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CANADA-U.S. FREE TRADE AND PRESSURES FOR TAX HARMONIZATION

by

Roger H. Gordon
The University of Michigan

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To what degree will dropping trade barriers create pressure on the U.S. and Canada to harmonize their tax systems? Which aspects of their tax systems will be most affected? Will this harmonization occur on its own, as each country finds it in its economic interest to choose tax provisions resembling those in the other country? When will explicit coordination of tax provisions be called for? What pressures towards harmonization exist even with existing trade barriers? Addressing these questions is the objective of this paper.

The answers to these questions depend to some extent on the degree to which the U.S. and Canadian economies are linked. Even when different economies are totally linked, as are cities and regions in a national economy, these different communities can still maintain distinct tax rates and even tax structures. There has developed a large literature exploring the characteristics of equilibrium tax structures in this setting, stimulated by Tiebout(1956). These models assume that everything and everyone is mobile — implicitly, even community boundaries can adjust. The basic conclusion of this literature is that competition among communities drives the tax system towards one in which each individual's or firm's tax payment closely matches the cost of the services received from the community (or the costs imposed on the community from, e.g., pollution or congestion), a tax system known in the literature as *benefit* taxation.[1] With any other tax structure, decisions in one community clearly affect welfare in other communities, creating the potential for mutually beneficial coordination of fiscal policies.[2]

Even before the recent free-trade agreement between the U.S. and Canada, these two national economies were closely linked. To begin with, the capital markets were highly integrated, allowing individuals and firms to shift their savings from one country to the other without restrictions. Trade in goods was substantial. While migration of individuals does not occur on a large scale, it certainly occurs. The free-trade agreement will lead to a further integration of the two economies. To what degree will these economic links drive the two tax systems towards a benefit-tax structure? What externalities are likely to remain, creating room for mutually beneficial coordination of fiscal policies?[3]

To explore this question, the paper proceeds in stages. In section 1, only capital mobility is allowed for. What implications does this link alone have on domestic tax policies, and the need for tax harmonization? Section 2 examines what further pressures are created by free trade in the full range of outputs. Finally, in section 3, labor mobility is allowed for as well. A brief conclusion ends the paper.

1. Tax implications of capital mobility

This section explores how capital mobility affects the design of tax policy in each of the two countries. To explore this question, assume for simplicity that only one good is traded between the two countries. Trade therefore simply takes the form of some of this good being imported now, in return for an acceptable amount of this good being exported back as return payment in a later period. To shorten the discussion, I will ignore the implications of risk or inflation.

Without taxes, capital would flow between the two countries until the rate of return from investing in each country is the same. Let i_j^a represent the rate of return on asset a in country j. Without taxes and uncertainty, the return on all assets would be equalized in equilibrium, so that $i_j^a = i_k^b$ for any asset a in country j and asset b in country k. Given this, investors would be indifferent between investing in domestic or foreign capital, and between investing in different types of financial securities.

The equilibrium ownership structure of securities, and the equilibrium allocation of capital, can be affected in many ways by the tax systems in the two countries. The existing tax treatment of capital income is quite complex. To begin with, a corporation's

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[1] To the degree to which a community's taxes deviate from benefit taxes, other communities have the incentive to bid to attract those individuals or firms who on net pay more than they impose in costs on the community. For further discussion, see Buchanan-Goetz(1972).

[2] See Gordon(1983) for an exploration of the various possible sources of externalities.

[3] While the paper will often refer to the beneficial coordination of fiscal policies as *tax harmonization*, this coordination does not necessarily imply equalization of tax rates.

income is directly subject to tax in the country in which it is located, under the corporate tax.[4] If the owners of a corporation reside in the same country, then they are taxed as well on the income they receive from this investment under the personal income tax.[5] For foreign owners of the firm, however, the tax treatment is more complex. Payments may first be subject to a withholding tax in the source country. If the owner is an individual, the pre-withholding-tax income is then taxable in the home country, but with a credit for any withholding tax. If the owner is a corporation, the pre-corporate-tax income underlying the payments is subject to tax in the home country, but with a credit for any taxes already paid on this income.[6] Finally, payouts to the ultimate individual owners are also taxed.

What pressures does capital mobility create, given the existing tax system? To simplify the discussion, I will initially assume that income from capital is subject to corporate taxation only in the source country, and that income to individuals from capital is taxable only in the country where they reside. In effect, this ignores withholding taxes and corporate surtaxes on repatriated income.[7] The discussion will start by examining the implications of capital mobility for residence-based taxes such as the personal income tax, then turn to source-based taxes, such as the corporate tax. Finally, the discussion will return to explore the implications of capital mobility for withholding taxes and corporate surtaxes, and explore the implications of Canada's dividend-credit scheme.

A. Capital taxation under the residence principle

In principle, under a residence-based tax each country taxes the capital income of its own residents at accrual, regardless of where this income is earned, but does not tax the income of nonresidents even when they invest in local securities or in local real capital.

[4] For simplicity, the discussion ignores noncorporate firms.

[5] In Canada, there is a dividend credit, reducing the extent of the double taxation inherent in this tax structure.

[6] In all cases, the credit is not refundable, so is limited to the amount of taxes due in the home country on that income.

[7] This last assumption may not be that unreasonable. Hines-Hubbard(forthcoming) provide evidence that at least U.S. multinationals pay little or no U.S. taxes on their repatriated earnings.

