

Fiscal and Migration Competition*

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June 24, 2010

Abstract

It is often argued that tax competition may lead to a "race to the bottom". Such a race may hold indeed in the case of the pure case of factor mobility (such as capital mobility). However, in this paper we emphasize the unique feature of labor migration, that may nullify the "race to the bottom" hypothesis. Labor migration is governed by net-of-tax factor rewards and the benefits that the welfare state provides. Tax rates are determined in a political economy set up which takes into account the effect of taxes and migration on factor rewards and the fiscal burden imposed by migration on the decisive voter.

The paper models the host country stylistically as a member of the core of an economic union (i.e., a core EU welfare state member state), with tax financed benefits which is able to control the volume and the skill-composition of migration. The source country is modeled as an accession country to an economic union (i.e., through the EU enlargement treaty), with its own welfare (tax-benefit) policy. We let these two countries engage in fiscal competition. Using numerical simulations we examine how the migration plocoes are affected by whether the skilled or the unskilled are in power. We also analyze differences for tax policies between free and controlled migration, and the role of productivity gap.

1 Introduction

We address the issue of wether tax competition lead to a "race to the bottom". In a basic tax-competition model competition may lead to such

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a downward race because of three mutually reinforcing factors. First, in order to attract mobile factors or prevent their flight, tax rates on them are reduced. Second, the flight of mobile factors from the relatively high tax to the relatively low tax countries shrinks the tax base in the relatively high tax country. Third, the flight of the mobile factors from the relatively high tax country is presumed to reduce the remuneration of the immobile factors, and, consequently, their contribution to the tax revenue ¹. In contrast, in our model the mobile factor is labor of various skills. These factors consider not only their economic returns when making their migration decision, but rather also the social benefits offered by the countries. Importantly, also, the decisive voter who determine the tax rates is concerned about the effect of migration on factor rewards and fiscal burden. The paper analyzes fiscal competition with and without migration in a two-country, political-economy, model with labor of different skills. The paper assigns an active fiscal role for both the host and the source countries in shaping policies concerning the generosity of the welfare state. It models a migration host country stylistically as a member of the core EU welfare state, with tax financed benefits, and political - economy based immigration policies. The source country is modelled as an accession EU country (in the EU enlargement to 27 states), with its own welfare state (tax-benefit) policy ². The two countries are identical except that the total factor productivity in the host country is assumed to be higher than that of the source country. The productivity gap is indeed the driving force behind migration. We let the host and the source country engage in fiscal competition. Using numerical simulations we examine how the migration and tax policies are shaped. That is, how they are different according to whether the skilled, or the unskilled, are in power. We also analyze hoe tax policies differ between the regime of free migration and the regime of controlled migration.

The organization of the paper is as follows. Section 2 reports some background empirical evidence. Section 3 presents the analytical framework. Simulation results are reported in section 4. Section 5 analyzes free vs. controlled migration. Section 6 concludes.

¹For a general-equilibrium fiscal-competition model of Europe, with capital mobility, see Mendoza and Tesar (2005). The paper demonstrates the limitation of the race-to-the-bottom result when factor rewards are variable.

²Recall that a grace period between 2004 and 2014 exists where an EU-15 member state can regulate the immigration flows from the accession countries. Thus, in the interim period national policies are allowed for inter-EU migration.

2 Evidence on the Fiscal Burden of Migration

It is worthwhile to review some evidence on the fiscal aspects of migration and on native born attitudes toward immigration, before we develop the tax competition model.

In 1997 the U.S. National Research Council sponsored a study on the overall fiscal impact of immigration into the U.S.; see Edmonston and Smith (1997). The study looks comprehensively at all layers of government (federal, state, and local), all programs (benefits), and all types of taxes. For each cohort, defined by age of arrival to the U.S., the benefits (cash or in kind) received by migrants over their own lifetimes and the lifetimes of their first-generation descendants were projected. These benefits include Medicare, Medicaid, Supplementary Security Income (SSI), Aid for Families with Dependent Children (AFDC), food stamps, Old Age, Survivors, and Disability Insurance (OASDI), etc. Similarly, taxes paid directly by migrants and the incidence on migrants of other taxes (such as corporate taxes) were also projected for the lifetimes of the migrants and their first-generation descendants. Accordingly, the net fiscal burden was projected and discounted to the present. In this way, the net fiscal burden for each age cohort of migrants was calculated in present value terms. Within each age cohort, these calculations were disaggregated according to three educational levels: Less than high school education, high school education, and more than high school education. Indeed the findings suggest that migrants with less than high school education are typically a net fiscal burden that can reach as high as approximately US-\$100,000 in present value, when the migrants' age on arrival is between 20–30 years. See also the related analysis of Auerbach and Oreopoulos(1999).

