Boston.

[93] Sarno, L. and M. P. Taylor (1999), "Hot Money, Accounting Labels and the Permanence of Capital Flows to Developing Countries: An Empirical Investigation", *Journal of Development Economics*, 59, 337-364.

[94] Shleifer, A. and R. W. Vishny (1986), Large Shareholders and

Corporate Control", *Journal of Political Economy*, 94, 461-488.

[95] Tinbergen, Jan (1962), "*Sharing the World Economy*", New York, NY: Twentieth Century Fund.

[96] Zhang, Kevin H. and James R. Markusen (1999), "Vertical Multinationals and Host-Country Characteristics," *Journal of Development Economics*, 59 (2).

[97] U.N. (1980), "U.N. Model Double Taxation Convention between Developed and Developing Countries", U.N. Document # ST/ESA/102.

[98] U.N. (2005), *World Investment Report*, U.N.: New York and Geneva.

[99] Wei, Shang-Jin (2000), "How Taxing is Corruption on International Investors", *Review of Economics and Statistics*, 1, 1-11.

[100] Wildasin, David E. (2004), "Competitive Fiscal Structures", University of Kentucky (mimeo).

[101] Wilson, John D. (1999), "Theories of Tax Competition", *National Tax Journal*, 52, 269-304.

[102] Wruck, K. (1989), Equity Ownership Concentration and firm Value: Evidence from Private Equity Financing", *Journal of Financial economics*, 23, 3-28.

[103] Zodrow, George R. and Peter Mieszkowski (1986), "Pigon, Tiebout, Property Taxation, and the Underprovision of Local Public Goods", Journal of Urban Economics, 19, 356-370.