Let the effective tax rate for residents of country j on income from asset a in country k be t^a_{jk}. Then, equilibrium for investors residing in country j requires that $i^a_j(1-t^a_{jj}) = i^b_k(1-t^b_{jk})$, while equilibrium for investors residing in country k requires that $i^a_j(1-t^a_{kj}) = i^b_k(1-t^b_{kk})$. As emphasized in Slemrod(1988), these two equilibrium conditions cannot hold simultaneously unless

$$\frac{1-t^a_{jj}}{1-t^b_{jk}} = \frac{1-t^a_{kj}}{1-t^b_{kk}} \tag{1}$$

for all assets a and b. Given equation (2), investors will again be indifferent between investing in any of the available financial securities. Firms would then seek the cheapest form of financing, given the resulting pre-tax rates of return on different financial securities.

If equation (1) does not hold for all asset pairs, however, then tax arbitrage possibilities exist enabling investors to rearrange their portfolio holdings to reduce tax payments. Each investor has the incentive to reduce his holdings of assets that are taxed relatively heavily in his country and increase his holdings of assets that are taxed relatively lightly. In the process, investors save on taxes. If investors can own negative amounts of some assets and can deduct the required payments,[8] then this rearrangement of portfolios can in principle continue without limit,[9] though risk considerations presumably limit the extent of this arbitrage.

Of course, similar arbitrage possibilities can arise even in a closed economy.[10] In fact, Gordon-Slemrod(1988b) found that in 1983 in the U.S., as a result of such arbitrage, the attempt to tax the return to savings and investment resulted in a slight net loss in tax revenue — interest deductions more than offset the taxable income generated by both real and financial investments. Countries in practice seem to recognize arbitrage opportunities gradually, and then attempt to eliminate them case by case. For example, in the U.S. individuals are not allowed to deduct interest when they borrow for the purpose of buying

[8] For example, borrowing implies a negative holding of bonds and interest payments are normally deductible.

[9] Technically, this requires that each investor be able to "go short" in at least one asset, deducting the payments from taxable income, and that each investor be taxed relatively more heavily on the asset he goes short in.

[10] See Stiglitz(1985) for a number of examples.

a tax-exempt bond. But this is just an example of a wide variety of possible forms of tax arbitrage, and enforcement of even this restriction is very difficult. Under the 1986 tax reform in the U.S., a broader attempt was made to limit arbitrage possibilities by restricting interest deductions, except for businesses, and restricting taxpayers' ability to deduct losses more generally.[11] When this arbitrage takes place across borders, detecting and dealing with it is that much more difficult.

If investors in each country can "go short" in the appropriate asset, then capital-income taxation collects significant revenue only if these arbitrage possibilities are closed off, which requires that equation (1) be satisfied for all pairs of assets. An agreement between the two countries on relative tax rates could occur implicitly as well as explicitly. Neither country would want to deviate from a common set of relative tax rates, since doing so would open up arbitrage opportunities for investors in both countries — *any* set of relative tax rates would be a Nash equilibrium. However, both countries may gain by jointly agreeing on a particular set of relative tax rates. The normal presumption has been that a "neutral" tax system, under which income from all assets is taxed at the same rate, is the most attractive.

If no deductions are allowed for payments on debt or other "short" positions, then a country would never lose revenue from taxing capital income, even without agreeing with the other country on the relative tax rates on different assets. Equilibrium portfolio holdings in each country would still depend on the tax policies in both countries, however, making welfare in the two countries interdependent. Coordination of relative tax rates would still in principle be justified. However, as shown formally in Gordon(1986), each country acting in isolation would have the incentive to set its tax rates so that its residents invest in the security paying the largest amount pre-tax. This is accomplished simply by equating the tax rates on all assets, so that $t^a_{jj} = t^b_{jk}$, regardless of the tax policy chosen in the other country. Therefore, a "neutral" tax system may well be the Nash equilibrium as well as the optimal policy chosen after full coordination.

[11] One apparent response has been an increase in corporate borrowing, since corporate interest deductions are still allowed.

Given any agreement on relative tax rates on different assets, each country could then choose independently the absolute level of its tax rates without opening up arbitrage opportunities. Each country's policies affect the welfare in the other country only through any resulting changes in the market interest rate. If each country is small relative to the world capital market, then these changes will be small, implying no important externalities when choosing the absolute level of residence-based capital income tax rates. The U.S., however, is not plausibly small relative to the world capital market — it has the incentive to reduce its borrowing from foreigners in order to reduce the market interest rate, thereby reducing the interest payments on its existing debt. Given that Canada is a net debtor in the world capital market, a reduction in the market interest rate would be beneficial for Canada, a benefit ignored by the U.S. in designing its own policies.[12] In particular, under optimal policies the U.S. would be indifferent to borrowing yet less, but Canada would gain from the resulting fall in the interest rate. This creates the potential for mutually beneficial agreements on tax policy.

Use of a residence principle for capital income taxation leads to a major problem with tax enforcement, however. Within a country, firms and institutions which pay dividends and interest can be required to report the names of the recipients, and how much they receive, to the local tax authorities. A country has no direct way to require foreign firms and institutions to make such reports. But if the tax authority receives no information directly about the capital income received by its residents from foreign sources, then it will find it extremely difficult to enforce the taxes due on this income. Reporting income from assets owned abroad in effect becomes voluntary, and normally investors do not knowingly make voluntary tax payments. If in practice savings invested abroad is tax free, then *all* savings becomes tax free — investors can invest through a foreign financial intermediary in all assets, including domestic assets. In fact, they may be able to borrow domestically, deduct the interest, then invest the funds abroad tax free.

[12] Changes in the market interest rate have further effects on efficiency to the degree to which choices were not efficient initially due to distorting taxes. In particular, if income from savings were taxed, then any resulting decrease in savings reduces welfare. A change in the market interest rate also has distributional consequences which may be of concern to the government.

Can this enforcement problem be solved through suitable cooperation between the two countries? Several approaches might be suggested. The two countries could, for example, agree to share information provided by firms and institutions regarding the names of recipients of capital income. Another alternative would be a joint agreement that investments by foreign residents be channeled through foreign financial intermediaries. The financial intermediaries in a country would then have information about the world-wide investments made by local residents, which they could then be required to report to the local tax authorities.