Following the recent enlargement of the European Union to 27 countries, only three members of the EU-15 (the UK, Sweden and Ireland) allowed free access for residents of the accession countries to their national labor markets, in the year of the first enlargement, 2004. The other members of the EU-15 took advantage of the clause that allows for restricted labor markets for a transitional period of up to seven years. Focusing on the UK and the A8 countries³, Dustmann at al (2009) bring evidence of no welfare migration. The average age of the A8 migrants during the period 2004⁴-2008 is 25.8 years, considerably lower than the native U.K. average age (38.7 years). The A8 migrants are also better educated than the native-born. For instance, the percentage of those

³The A8 countries are the first eight accession countries (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Slovenia and Poland.)

⁴More accurately, the said period extends from the second quarter of 2004 through the first quarter of 2009.

that left full-time education at the age of 21 years or later is 35.5 among the A8 migrants, compared to only 17.1 among the U.K. natives. Another indication that the migration is not predominantly driven by welfare motives is the higher employment rate of the A8 migrants (83.1%) relative to the U.K. natives (78.9%). Furthermore, for the same period, the contribution of the A8 migrants to government revenues far exceeded the government expenditures attributed to them. A recent study by Barbone et al (2009), based on the 2006 European Union Survey of Income and Living conditions, finds that migrants from the accession countries constitute only 1-2 percent of the total population in the pre-enlargement EU countries (excluding Germany and Luxemburg); by comparison, about 6 percent of the population in the latter EU countries were born outside the enlarged EU. The small share of migrants from the accession countries is, of course, not surprising in view of the restrictions imposed on migration from the accession countries to the EU-15 before the enlargement and during the transition period after the enlargement. The study shows also that there is, as expected, a positive correlation between the net current taxes (that is, taxes paid less benefits received) of migrants from all source countries and their education level⁵.

Hanmeueller and Hiscox (2010), using survey data in the US, find two critical economic concerns that appear to generate anti-immigrant sentiments among voters: concerns about labor-market competition, and concerns about the fiscal burden on public services. Not unexpectedly, employing opinion surveys, Hanson et al (2007) bring evidence that in the United States native residents of states which provide generous benefits to migrants also prefer to reduce the number of migrants. Furthermore, the opposition is stronger among higher income groups. Similarly, Hanson et al (2009), again employing opinion surveys, find for the United States that native-born residents of states with a high share of unskilled migrants, among the migrants population, prefer to restrict in migration; whereas native-born residents of states with a high share of skilled migrants among the migrant population are less likely to favor restricting migration⁶. Indeed, developed economies do attempt to sort out immigrants by skills (see, for instance, Bhagwati and Gordon (2009)). Australia and Canada employ a point system based on selected immigrants' characteristics. The U.S. employs explicit preference for professional, technical and kindred immigrants under the so-called third-preference quota. Jasso and Rosenzweig (2009) find that both the Australian and American selection mechanisms are effective in sorting out the skilled migrants, and produce essentially similar outcomes de-

⁵See also Boeri, Hanson, and McCormick (2002)

⁶See also Mayda (2006)

spite of their different legal characteristics.

3 The Analytical Framework

We now develop a two-country model based on political-economy determination of the way of migration policies and the generosity of the welfare state⁷.

3.1 The Host-Country Economy

Assume a Cobb-Douglas production function, with two labor inputs, skilled and unskilled⁸:

$$Y = AL_s^\alpha L_u^{1-\alpha}, \quad 0 < \alpha < 1 \quad (1)$$

where, Y is the GDP, A denotes a Hicks-neutral productivity parameter, and L_i denotes the input of labor of skill level i , where $i = s, u$ for skilled and unskilled, respectively.

