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# INTERNATIONAL TAX COMPETITION AND GAINS FROM TAX HARMONIZATION

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## ABSTRACT

In a world economy there are two types of distortions which can be caused by capital income taxation in addition to the standard closed-economy wedge between the consumer-saver marginal intertemporal rate of substitution and the producer-investor marginal productivity of capital: (i)international differences in intertemporal marginal rates of substitution, implying an inefficient allocation of world savings across countries; and (ii) international differences in the marginal productivity of capital, implying an inefficient allocation of world investment across countries. The paper focuses on the structure of taxation for countries which are engaged in tax competition and on potential gains from a tax harmonization. We show that if the competing countries are sufficiently coordinated with the rest of the world then tax competition leads each country to apply the residence principle of taxation and there are no gains from tax harmonization. If, however there is not sufficient coordination,tax competition leads to low capital income taxes and the tax burden falls on the internationally immobile factors. The outcome is nevertheless still efficient relative to the available constrained set of tax instruments.

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## 1. Introduction

In a world with international capital mobility, the equality between saving and investment need not hold for each country separately, but rather for world aggregate saving and investment. This separation brings out new issues of taxation in theory and practice. In a closed econmy a tax on capital income drives just one wedge between the consumer-saver marginal intertemporal rate of substitution and the producer-investor marginal productivity of capital. In a world of open economies there are two more types of distortions which can be caused by capital income taxation: (i) international differences in intertemporal marginal rates of substitution, implying an inefficient allocation of world savings across countries; (ii) international differences in the marginal productivity of capital, implying that world investment is not efficiently allocated across countries.

In an international context, there are two polar principles of taxation: the residence (of the taxpayer) and the source (of income)

principles. According to the first principle, residents are taxed on their world-wide income equally, regardless of whether the source of the income is domestic or foreign.[1] A resident in any country must earn the same net return on her savings, no matter to which country she chooses to channel her savings (the rate-of-return arbitrage). If a country adopts the residence principle, taxing at the same rate capital income from all sources, then the gross return accruing to an individual in that country must be the same, regardless of which country is the source of that return. Thus, the marginal product of capital in that country will be equal to the world return to capital. If all countries adopt the residence principle, then capital income taxation does not disturb the equality of the marginal product of capital across countries which is generated by a free movement of capital. However, if the rax rate is not the same in all countries, then the net returns accruing to savers in different countries vary and the international allocation of world savings is distorted.

According to the second principle, residents of a country are not taxed on their income from foreign sources and foreigners are taxed equally as residents on income from domestic sources. Now, suppose that all countries adopt this principle. Then a resident of country H earns in country F the same net return as the resident of country F earns in country F. Since a resident in country H must earn the same net return whether she channelled her savings to country H or to country F, it follows that residents of all countries earn the same net return. Thus, intertemporal marginal rate of substitution are equated across countries, implying that the international allocation of

world savings is efficient. However, if the tax rate is not the same in all countries, then the marginal product of capital is also not the same in all countries. In this case the international allocation of the world stock of capital is not efficient.

Although there are two extreme principles of international taxation, in reality, countries adopt a mixture of the two polar principles. Accordingly, in practice, countries partially tax foreign-source income of residents and domestic-source income of non-residents, in which case both the international allocations of world savings and of world investments are distorted.

These issues are of particular relevance for Europe of 1992. The creation of a single capital market in the European Community raises the possibility of tax competition among the member countries, in the absence of a full-fledged harmonization of the income tax systems. Also, the possibilty of capital flight from the EC to low-tax countries elsewhere has strong implications for the national tax structures in the EC. These developments renewed the interest among public finance and international finance economists in the issues of tax harmonization and coordination, tax competition, the international structure of taxation, etc.[2]

In this paper we focus on the structure of taxation for countries which are engaged in tax competiton and on the potential gains from tax harmonization among them. Tax competition among countries obviously raises the possibility of terms of trade manipulation. This issue, however, has been exhaustively studied by now and we do not wish to address it here any further. We are rather interested here in

highlighting the distortions and inefficiencies of the international allocations of world savings and investments that are caused by capital income taxation. We show that if the competing countries are sufficiently coordinated with the rest of the world so as to be able to effectively tax their residents on their income from capital in the rest of the world, then tax competition leads each country to apply the residence principle of taxation and the equilibrium outcome is efficient. Thus, there are no gains from tax harmonization.