Any such agreement would allow each country to tax the capital income of its residents, so would appear to be mutually beneficial. However, given the disparity in the sizes of the two countries, Canada may have the incentive to refuse to cooperate. Without the agreement, the relatively huge number of U.S. investors could flock to Canada hoping thereby to evade U.S. taxes. The resulting gains to the Canadian economy, whether or not the gains are taxed, may well more than offset the losses to Canada from not being able to tax the capital income of Canadian residents. If so, the U.S. would need to compensate Canada in order to secure any such agreement.

Any such agreement would be futile in any case, given that any third country, e.g. Switzerland, can agree to facilitate the tax evasion of U.S. or Canadian investors. Such a country could open its own financial intermediaries to foreign depositors, and refuse to share information with other countries. The income to foreign investors working through these financial intermediaries would again be tax exempt in practice. This small country can tax away some of the gain to investors from giving them a tax exempt outlet for their savings, and still attract funds.[13] By refusing to cooperate with other countries, it may not be able to tax the capital income of its own residents, but if the country is small enough that would be a minor consideration.[14]

[13] Competition between these countries would drive any tax down to zero, however.

[14] See below, however, for a discussion of use of source-based taxes to help enforce residence-based taxes.

Taxation at Repatriation

Even if a country cannot independently detect capital income earned abroad by its residents, it may be able to detect income as it is repatriated through monitoring all deposits in domestic financial intermediaries, or through auditing of individuals whose expenditures clearly exceed their cash flow. What happens if a country simply taxes capital income at repatriation. If repatriated income is taxed at the same rate, regardless of the date of repatriation, then the present value of tax payments is the same regardless of the repatriation date, discounting at the rate of return earned abroad.[15] The tax on the return to savings becomes instead a one time fee to investing abroad. Repeated movements of funds back and forth are therefore discouraged. However, economic repatriation may be possible without triggering the repatriation tax. For example, the investor may be able to borrow at home, possibly using the foreign assets as collateral. The borrowed funds can be used to finance any desired expenditures at home, and in fact lead to further tax savings through interest deductions. The U.S. tax law has evolved over time, trying to close off such devices for avoiding the repatriation tax, but doing so is very difficult. If repatriation can in fact be postponed indefinitely, then savings would remain effectively untaxed.

B. Capital taxation under the source principle

Under a source-based tax, each country would tax the return to real capital located within its borders, with rates perhaps varying by type of real capital.[16] If in country j the returns to asset a are taxed at rate t_j^a, then in equilibrium $i_j^a(1-t_j^a) = i_k^b(1-t_k^b)$ for all assets a and b. Since this condition is the same for investors in each country, allowing for capital mobility does not create additional complications when characterizing the equilibrium.

What can be said about the optimal source-based capital income tax rate? Diamond-Mirrlees(1972) argued that when all excise taxes can be used flexibly, and when there are no pure profits, then the optimal tax system will lead to efficient production. In particular, if a country is a price taker in the world capital market, then efficient production means

[15] Hartman(1985) emphasized this point.

[16] Tax rates might also depend on the form of the financial claim to the real capital income.

that investment occurs until the marginal rate of return equals that prevailing on the world market. Therefore, in such a setting, the optimal source-based capital income tax rate should be zero. The intuition underlying this result is very simple: In a small open economy, a source-based tax on capital cannot be borne by capital, since capital-owners will not invest in the country unless they earn the same return as they earn elsewhere. Therefore, the tax ultimately must be paid by immobile factors, presumably land and labor. But in that case, a direct tax on these factors would dominate, since it would have the same incidence yet not distort the international flow of capital.

What if firms can earn a rate of return above the world rate? Within a closed economy, a tax on pure profits, as occurs under a cash-flow tax, does not distort allocations, so is attractive on efficiency grounds.[17] In an open economy, however, pure profits may also be mobile. For example, if the profits are tied to technology rather than location, then the firm will locate production based on economic conditions in the available countries. An open economy would then be able to extract rents from the firm only to the extent to which the country provides locational advantages greater than exist elsewhere. A small country presumably provides at best small advantages, implying based on the same reasoning as before that the optimal tax on these pure profits is close to zero.[18]

The Diamond-Mirrlees argument also implies, however, that a large open economy will wish to equate the domestic marginal product of capital to the marginal cost to the country of extra funds on the world market. As a result, a country such as the U.S. which is large relative to the world capital market has the incentive to take advantage of this market power by restricting net capital flows. Given that the U.S. has recently been a net borrower in the world capital market, this would imply taxing investment in order to reduce net borrowing. Before the 1980's, when the U.S. was a capital exporter, the incentives would instead have been to subsidize investment to restrict capital exports. Canada does not plausibly have market power in the world capital markets, so should not

[17] See, for example, Mirrlees(1972).

[18] If the profits arise from control of a patent, then the patent right itself can be relocated to a tax-free country, and the pure profits paid in the form of a tax-deductible license fee to this country, with no change in the location of production.

attempt to change investment incentives.[19]

What about the evidence in Feldstein-Horioka(1980) that savings and investment rates in OECD countries are highly correlated, suggesting only limited capital mobility? This evidence may well be consistent with *all* countries having market power, leading them to wish to restrict net capital flows. For example, if the goods produced in different countries are not perfect substitutes, then borrowing from abroad could involve substituting foreign-produced for domestically-produced consumption goods to free resources for new investment. The debt is repaid by exporting domestically-produced consumption goods in the future. But the shifting relative demands for domestic and foreign output can change relative prices, in effect changing the time path of the exchange rate, creating incentives to reduce the extent of capital-account imbalances.[20]

Except as a means to take advantage of monopoly power, are there any other ways of explaining the continued though relatively minor role of corporate taxes in the U.S. and Canada? One traditional rationalization for the corporate income tax is that it is necessary to prevent wholesale avoidance of a residence-based tax on equity income, given the favorable treatment of accruing capital gains under existing tax systems. This argument is appropriate only in a closed economy, however, where domestic shareholders can be taxed indirectly on their accruing capital gains through imposing a corporate tax on domestic corporations. In a small open economy, the rate of return earned by domestic residents on their savings, before personal taxes, is set by the world market so is unchanged by a domestic source-based tax.

