International Tax Reforms with Flexible Prices

By

Assaf Razin[1], Tel-Aviv University

Efraim Sadka[2], Tel-Aviv University

Dec. 1, 2017

[1] E-mail Address: razin@post.tau.ac.il

[2] E-mail Address: sadka@post.tau.ac.il

Abstract

The growing spread of globalization creates a genuine need for international tax reforms. In the latter context, we establish the neutrality of border-tax adjustments of the income tax; the welfare dominance of residence-based over source-based income taxation, albeit at the cost of a larger trade deficit; and the ineffectiveness of non-transitory border taxes as a means for reducing the trade deficit.

1 Introduction

The growing and continuous spread of globalization inevitably triggers a process of international tax reforms. One important aspect in this context is border-tax adjustments. The latter have received an even wider attention in view of recent proposals for tax reforms in the U.S.

Reforms are typically aimed at long-run restructuring of the economic landscape. Therefore, it is useful to analyze them in a long run setup, which ensues flexible rather than sticky prices[3].

Typically, tax reforms have both efficiency and distribution implications. Nevertheless, the latter are not in the forefront of the issues considered here. As common in the literature, we therefor simplify by considering a representative consumer.

In this note we analyze the implications of border-tax adjustments in the income tax and of a shift from source-based to residence-based international income taxation, paying a special attention individual welfare and to the trade balance. In addition, we re-examine the effectiveness of border taxes as a means to reducing trade deficits.

2 Income Taxation and Border-Tax Adjustment

Border-tax adjustments of the income tax has received a growing public and academic attention since the introduction of the U.S. House Republican tax plan in June, 2016. In addition to replacing the ordinary corporate income tax with a cash-flow tax, it was proposed also to introduce border tax adjustments (à la VAT) according to which expenditures on imports are not deductible from taxable income, and export revenues are exempted[4]. We focus on the border-tax adjustments components of the plan and analyze its implication for the real exchange rate.

Consider a minimal Fisherian model that can serve to highlight our arguments and conclusions. Suppose there are only two periods and one composite, tradable good that can serve for present consumption (c_0), future consumption (c_1), investment (I), imports (M) and exports (X). There is a representative consumer and a representative producer. There is an initial endowment in the first period and none in the second. There is a flat income tax rate (t) that applies to both individuals and businesses. As common in advance economies, the tax is based on the residence principle according to which residents (both individuals and businesses) are taxed on their world-wide

[3] Early on, Berglas (1974) and recently Buiter (2017) analyze border-tax adjustments in the context of sticky prices.

[4] See a detailed analysis of the plan in Auerbach (2017) and Auerbach et al. (2017).

income, irrespective of its origin – domestic or foreign[5]. As residents are taxed on their capital income at the same rate whether they invest at home or abroad, the domestic real interest rate in our small open economy is equal, by arbitrage, to the internationally given real interest rate (r^*).

Suppose first that there are no border-tax adjustments. As expected in this standard model, the equilibrium is characterized by the first-order conditions:

$$MP_k = r^* \quad and \quad MRS = 1 + (1 - t)r^* \tag{1}$$

where MP_k is the marginal product of capital, and MRS is the intertemporal marginal rate of substitution of future for present consumption[6]. Note that the marginal rate of substitution (the absolute slope of the consumer's indifference curve) is lower than the absolute slope of the production possibilities frontier (in essence, we can say that there is inadequate domestic savings).

This equilibrium is illustrated in Figure 1.