If, however, there is not sufficient coordination with the rest of the world to allow each country to tax its residents on their income from capital in the rest of the world, then tax competition leads to no tax whatsoever on capital income. All the tax burden falls in this case on internationally immobile factors of producton, such as labor or land, (more generally, it seems that the lower is the tax that can be effectively levied on residents on income from capital in the rest of the world, the lower would be the tax rate on income from capital from sources within the competing countries.). The outcome in this case is also efficient, relative to the constrained set of available tax instruments. Thus, in this case too there are no gains from tax harmonization. Naturally the outcome of tax competition in the case in which the countries cannot tax their residents on capital income from the rest of the world is welfare-inferior to the case where they can. Thus, there are gains for the competing countries from tax coordination with the rest of the world.

## 2. A Stylized Model of International Tax Competition

International tax competition, or any fiscal policy competition for that matter, has major efforts on the resource allocation across countries as well as within each country. For example, the aggregate (world-wide) level of savings as well as its cross-country composition may be distorted by such competition; similarly, the aggregate level of investment and its international allocation may become inefficient. In general, these effects on resource allocation can be decomposed into two elements. One concerns the indirect manipulation of the international terms of trade by various fiscal measures (other than explicit trade barriers such as tariffs and quotas) which is akin to the familiar "trade wars." The second element which received less attention concerns the international and domestic misallocation of resources that is generated by tax competition for given terms of trade.

This paper focuses on the second of these two elements since the first one has been exhaustively studied and has become by now a textbook case. We therefore set up a stylized model in which tax competition within the group of countries that we analyze cannot effect their terms of trade. This is accomplished by assuming that this group of countries is small relative to the rest of the world which effectively sets the international terms of trade.

To simplify the exposition we assume that the competing group consists of two small countries, denoted by superscripts H (for Home) and F (for Foreign). An asterisk (*) stands for the rest of the world. Suppose that all the countries agree on full integration of the capital markets (as in Europe of 1992). That is, there exist totally

free international movements of capital. There is also another factor, labor, which is assumed to be immobile internationally.

We describe a representative (small) country, say country H. Consider a stylized two-period model with one composite good, serving both for (private and public) consumption and for investment. In the first period the economy possesses an initial endowment of the compositive good. Individuals can decide how much of their initial endowments to consume in the first period and how much to save. Saving is allocated to either domestic investment or foreign investments. In the second period, output (produced by capital and labor) and income from foreign investments are allocated between private and public consumption. For the sake of simplicity, we assume that government spending takes place in the second period. The government employs taxes on labor, taxes on income from domestic investments, and possibly taxes on income from investments abroad in order to finance optimally its (public) consumption.

For simplicity, while still capturing basic real-world features, we assume that government spending on public goods does not affect individual demand patterns for private goods or the supply of labor. That is, only the taxes that are needed to finance these expenditures affect individual demands and supplies, but not the expenditures themselves. Formally, this feature is obtained by assuming that the utility function is weakly separable between private goods and services on the one hand, and public goods and services, on the other hand. That is, the representative individual in country H has a utilty function of the form:

(1) $$U^H(c_1^H, c_2^H, L^H, G^H) = u^H(c_1^H, c_2^H, L^H) + m^H(G^H),$$

where $u^H$ and $m^H$ are the private and public components of the utility function, respectively; $c_1^H$, $c_2^H$ and $L^H$ are first-period consumption, second-period consumption and (second-period) labor supply, respectively; and $G^H$ is (second-period) public consumption.

Denote saving in the form of domestic capital by $S^{HH}$, saving exported to country F by $S^{HF}$ and saving exported to the rest of the world by $S^{H*}$. The budget constraint of the representative individual (the private sector) in the first period is:

(2) $$c_1^H + S^{HH} + S^{HF} + S^{H*} = I^H,$$

where $I^H$ is a fixed endowment.

In the second period the private sector finances its consumption from labor income which is taxed at the rate $t_2^H$ and its capital income which stems from one domestic source and two foreign sources, from country F and from the rest of the world. The gross returns on capital income from these sources are $r^H$, $r^F$ and $r^*$, respectively.[3] These sources may be taxed domestically and/or by the foreign countries. We use the following notation for the rates of tax on capital income imposed in country i (i = H,F):

(i) $t_{RD}^i$ - the tax rate levied on domestic residents on their domestic-source income,

(ii) $t^i_{RA}$ - the tax rate levied on domestic residents on their foreign-source income,

(iii) $t^i_{NRD}$ - the tax rate levied on non residents on their domestic capital.