A related argument is that the corporate tax prevents avoidance of the domestic tax on *labor* income, at least in closely-held corporations. Without the corporate tax, shareholder-employees in such firms have the incentive to leave their labor earnings in the firm, thereby allowing their shares to increase in value. When they need cash, they can simply sell some of their shares in the firm, paying tax on the accumulated gains at the more favorable capital-gains rate. A cash-flow tax on corporate income at the same rate

[19] See Gordon-Varian(1989), however, for an argument that even small countries may have market power with respect to equity issued in their country, due to its idiosyncratic risk.

[20] See Gordon(1988a) for further discussion.

as the labor-income tax rate would eliminate this opportunity, though it might discourage firms earning pure profits from locating in the country. A better alternative, at least in theory, would be to shift from a labor income tax to a consumption tax. Given the appropriate treatment of bequests, both have the same lifetime incidence, but consumption may be easier to measure.

Certainly if a firm imposes costs on the public sector through use of public services and facilities, then user fees would be appropriate, even in the Diamond-Mirrlees setting. It is difficult to justify a tax on capital *income* based on this reasoning, however.

These arguments together suggest that at least a small open economy should not make use of source-based capital-income taxes. However, source-based capital-income taxation in one country imposes clear externalities on other countries, suggesting that countries may gain by jointly agreeing to use source-based taxes. In particular, when one country raises its source-based capital-income tax, capital flows to other countries raising wage rates in these other countries and raising tax revenues if these countries also use source-based capital-income taxes. In fact, a uniform capital-income tax at source is equivalent to a uniform tax based on residence. While a residence-based tax is very difficult to enforce, given the government's lack of independent information about capital income earned abroad by its residents, enforcement of a source-based tax in theory should be much easier since any activity within the country can be monitored by the tax authorities. Therefore, countries may well find it attractive to jointly tax capital income at source as a means of taxing indirectly the capital income earned by their residents.[21] The U.S. and Canada together, however, are not much larger relative to the world capital market than the U.S. alone, suggesting that the room for Pareto-improving gains between these two countries alone may be quite limited.

Furthermore, source-based taxation at least of multinational firms has its own enforcement problems. There are many ways in which a multinational can shift accounting profits towards the country which has the lowest statutory tax rate, even without changing the

[21] See Giovannini-Hines(1990) for a discussion of how transfers might be made between governments so that the allocation of revenue among countries would be equivalent to that arising under a residence-based tax.

location of real activity. The easiest approach is probably through manipulation of the transfer prices assigned to goods and services moving between firms within the multinational. Similarly, the multinational can locate patents for new technology in the country with the lowest tax rate. Yet another approach is to do the bulk of the debt financing for the multinational in the country with the highest tax rate, using perhaps as collateral the assets located in other countries. Governments have little ability to monitor the diverse nature of transactions within a firm, and can effectively challenge only a small fraction of these schemes.

Given that multinationals can quickly and easily shift taxable income towards those countries with the lowest statutory tax rate, each country has a strong incentive to cut its statutory tax rate in order to benefit from this process. Tax competition then drives statutory tax rates towards zero even if the location of real activity is not very sensitive to relative tax rates.

The above discussion of optimal tax policy assumes that capital is fully mobile in response to differences in rates of return. Once capital is invested in a country, however, it is difficult to move even in response to high tax rates. Therefore, while the amount of new investment may be very sensitive to tax rates, the amount of existing capital may be virtually fixed. As a result, at any date a country has an incentive to seize any existing capital but then to promise never to do this again, so as not to discourage new investment.[22] Assuming it can make such a binding promise, then by the above arguments it would choose never to tax new investment. But governments have no way to precommit their future tax policy. If no commitment has been made, then once new investment occurs and the capital has become immobile, the country again has the incentive to seize it. This is known as the "time consistency" problem. Perhaps, reputation effects inhibit even the initial seizure of capital. Alternatively, the country can subsidize initial investments to compensate for the taxes that inevitably will be collected from this investment at a later date, regardless of what may be promised.

[22] The same incentives can exist even with taxation based on residence. For example, if foreigners have large holdings of domestically issued bonds, then a government has the incentive to unexpectedly inflate the currency, thereby wiping out its debt to foreigners.

C. Capital income taxation under the current law

So far, we have ignored the incentives created by existing tax treaties. Given these treaties, how does the forecasted behavior of each government change? What joint tax structure would be forecasted to arise? Comparing this tax structure with that which arises without these tax treaties, does each country plausibly gain from signing the tax treaties? Existing tax treaties affect the taxation in the home country of both portfolio income earned abroad by domestic investors and corporate income repatriated from foreign subsidiaries by a domestically-based multinational. In each case, the home country allows a tax credit for particular taxes paid abroad, whereas our previous discussion assumed that foreign tax payments were deductible.

One further complication ignored in the previous discussion was the use of a dividend-credit scheme in Canada. The incentives created by this scheme are complicated enough that they merit a separate discussion.