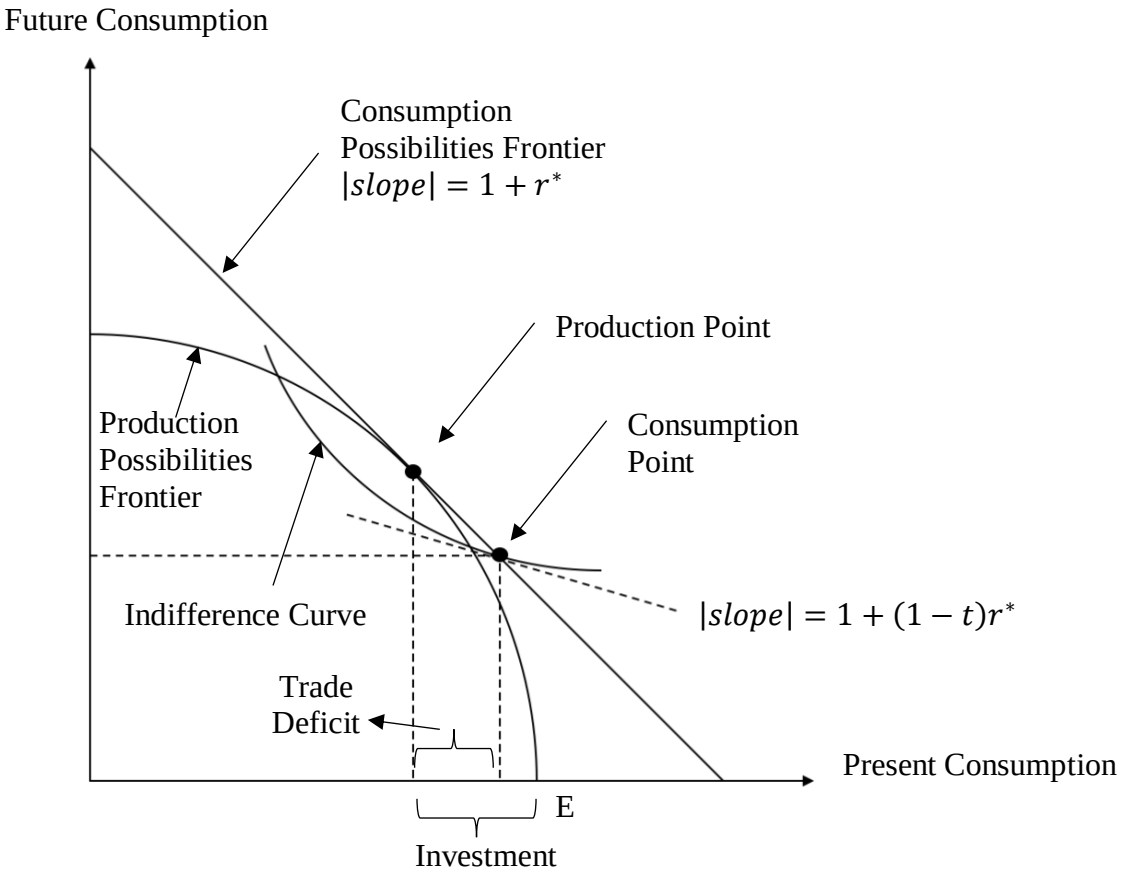

Figure 1: Residence-Based Taxation Allocation with or without Border-Tax Adjustments

[5] See Frenkel, Razin and Sadka (1990 and 1991) for an analysis of the basic principles of international taxation.

[6] This specification assumes for simplicity that capital does not depreciate.

Now, consider border-tax adjustments, where imports are not deductible, and exports are tax exempt. Suppose that the world price of the composite good is unity. Because imports are not deductible, the domestic price of the composite good must be grossed up to $\frac{1}{1-t}$ if imported, through arbitrage. Similarly, because exports are exempted, the domestic price of the composite good will be also grossed up to $\frac{1}{1-t}$, if exported. Thus, the consumer intertemporal relative price remains $1 + (1-t)r^*$ and the producer intertemporal relative price remains $1 + r^*$. Hence, the equilibrium is characterized again by the same condition (1). This equilibrium is depicted in Figure 2, which re-depict also the former equilibrium for comparison.

Therefore border-tax adjustments have no effect on the equilibrium in this simple setup with no non-tradable goods. This establishes the neutrality of border-tax adjustments[7].

3 Reforming the Income Tax from the Source-Based to the Residence Principle

Israel's tax system was by and large based on the source principle. That is, only income from domestic sources are subject to a tax, whereas foreign-source income is exempt. With the growing process of Globalization, especially in the capital field, Israel shifted to the residence principle in 2003[8].

The equilibrium under the residence principle was already analyzed and depicted in the preceding section. Here we illustrate the equilibrium under the source principle and compare it to the residence equilibrium.