Thus, the private sector faces the following budget constraint in the second period:

$$(3) \quad c_2^H = (1-t_L^H)\, w^H L^H + S^{HH}[1 + (1-t_{RD}^H) r^H] + S^{HF}[1 + (1-t_{RA}^H)(1-t_{NRD}^F) r^F] + S^{H*}[1 + (1-t_{RA}^H) r^*],$$

where $w^H$ is the real wage rate (in terms of second-period consumption).

Since a resident in country H is free to invest domestically, or in country F, or anywhere else in the world, and assuming that in the equilibria analyzed here she exercises this possibility of portfolio diversification, then it must be the case that she earns the same net (after-tax) return everywhere. That is:

$$(4a) \quad (1 - t_{RD}^H) r^H = (1 - t_{RA}^H) r^*$$

and

$$(1 - t_{RA}^H)(1 - t_{NRD}^F) r^F = (1 - t_{RA}^H) r^*$$

which upon cancellation of the common term $1 - t^H_{RA}$, becomes

(4b) $$(1 - t^F_{NRD})r^F = r^*.$$

Hence, the second-period budget constraint may be rewritten as:

(5) $$c^H_2 = (1 - t^H_L)w^H L^H + S^H[1 + (1 - t^H_{RD})r^H],$$

where

(6) $$S^H = S^{HH} + S^{HF} + S^{H*}$$

is the **aggregate** saving of the private sector in country H. Now, the budget constraints for the first and second periods ((2) and (5)) may be consolidated into one present-value life-time budget constraint:

(7) $$c^H_1 + q^H_c c^H_2 = I^H + q^H_L L^H,$$

where

(7a) $$q^H_c = [1 + (1 - t^H_{RD})r^H]^{-1}$$

and

(7b) $$q^H_L = [(1 - t^H_L)w^H][1 + (1 - t^H_{RD})r^H]^{-1}$$

are the present-value, (post-tax) consumer prices of second-period consumption and labor, respectively.

Maximization of the utilty function (1) subject to the budget constraint (7) yields the demand for private consumption in the first period, the supply of saving in the second period, and the supply of labor by the private sector in the second period respectively: $c^H_1(q^H_c,$

$q_L^H$, $I^H$), $c_2^H(q_c^H, q_L^H, I^H)$, $S^H(q_c^H, q_L^H, I^H)$ and $L^H(q_c^H, q_L^H, I^H)$. Also, the indirect utility function is defined by:

$$(8) \qquad v^H(q_c^H, q_L^H, I^H, G^H) =$$

$$u^H(c_1^H(q_c^H, q_L^H, I^H), c_2^H(q_c^H, q_L^H, I^H), L^H(q_c^H, q_L^H, I^H)) + m^H(G^H).$$

This comprises the consumption-labor supply side of the economy.

Domestic output $(Y^H)$ of the composite consumption good in the second-period is produced by capital $(K^H)$ and labor $(L^H)$, according to a neo-classical, constant-returns-to-scale production function:

$$(9) \qquad Y^H = F^H(K^H, L^H).$$

The stock of domestic capital is composed of the saving by domestic residents channelled to domestic uses $(S^{HH})$, the saving by the residents of country F channelled to country H $(S^{FH})$ and saving by the rest of the world channelled to country H $(S^{*H})$. That is:

$$(10) \qquad K^H = S^{HH} + S^{FH} + S^{*H}$$

$$= S^H - [(S^{HF} + S^{H*}) - (S^{FH} + S^{*H})]$$

where use is made of equation (6). Put differently, the domestic capital stock is equal to aggregate domestic saving $(S^H)$ less net capital exports (i.e., $S^{HF} + S^{H*} - (S^{FH} + S^{*H})$).

The marginal productivity conditions determine the (pre-tax) interest rate and the wage rate:

$$(11) \qquad r^H = F_K^H(K^H, L^H)$$

and

$$(12) \qquad w^H = F_L^H(K^H, L^H),$$

where a subscript i denotes a partial derivative with respect to variable i, i = K, L.