Withholding taxes on portfolio income

Let us begin by examining the equilibrium use of withholding taxes on portfolio income earned by foreign investors. Existing tax treaties require a tax credit in the home country for withholding taxes paid on portfolio income accruing in the host country, with a maximum credit equal to the taxes due on the income in the home country. If the treaties did not also specify the rate of withholding tax, how would each country respond?

Assume first that tax evasion is not a problem, so that each country can effectively tax income earned by domestic residents from foreign portfolio holdings. Consider first the incentives faced by a small host country. Since a withholding tax does not affect the net-of-tax earnings of foreign investors, as long as the withholding tax rate remains below the domestic tax rate faced by these foreign investors on their portfolio income, the tax produces revenue without any loss to domestic residents. Therefore, the host country should choose to raise this tax rate at least up to the foreign tax rate.[23] If the

[23] With a diversity of foreign tax rates, the story becomes a bit more complicated, since the country is no longer a price-taker in the world capital market.

tax rate is raised further, however, it does discourage capital inflows, and the Diamond-Mirrlees reasoning still implies that a small open economy would not choose to impose such distortions.[24]

How would the home government behave, given this foreign withholding tax rate? In ongoing work with Vitor Gaspar, I have shown under standard assumptions that the home country would never choose a tax rate on the portfolio income of domestic residents equal to this foreign withholding tax rate — the optimal tax rate could in principle be either lower or higher.[25] When the tax rate is below this point, raising the tax rate affects the net-of-tax rate of return only of domestic investments, so quickly drives investments abroad. When the tax rate is above this point, however, a tax increase affects foreign and domestic holdings equally, making tax increases just above the foreign rate more attractive than tax increases just below the foreign rate. This implies, at least in theory, that there is no Nash equilibrium set of tax rates.

Without tax evasion as a problem, I argued above that residence-based taxes should create few externalities, implying little gain from coordination. Therefore, even if the treaty led to a clear outcome, it would be very unlikely that this outcome would be preferred by both countries to the situation without the treaty.

What if investors can easily evade domestic taxes by investing through foreign financial intermediaries? Then, domestic investors can always avoid tax by investing abroad, so a withholding tax is simply a source-based tax, and by the same arguments used above we conclude that a small open economy should not impose a source-based tax.

Why then do countries impose withholding taxes? One possible explanation is that each country's equity is a unique asset, if only because it provides risk-diversification not available elsewhere. In that case, each country would have the incentive to take advantage of its monopoly power by, for example, imposing a withholding tax on payments to foreign equity-holders.[26] What if those paying this tax include domestic investors buying through

[24] As noted before, a large open economy would set its taxes to take advantage of this market power.

[25] Bond-Samuelson(1988) find, under different assumptions which allow each country to tax domestic and foreign income at different rates, that equilibrium tax rates will be high enough to cut off any capital flow.

[26] For further discussion, see Gordon-Varian(1989).

a foreign intermediary to evade domestic taxes? Imposing a withholding tax remains attractive as long as taxing capital income would be part of the desired tax system.[27]

If the only motivation towards imposing withholding taxes is to take advantage of market power, then there would be a joint efficiency gain from reducing these trade distortions by jointly setting a low ceiling for withholding tax rates. Since Canada would presumably gain more, given the much greater market power of the U.S., such an agreement may in practice require Canadian concessions on other trade issues.[28]

Why would any withholding tax be allowed by such a treaty? One possible explanation is the following: If domestic investors find use of foreign intermediaries more expensive, then the case of tax evasion results in an efficiency loss through use of more expensive intermediaries. A withholding tax can induce domestic investors to invest instead through domestic intermediaries and pay the residence-based tax, resulting in an efficiency gain through the reduced cost of financial intermediation.

Corporate taxation of repatriated earnings

Previously, I argued that source-based tax rates would be at or near zero in a Nash equilibrium. How do existing tax treaties dealing with repatriated corporate earnings change the equilibrium behavior of the two governments? Let us ignore initially the effects of taxation at repatriation rather than at accrual and assume that all capital flows are direct investments by multinational corporations.

Under the provisions of the tax treaty, a source-based tax assessed just on foreign direct investment does not affect investment incentives as long as the source-based tax rate is below the corporate tax rate in the multinational's home country. Therefore, each country has the incentive to set its source-based corporate tax rate on foreign direct investment equal to the corporate tax rate prevailing in the other country.

The incentives faced by the host country do not end here, however. Since a multinational pays the same tax rate, regardless of the location of an investment, the before-tax rate of return on investments in the two countries would be equated. However, when one country acquires funds from the other country, it pays the net-of-tax rate of return on these funds, as a result of the source-based taxes. A small open economy would therefore want to equate the value of the marginal product of capital with this net-of-tax rate of return paid for funds acquired from abroad, or earned on funds invested abroad. In order to induce firms to equate the marginal product of capital with the net-of-tax cost of funds, the government could provide a suitable direct subsidy to new investment.[29] This subsidy produces the desired result as long as it is treated as extra income rather than a reduction in the creditable tax payment under the tax treaty.[30]

What are the incentives faced by the home country? The Diamond-Mirrlees results still show that the home country wants to set the marginal product of domestic investment equal to the cost of funds on the world market. For a small open economy, this still requires that no taxes be collected on foreign earnings, so requires that the domestic tax rate be at or below the foreign tax rate.[31]

Given that multinationals are based in both countries, each country is both a home country and a host country for some investment. If the same corporate tax rate applies to both, then the combined incentive is to set the corporate rate equal to the rate prevailing in the other country. Any common corporate tax rate could be a Nash equilibrium. If one country, e.g. the U.S., acts as a Stackelberg leader, then it can choose the common corporate tax rate. What rate would it choose? Given that the countries together are net borrowers in the world capital market, it would want a positive corporate tax rate to take

[27] The withholding tax also reduces the incentive to use foreign financial intermediaries, leading to potential efficiency gains if domestic intermediaries are more efficient at handling domestic investments.