As foreign-source income is not taxed, whereas domestic-source income is taxed, it follows by arbitrage that the domestic real rate of interest will be grossed up to $\frac{r^*}{1-t}$. As a result, the source equilibrium will be characterized by:

$$MP_k = \frac{r^*}{1-t} \quad and \quad MRS = 1 + r^* \tag{2}$$

That is, production is at a point, where the marginal product of capita is below the world real rate of interest (there is inadequate domestic investment). As a result, the consumption possibilities frontier shrinks; see figure 2.

[7] One can show that this neutrality continues to hold when there are also non-tradable goods.

[8] Israel's globalization process culminated in 2010 with the joining of the OECD group, see Razin (2018).

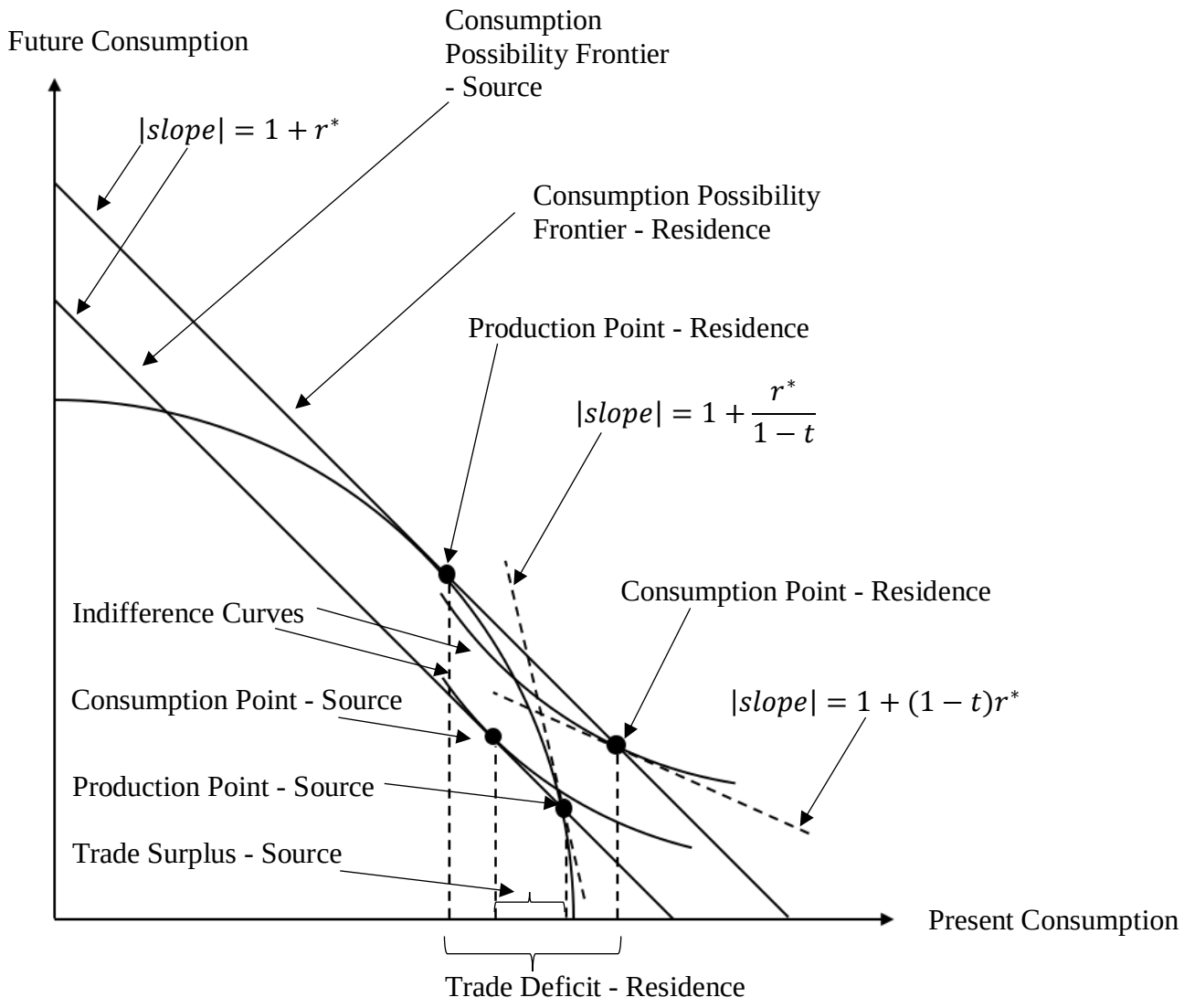

Figure 2: Source versus Residence-Based Taxation

Moving from a source-based to a residence-based taxation clearly enhances welfare[9]. Also, it worsens the trade deficit (in our example in Figure 2, a trade surplus turns into a trade deficit).

[9] The reader familiar with the public economics literature will undoubtedly realize that this result is a variant of the Diamond-Mirrlees aggregate production efficiency theorem (1971); see also Frenkel, Razin and Sadka (1991).

4 Border Taxes and the Trade Balance

So far, we did not have any border taxes (barriers to trade). Even the border-tax adjustments discussed in section 1 were shown to not amount to border taxes. In this section, we address the issue of border taxes.

For Trump, NAFTA is "an economic disaster", because the United States has increased its trade deficit with Mexico from a $1.6 billion surplus in 1993 (the year prior to NAFTA's implementation) to $63.2 billion in 2016. In part, the US-Mexico trade balance reflected a weak peso after it was weakened by the uncertainty over the future of US-Mexico bilateral trade relations. To reverse it, Trump's solution is to abolish NAFTA.