As usual, the equilibrium conditions (or resource constraints) in country H require that supply demand for first-period consumption, and similarly for second-period consumption, will be:

$$(13) \qquad c_1^H = I^H - S^H$$

and

$$(14) \qquad G + c_2^H = F^H(K^H, L^H) + K^H + (S^{HF} + S^{H*})(1 + r^*) - (S^{FH} + S^{*H})[1 + (1 - t_{NRD}^H)r^H].$$

Note that $S^{HF} + S^{H*}$ is the saving of the residents of country H which is invested abroad and thus earns a social (i.e., before tax) return at the rate of $r^*$, no matter whether invested in the rest of the world or in country F. The sum $S^{FH} + S^{*H}$ is foreign saving invested in country H. It earns the domestic rate of return $r^H$, but the foreign

residents can extract from country H only a net of tax return $(1 - t^{H}_{NRD})r^{H}$, because a tax $t^{H}_{NRD}$ (per unit) remains in country H.

Country F is similar to country H, so that the equations for country F are exactly like those described above for country H, except that the superscripts F and H are interchanged.

Of particular interest now are the rate-of-return arbitrage conditions (4a) and (4b) which become (assuming interior solutions):

$$(15a) \qquad (1 - t^{F}_{RD})r^{F} = (1 - t^{F}_{RA})r^{*}$$

and

$$(15b) \qquad r^{*} = (1 - t^{H}_{NRD})r^{H}.$$

Since (15a) and (15b) imply that $(1 - t^{H}_{NRD})r^{H} = r^{*}$, it follows upon consolidation of the first-period and the second-period equilibrium conditions for country H (i.e., equations (13) and (14),) that country H faces the following future-value, life-time equilibrium condition:

$$(16) \qquad G^{H} + c^{H}_{2}(q^{H}_{C}, q^{H}_{L}, I^{H}) = F^{H}\{I^{H} - c^{H}_{1}(q^{H}_{C}, q^{H}_{L}, I^{H}) - [(S^{HF} + S^{H*}) - (S^{FH} + S^{*H})], L^{H}(q^{H}_{C}, q^{H}_{L}, I^{H})\} + I^{H} - c^{H}_{1}(q^{H}_{C}, q^{H}_{L}, I^{H}) + [(S^{HF} + S^{H*}) - (S^{FH} + S^{*H})]r^{*},$$

where use is made also of equation (10). This condition merely states that total private and public consumption in the second-period (i.e., $G^H + c_2^H$) must be equal to the sum of: (i) output generated by domestic capital, which is financed by domestic saving (i.., $I^H - c_1^H$) less net capital exports (i.e., gross capital exports, $S^{HF} + S^{H*}$, less gross capital iports, $S^{FH} + S^{*H}$), and labor; (ii) domestic capital; and (iii) the return on net capital exports. Notice that by Walras's Law the government budget constraint in each country is automatically satisfied at equilibrium.

The stylized model of international tax competition works as follows. Each government designs its fiscal policy so as to maximize the welfare of the representative resident. In so doing, it obviously takes into account the equilibrium and arbitrage conditions set forth by adherence to a market economy, and also takes as given the fiscal instruments employed by the government in the other country. This leads to a **Nash-equilibrium** between the two countries.

## 3. Tax Competition with Effective Enforcement of Taxes on Income from the Rest of the World.

Suppose that fiscal policies are not harmonized internationally, so that the two countries are engaged in tax competition. However, some minimal degree of coordination among the two countries and the rest of the world prevail, so that they can effectively tax, should they wish, their residents on foreign-source income.

In this case the government in country H, for instance, chooses $G^H$, $q_c^H$, $q_L^H$, $(S^{HF} + S^{H*}) - (S^{FH} + S^{*H})$, $r^H$, $w^h$, $t_L^H$, $t_{RD}^H$, $t_{NRD}^H$ and $t_{RA}^H$

so as to maximize the utility function (8), subject to the equilibrium condition (16), the definition of $q_C^H$ and $q_L^H$ in (7a) and (7b) respectively, and the relevant arbitrage conditions (4a) and (15b). Notice that the other two arbitrage conditions (4b) and (15a), are irrelevant for country H because they have no effect on its economy (formally the endogenous variables in (4b) and (15a) appear nowhere else in the equations describing the economy of country H). In addition, $r^H$ and $w^H$ are given by the marginal productivity conditions (11) and (12).