[28] Such an agreement could require coordination of withholding tax rates with respect to third countries. Otherwise, the optimal Canadian withholding tax rates toward third countries would presumably be low, given the limits on its market power. As a result, third parties could then purchase U.S. equity through Canadian financial intermediaries, paying two rounds of low withholding tax rates as the funds travelled from the U.S. to Canada and then to the third country, rather than paying the higher U.S. withholding tax rate that applies to that third country.

[29] The appropriate subsidy rate would be $tf'/(1-t)$, where t is the residence-based tax rate, and f' is the marginal product of capital.

[30] For further discussion, see Findlay(1986).

[31] For simplicity, this assumes that the definition of taxable income is the same in the two countries. For a discussion of complications which arise when this is not the case, see Leechor-Mintz(1990).

advantage of the combined market power of the U.S. and Canada. The tax treaty therefore should lead to greater use of source-based taxes than would occur without the tax treaty. Since the U.S. would presumably not take into account Canadian preferences concerning the overall level of corporate tax rates when setting its corporate tax rate, there may still be gains from direct coordination of tax rates.

How do the results change if we take into account that investments made through a foreign subsidiary are taxed only at repatriation rather than at accrual? As Jun(1987) shows, postponement of realization drives the effective tax rate on the initial equity investment down towards (and in the limit equal to) the tax rate in the host country, while Hartman(1985) argues that for investments financed by retained earnings, the effective tax rate is simply the host-country tax rate. But if the effective tax rate is the host country tax rate, then a small open host country would not choose to impose such a tax.

What happens if capital flows to foreign firms can take the form of portfolio investments rather than just direct investment by foreign subsidiaries? Funds can flow from the home country to the host country either by direct investment by a multinational, which itself is owned by home-country individuals, or else by purchase of equity in host-country firms by home-country individuals. In either case, the same host-country corporate taxes are paid, and home-country individuals owe tax at the same rate on the net income they receive.[32] The key difference is that with direct investment by a multinational, supplementary taxes might be owed to the home country. If so, portfolio investment is preferred for tax reasons. If there are no nontax reasons favoring direct investment, then supplementary taxes would never be paid at repatriation, and a small open host country would therefore not impose a source-based tax.

Dividend-credit schemes

What incentives are created by the presence of the dividend-credit scheme in Canada? Most of the discussion of the effects of such a scheme assume a closed economy. But as Boadway-Bruce(1989) emphasize, the effects of the scheme are very different in an open

[32] This ignores the dividend-credit scheme available in Canada for income from domestic corporations. See below for further discussion.

economy. For simplicity, assume that the scheme provides full integration of the corporate and personal tax systems, and assume to begin with that the Canadian corporate tax rate is below the U.S. corporate rate.

When Canadian corporations invest in the U.S., they must pay U.S. corporate taxes on their foreign earnings. When the earnings are repatriated, no corporate surtax is due, but shareholders still receive a dividend credit based on the difference between their personal tax rate and the Canadian corporate tax rate. If the corporate tax rate exceeds the personal tax rate, then on net Canada provides a subsidy for direct investment by Canadian multinationals in the U.S., and thereby raises the return to savings in Canada above the return available in the world market.[33] This subsidy is not available when Canadian individuals buy shares in U.S. corporations, so this scheme favors direct investment over portfolio investment.

How does its presence affect the equilibrium corporate tax rates? As a home country, when Canada raises its corporate tax rate it increases the subsidy it gives to investments by Canadian investors in the U.S. The Diamond-Mirrlees result still implies that Canada would want to equate the marginal product of capital in Canada with the rate of return available on the world market. To do so now requires that the corporate tax rate be zero. As a host country, however, Canada would still wish to set its corporate tax rate equal to the U.S. rate. Therefore, on net Canada would prefer a tax rate below the U.S. rate.

The U.S., as Stackelberg leader, would now have to take into account that Canada will keep its corporate tax rate below that in the U.S. This certainly affects the optimal tax rate in the U.S., and implies that capital will not be allocated efficiently between the two countries in equilibrium. As a result, there would be a further gain from direct coordination of tax rates.

[33] Specifically, under the dividend-credit scheme, shareholders receiving a dollar of dividends are credited with earning $1/(1-\tau_c)$ in pre-corporate tax profits, where τ_c is the corporate tax rate. On this income, they owe personal taxes at rate t_c, but receive a credit for corporate taxes already paid, implying a net tax liability of $(t_c-\tau_c)/(1-\tau_c)$. By assumption, $t_c < \tau_c$. If income Y is repatriated from foreign earnings and generates no corporate surtax at repatriation, then net tax payments in Canada on these earnings are $(t_c-\tau_c)/(1-\tau_c)Y < 0$, implying a subsidy to foreign investment.

2. Tax policy given free trade

Based on recent agreements, all tariffs and most nontariff barriers to trade between the U.S. and Canada will be eliminated by 1998. What implications will this policy change have for the domestic tax structure in each country?

Assume to begin with that each country is free to use tariffs, but that trade is not otherwise restricted. As noted above, Diamond-Mirrlees(1971) showed that a small open economy which imposes excise taxes on all goods would choose to produce efficiently under an optimal tax system. This implies that it would choose not to distort trade patterns. As emphasized in Gordon-Levinsohn(forthcoming), however, this does not necessarily imply that a country would avoid use of tariffs. In particular, the effects of an excise tax on a particular good can be duplicated by a production tax and an import tariff or export subsidy on that good. It may be that it is easier to administer a combination of a tariff and a production tax, at equal rates, on some goods than to administer an excise tax on these goods. Both have the same economic effects, and neither distorts trade patterns.[34] To the degree that tax or other policies distort relative output prices, then optimal policy would involve undoing these distortions at the border through suitable export taxes and subsidies.