Policy makers often justify export subsidies and import tariffs by their improving effects on the trade balance. On the other hand, in standard international trade theory, we teach the Lerner's (1936) Symmetry Theorem, according to which export taxes (rather than subsidies) and import tariffs have identical effects on resource allocation. In his analysis Lerner explicitly abstracted from intertemporal aspects. The apparent puzzle is resolved once a distinction is made between temporary and permanent trade taxes in an explicitly intertemporal model. Razin and Svensson (1983) show that only a temporary import tariff improves the trade balance, and only a temporary export tax deteriorates it. However, fully persistent import tariffs or export taxes have an identical effect on the trade balance, as in Lerner's Symmetry. Furthermore, to the first approximation, border taxes neither improve nor deteriorate the trade balance. The reason for this result is that temporary trade taxes, in contrast to permanent trade taxes, result in changes in intertemporal relative prices, and hence induce substitution between present and future goods. Therefore, they do affect savings and investment behavior.

5 References

Auerbach Alan J. (2017), "Demystifying the Destination-Based Cash-Flow Tax", NBER working paper No. 23881.

Auerbach, Alan J., Michael P. Devereux, Michael Keen, and John Vella (2017), "Destination-Based Cash Flow Taxation." WP 17/01, Oxford University Centre for Business Taxation.

Berglas, Eitan (1974), "Devaluation, Monetary Policy and Border Tax Adjustment", Canadian Journal of Economics, Vol. 7, no. 1, pp.1-11.

Buiter, Willem H. (2017), "Exchange Rate Implications of Border-Tax Adjustment Neutrality", CEPR VOX, 22 March.

Diamond, Peter A., and James A. Mirrlees, (1971). "Optimal Taxation and Public Production," American Economic Review, March and June, pp. 8-17 and pp. 261-178.

Frenkel, Jacob A., Assaf Razin, and Efraim Sadka (1990), "Basic Concepts of International Taxation", NBEW WP 3540.

Frenkel, Jacob A., Assaf Razin, and Efraim Sadka (1991), International Taxation in an Integrated World, MIT Press.

Lerner, Abba (1936), "The symmetry between import and export taxes". Economica 3, 306-313; also reprinted in R.E. Caves and H.G. Johnson, eds. (1968), Readings in International Economics (Allen and Unwin, London) 197-203.

Razin, Assaf, and Lars E.O. Svensson (1983), "Trade Taxes and the Current Account", Economic Letter, 13 55-57

Razin Assaf (2018), Israel and the World Economy: The power of Globalization, MIT Press.