This optimization can be simplified a great deal by solving it in two stages. First, choose public consumption ($G^H$), consumer prices of second-period consumption and labor ($q_C^H$ and $q_L^H$, respectively) and net capital exports ($S^{HF} + S^{H*} - (S^{FH} + S^{*H})$) so as to maximize the indirect utilty function (8), subject to just one constraint: the resource constraint (16). Then, in the second stage set $r^H$ and $w^H$ from (11) and (12), respectively; $t_{RD}^H$ from (7a); $t_L^H$ from (7b); $t_{NRD}^H$ from (15b) and $t_{RA}^H$ from (4a).

Carrying out the first stage of this optimization process it follows (from the first-order condition for net capital exports) that the marginal product of capital, $F_K^H$ should be equal to the world rate of interest $r^*$. Since $F_K^H = r^H$, by (11), we thus have:

$$F_K^H = r^H = r^*. \tag{17}$$

This gross rate-of-return equalization (which, for the same reasons, must hold also in country F) implies that physical capital must be efficiently allocated among country H, country F and the rest of the

world, even though we are at a second-best situation where many other distortions exist both within and across countries (e.g., the saving-consumption tradeoffs, the consumption-leisure tradeoffs).[4]

Since $r^H = r^*$, it follows from (15b) that $t^H_{NRD} = 0$. Also, (4a) implies that $t^H_{RD} = t^H_{RA}$. Thus, country H should not tax foreigners on their income from capital in country H and it should tax its residents uniformly on their capital income from all sources, domestic as well as foreign. Naturally, a similar result holds for country F as well. Thus, each country should employ the residence (or world-wide) principle for the taxation of income from capital.

Now we shall address the issue of whether this tax competition Nash-equilibrium is a second-best optimum (i.e., relative to the tax policy tools). Or, can there be gains from concerted tax harmonization? Consider, say, country H. Notice that in the optimization problem carried out by the government of country H, the only variables that pertain to country F are $S^{HF}$ and $S^{FH}$. However, country H is indifferent between $S^{HF}$ and $S^{H*}$ and between $S^{FH}$ and $S^{*H}$, as long as net capital exports, $S^{HF} + S^{H*} - (S^{FH} + S^{*H})$, stay constant. Therefore, country H can readjust capital exports with the rest of the world in order to offset any fiscal policy that country F may implement. That is, country F has no effect on country H; and vice versa. Thus, there is nothing that can be gained from tax harmonization and tax competition therefore leads to a second-best optimum.

## 4. Tax Competition without Enforceable Taxes on Income from the Rest of the World

In order to implement effectively a policy of taxing world-wide income, a considerable degree of coordination among countries is required, such as, for example, an exchange of information among the tax authorities, withholding arrangements, loosening bank secrecy laws, etc. Suppose now that countries F and H can reach such coordination which enables each to effectively tax its residents on their income from capital invested in the other country, even though they continue to engage in tax competition. However, they cannot tax the income from capital invested in the rest of the world, as they have no coordination agreements. This seems a rather interesting and realistic case which captures the essence of a problem hindering European integration, that of capital moving to low-tax countries in the rest of the world.

The arbitrage conditions (4a)-(4b) and (15a)-(15b) now become:

$$(4a') \qquad (1 - t^{H}_{RD})r^{H} = r^{*},$$

$$(4b') \qquad (1 - t^{H}_{RA})(1 - t^{F}_{NRD})r^{F} = r^{*},$$

$$(15a') \qquad (1 - t^{F}_{RD})r^{F} = r^{*},$$

and

$$(15b') \qquad (1 - t^{F}_{RA})(1 - t^{H}_{NRD})r^{H} = r^{*}.$$

Now, if there is an interior solution for capital invested by the rest of the world in countries H and F, it must also be the case that

the rest of the world earns a net return of $r^*$ on such investments. That is:

$$(18) \qquad (1 - t^H_{NRD})r^H = r^* = (1 - t^F_{NRD})r^F.$$

Then (18), (4b′) and (15b′) imply that

$$(19) \qquad t^H_{RA} = t^F_{RA} = 0.$$

That is, when countries F and H cannot tax their residents on income from capital invested in the rest of the world, then the rate-of-return arbitrage prevents each one of them from taxing its residents on their income from capital invested in the other country, even though their tax authorities can cooperate on such things as tax withholding, etc. This may explain why the EC dropped the idea of imposing a withholding tax on capital income.