Of course, if a country does have market power in a particular good, then it will want to take advantage of this market power, as shown in the optimal tariff literature. However, doing so does not require use of explicit tariffs, since again the combination of a production tax and a consumption subsidy have the same effects.

One of the main source-based taxes in the U.S. and Canada is the corporate income tax. This tax raises the prices of corporate relative to noncorporate goods, and alters relative corporate prices due to differences in capital-output ratios and due to idiosyncracies in depreciation and other detailed provisions in the tax law. Under optimal tariff policy in a small country, these distortions would be offset at the border.

Domestic regulations may also distort relative prices, creating the incentive to use tariffs to offset these distortions. For example, agricultural price supports lead food prices to differ from marginal costs, justifying export subsidies on these products. Similarly, the U.S. lumber industry may face a below-market price for use of the National Forests, leading lumber prices to be below marginal costs and thereby justifying export taxes.

The Canadian sales tax also creates nontrivial distortions to the relative prices of imported vs. domestically produced goods, as reported in Dodge-Sargent(1987). Since it is imposed at the wholesale rather than the retail level, the amount of tax collected on a finished product depends on the number of transactions that occur between firms at the wholesale stage. To some degree, industries can change how they organize their production in order to minimize the total sales tax payments that are incurred, but doing so has its own costs.

What will be the implications for source-based taxes, and regulatory distortions, of the free trade agreement between the U.S. and Canada? This agreement will have no economic effect if each country can costlessly offset this change through a suitable modification to its domestic tax structure as it applies specifically to income flows between the two countries. To compensate for the drop in tariff or nontariff barriers for a particular good, each country could compensate by cutting the domestic tax (increasing the subsidy) on production of that good and increasing the sales tax rate on consumption of that good. To avoid any economic changes, tariffs between the U.S. or Canada and third countries would need to be suitably readjusted.

These compensating readjustments in the domestic tax system, to neutralize the effects of the free-trade agreement between the U.S. and Canada, are substantial and awkward. If they cannot be done, then source-based taxes on production will become more costly from each country's perspective, since the resulting distortions to the trade pattern between the U.S. and Canada can no longer be neutralized by suitable border distortions. Given the large volume of trade between the two countries, these distortions will be important, creating significant pressure to cut distortions to the relative prices of different goods to maintain an efficient composition of trade. Similarly, regulations which distort relative output prices become much more costly.

Various responses to these pressures are possible. For one, policy distortions to the relative prices of domestic output can be reduced by "leveling the playing field" by eliminating differences in the effective tax rates on different industries. If the tax system raises

[34] Trade distortions are present in this argument when the tax law favors purchases of goods produced in a particular location.

the prices of all domestically produced goods by the same percent, then the exchange rate between the Canadian and the U.S. dollar would simply readjust, leaving trading incentives unchanged. Such a shift in the tax system in each country has been occurring recently in any case, whether or not connected to the U.S.–Canada free–trade agreement. To the extent that regulations create price distortions, e.g. various agricultural programs designed to raise crop prices artificially, then each country would face competitive pressure to redesign these regulations to "level the playing field" between these sectors and other domestic industries.

From the perspective of the two countries together, however, as long as any particular industry is *equally* favored or disfavored by the tax/regulatory system in both countries, no policy distortion to trade patterns is created. In some cases, harmonizing the relative tax rates on different industries in the two countries may be easier or more desirable than allowing competitive pressures to undermine rate differences across industries which each country might in principle have desired.

Coordination between the two countries can also affect the size of tariff barriers with respect to the rest of the world. Together the two countries have more market power than either country has in isolation, particularly in goods such as lumber or wheat. Coordination would therefore lead to increased restrictions on their combined trade with the rest of the world.

Coordination of policies between the two countries, whether concerning policies with respect to each other or with respect to the rest of the world, does not require a written treaty. Any country which deviates from an implicit agreement could incur "punishment" from the other country in some form. As long as the threat of "punishment" is a sufficient deterrent, the implicit agreement will be sustainable.[35] This use of threats to enforce an implicit agreement is commonly seen with regard to tariff policy, and may well occur with regard to tax policy as well.[36]

[35] There is a large literature in cooperative game theory on the sustainability of such a cooperative outcome.

[36] Since tariffs can be duplicated through use of a suitable set of domestic taxes, the two policy areas are not really distinct in any case.

3. Tax policy given mobility of individuals

So far, the discussion has ignored tax/expenditure pressures created by the movement of individuals across borders. Yet travel between the two countries is extensive, taking the form of tourism and business trips as well as changes in the location of employment or even of citizenship. The U.S.–Canada free–trade agreement reduces some restrictions on the movement of individuals across the border. What pressures are created by such movement of individuals?

This is in many ways the key question examined in the local public–finance literature. As argued by Buchanan–Goetz(1972) and many others, mobility of individuals imposes externalities on jurisdictions which depend on the degree to which the individual pays an amount in taxes which differs from the costs that individual imposes on the jurisdiction, whether in the form of increased costs of public services or increased congestion. This applies in both the sending and the receiving jurisdiction. When a community gains on net from the presence of an individual, because tax payments exceed the costs that individual imposes on the community, the community has an incentive to encourage immigration, and conversely. This competitive pressure pushes the tax system towards a benefit–tax structure in which the net gain to the jurisdiction from acquiring/losing an extra individual is competed down to zero. At that point, individuals simply pay for the costs they impose on the community.

What implications does this story have for tax policy at the national level? Consider first the pressures created by temporary migration, such as tourism. Through such migration, countries trade in services as well as in goods.[37] Therefore, tax and regulatory policies can potentially distort the relative trade in services vs. goods, as well as distort the composition of trade in goods which physically cross the border. Countries would face competitive pressure to reduce or eliminate policy–distortions to the composition of trade, which now includes services as well as "tradeables."

When individuals cross the border, however, they also normally increase the costs of public services, since they make use of roads, police protection, etc. A country would want

[37] Migration is not even needed for trade in financial services.

to encourage immigration if tax payments exceed the net costs imposed by immigration, and conversely. By the Diamond-Mirrlees reasoning, a small open economy would simply charge for the services obtained, whether directly or indirectly, and so would design tax policy to increase the cost of goods used by migrants above the cost of goods that are physically exported — the playing field would be intentionally "tilted" to compensate for the costs imposed on the public sector when certain goods are purchased. Countries with relative market power in, e.g., tourist-related services, would attempt to charge yet more to take advantage of this market power.

Individuals who change their country of employment create more extensive changes in the tax revenue and public-service costs in each country. Presumably, the relocation of higher paid individuals creates larger relative gains, since their tax payments are relatively large compared to the cost of the public services they require. Similarly, each country has an incentive to discourage the immigration of those who impose net fiscal costs, be they the poor, the sick, or the elderly.

Competition for individuals who provide a net fiscal gain to the jurisdiction therefore reduces the degree to which the fiscal system redistributes from rich to poor, again pushing towards a benefit-tax system. But the resulting tax structure cannot simply equate benefits and tax payments in present value over the lifetime, since individuals can remain in the country when they gain on net, and leave during those periods when they lose on net. Therefore, even the *timing* of taxes would be pushed to coincide with the timing of benefits. As a result, national debt would be discouraged since it creates the incentive to emigrate during those periods when the debt is repaid. Similarly, redistributive policies such as Social Security would come under pressure since those who work for a short period under existing law gain substantially from the system. Since nonworkers do not pay labor income taxes but do make use of public services, and often more extensively than do workers, even labor income taxes may not easily be sustainable. A country which relies heavily on a labor-income tax would become a haven for nonworkers, such as students or the retired. Public services such as subsidized college education or free medical care would attract residents of the other country who hope to take advantage of these subsi-

dies.[38] All of these are examples of pressures towards a benefit-tax structure. Which tax system most resembles a benefit tax depends on the composition of public expenditures. If consumption of public services roughly corresponds with consumption of private goods, then a consumption tax or a V.A.T. may most closely approximate a benefit tax. User fees certainly approximate a benefit tax.[39]

This evolution towards a benefit-tax structure would occur even if both countries desire a redistributive fiscal policy. Based on this reasoning, the conventional wisdom in public finance has always been that redistribution should be done at the national rather than at the local level. Retranslated to this context, the analysis suggests that policies regarding redistribution should be coordinated between the two countries. Of course, coordination must cover *both* tax and expenditure policies, otherwise each country can make use of its remaining flexibility to attract those who pay more than they receive.

The Tiebout literature argues, however, that expenditures financed by benefit taxes should not need coordination[40] — competition among jurisdictions pushes them to offer the efficient composition and level of public services.[41] How can jurisdictions choose the composition and level of services financed by benefit taxes without coordination, however, and yet agree to restrictions on their expenditure policies to prevent undermining of interjurisdictional agreements on redistribution? In a Federal system, these contradictory pressures are avoided by having redistribution done at the national level. Competition among communities then leads to a local benefit-tax structure, in which case there is no fiscal gain to a community from attracting those who pay relatively more to the *national* government. Without this Federal structure, however, coordination of at least some expenditure policies may be necessary to preserve redistributive policies even though this

[38] Of course, countries may impose residency requirements for these benefits, to some degree lessening the pressures.

[39] The recent shift from a property tax to a head tax in financing public services in the U.K. could be interpreted as a response to this type of pressure.

[40] Given that a V.A.T. should roughly correspond to a benefit tax, at least relative to other taxes used at the national level, it is ironic that the E.C. has focussed its tax coordination efforts on this particular tax.

[41] For discussion of various limitations of the Tiebout argument, see, for example, Stiglitz(1983).

coordination undermines the ability of each government to provide the composition or level of public expenditures desired by its citizenry.

At this point, these various pressures will be much more important within the E.C., where all restrictions to migration are being eliminated, than in the U.S.–Canadian context. The pressures are still there, however, and will surely increase over time.

4. Conclusions

When analyzing the fiscal implications of unrestricted mobility among jurisdictions, the local public finance literature concludes that the fiscal system will be driven towards a benefit-tax structure, in which people pay in taxes an amount appropriate to cover the costs they impose on the public sector. Yet existing national tax systems in the U.S. and Canada differ substantially from benefit taxes. As a result, the increasing mobility of output, capital, and even labor, between the two economies will create a variety of pressures pushing the tax system towards a benefit-tax structure.

Where this pressure will be strongest depends on the degree of mobility of particular types of goods, services, and people, across the border. This paper explored in turn the types of pressures created by mobility of capital, unrestricted trade in all outputs, and mobility of people.

Even though tax competition will push each country's fiscal structure towards that of a benefit tax, however, such a tax system may not be mutually advantageous — in fact, both countries may well gain through explicit or implicit coordination of fiscal policies. In many cases the appropriate form of coordination involves equalization of tax rates. Where, for example, the local public finance literature calls for the national government to handle redistribution, given the degree to which individual mobility undermines any one community's efforts at redistribution, the same logic calls here for coordinating redistributive policies between the two countries. A number of other examples of fruitful areas for policy coordination are discussed.

Ultimately, the implications of the increasing interdependence of the two economies on their national fiscal structures should be substantial. Fortunately, the two countries can watch the European experience post–1992 to learn better how to redesign the existing fiscal systems in the two countries.

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