We now turn to the Nash-equilibrium resulting from tax competition in this case. Consider one of the two competing countries, say country H. As in the preceding section, the government in country H faces the same optimization problem, except that constraints (4a′) and (15b′) replace (4a) and (15b), respectively. Here too, it follows from the first-order condition for net capital exports, that $F^H_K = r^*$. Since $F^H_K = r^H$, by (11), we thus have (with similar reasoning applying to country F):

$$(20) \qquad F^H_K = r^H = r^* = r^F = F^F_K.$$

Again, this equalization of the domestic productivity of capital in country H (and in country F) to the world rate of interest generates a world-wide efficient allocation of physical capital. From (4a′) and (15a′) we then conlude that

$$(21) \qquad t^{H}_{RD} = t^{F}_{RD} = 0.$$

Also, it follows from (19), (4b′) and (15b′) that

$$(22) \qquad t^{H}_{NRD} = t^{F}_{NRD} = 0.$$

That is, **no capital income tax** whatsoever is imposed by either country. All of the tax burden falls on the internationally immobile factor, i.e. labor. Again, as in the preceding section, it is straightforwarded to show that the countries F and H cannot gain anything from a concerted tax harmonization. That is, **tax competition is a constrained optimum**, relative to the set of tax instruments that is available. Notice that since this set is more restricted than that of the preceding section (where taxes on income from sources in the rest of the world were enforceable), then the constrained optimum in this case is inferior to the second-best optimum o the preceding section.

In conclusion, when the two countries are not coordinated with the rest of the world and cannot effectively tax their residents on their income from capital invested in the rest of the world, then tax competition leads to a full exemption from tax for the mobile factor (i.e., capital), placing all the tax burden on the immobile factors,

such as labor, land, etc. Furthermore no gains can be obtained from tax harmonization.

## 5. Extension: Equity Considerations

We have dealt so far with a representative individual in each country, thereby abstracting from any intra-country equity considerations. Nevertheless, while in general the size of government and the structure of taxation depends on equity considerations, the results obtained in the preceding sections do not. Specifically, the optimality of the residence principle in the case where each country can tax its residents on their capital income from the rest of the world, the optimality of not taxing capital income in the case where it cannot and the redundancy of tax harmonization in both cases, all hold for many consumer economies as well.

To see this, notice that with many consumers the indirect utility function $v^H(q_C^H, q_L^H, I^H)$ of country H, for instance, is replaced by an indirect social welfare function $V^H(q_C^H, q_L^H, I_1^H,\ldots,I_{n_H}^H)$ which depends, in addition to prices, also on the distribution of initial endowments $I_1^H,\ldots,I_{n_H}^H$ among the $n_H$ consumers of country H. Similarly, each individual demand or supply function is replaced by an aggregate demand or supply function. [For example, the demand function for first-period consumption of the representative individual in country H, namely $c_1^H(q_C^H, q_L^H, I^H)$, is replaced by an aggregate demand function $C_1^H(q_C^H, q_L^H, I_1^H,\ldots,I_{n_H}^H) = \Sigma_{i=1}^{n_H} c_{1i}^H(q_C^H, q_L^H, I_i^H)$, where $c_{1i}^H(\cdot)$ is the demand function of individual i; and so on. ] It is straightforward to see that

carrying out this extension alters none of the results of the preceding sections.

## FOOTNOTES

[1] A credit is given against taxes paid abroad on foreign-source income in order to avoid double taxation.

[2] See, for instance, Alworth (1988), Bovenberg (1988), Giovannini (1988, 1989a, 1989b), Gordon (1986), Razin and Sadka (1988, 1989), Razin and Slemrod (forthcoming), Sinn (1987) and Slemrod (1988).

[3] Since the rest of the world is passive in this framework we denote for simplicity by $r^*$ the world-rate of interest that accrues to residents in countries H and F, after whatever taxes are withheld by the rest of the world.

[4] This result is essentially an open-economy variant of the aggregate production efficiency theorem in optimal tax theory (e.g., Diamond and Mirrlees (1971), Sadka (1977), and Dixit (1985).)

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