The competitive wages of skilled and unskilled labor are, respectively

$$\begin{aligned} w_s &= \alpha Y / L_s \\ w_u &= (1 - \alpha) Y / L_u. \end{aligned} \quad (2)$$

Aggregate labor supply, for skilled and unskilled workers, respectively, is given by:

$$\begin{aligned} L_s &= (S + \sigma\mu) l_s \\ L_u &= (1 - S + (1 - \sigma)\mu) l_u. \end{aligned} \quad (3)$$

There is a continuum of workers, where the number of native-born is normalized to 1; S denotes the share of native born skilled in the total native-born labor supply; σ denotes the share of skilled migrants in the total number of migrants; μ denotes the total number of migrants; and l_i is the labor supply of an individual with skill level $i \in \{s, u\}$

Total population (native born and migrants) is as follows

$$N = 1 + \mu. \quad (4)$$

We specify a simple welfare-state system which levies a proportional labor income tax at the rate τ , with the revenues redistributed equally

⁷See Cohen and Razin (2008) and Cohen, Razin and Sadka (2009) who analyze the interactions between redistribution policies and migration policies using a similar analytical framework.

⁸The parsimonious model is developed with the cross-section data in mind. The migration variable is the stock of migrants; not flows (as relevant for dynamic analysis).

to all residents (native born and migrants alike) as a demogrant, b , per capita. The demogrant captures not only a cash transfer but also outlays on public services such as education, health, and other provisions, that benefit all workers, regardless of their contribution to the finances of the system.

The government budget constraint is therefore

$$Nb = \tau Y. \quad (5)$$

The utility function for skill-type $i \in \{s, u\}$ is

$$u_i = c_i - \frac{\varepsilon}{1 + \varepsilon} l_i^{\frac{1+\varepsilon}{\varepsilon}} \quad (6)$$

where c_i denotes consumption of an individual with skill level i , and $\varepsilon > 0$.

The budget constraint of an individual with skill level i is

$$c_i = b + (1 - \tau) l_i w_i. \quad (7)$$

Individual utility-maximization yields the following the labor supply equation

$$l_i = ((1 - \tau) w_i)^\varepsilon. \quad (8)$$

It is then straightforward to calculate the equilibrium wages for the skilled and unskilled workers, which are given respectively by

$$\begin{aligned} w_s &= A (\alpha \delta^\varepsilon \theta^{1-\alpha})^{\frac{1}{1+\varepsilon}} \\ w_u &= A ((1 - \alpha) \delta^\varepsilon \theta^{-\alpha})^{\frac{1}{1+\varepsilon}} \end{aligned} \quad (9)$$

where $\delta \equiv \alpha^\alpha (1 - \alpha)^{1-\alpha}$ and $\theta \equiv \frac{1-S+(1-\sigma)\mu}{S+\sigma\mu}$

In order to ensure that the skilled wage always exceeds the unskilled wage, $w_s > w_u$, we assume that

$$\frac{\alpha(1 - S + (1 - \sigma)\mu)}{(1 - \alpha)(S + \sigma\mu)} > 1. \quad (10)$$

.We now use this model to to analyze the policy-controlled regime.

3.2 The Source-Country Economy

To simplify, we assume that the economies of the source country and the host country are identical, except for a higher productivity factor in the host country (e.g., all the other technology and preference parameters are identical). Also, each resident of the source country has an

individual-specific cost of migration. This cost (denoted by c^* and measured in utility terms) varies across individuals as in section 2.3.1 due to individual characteristics such as age, family size, forms of portable pensions, etc. For each skill group (their *total* size normalized to one) c^* is distributed uniformly over the interval $[0, \bar{c}^*]$. Throughout an asterisk (*) denotes the source country variables.

The description of the source country economy is similar to that of the host country economy, as described in chapter 4. Production is as in equation (4.1), except for a different total productivity factor:

$$Y = A^* L_s^{*\alpha^*} L_u^{*(1-\alpha^*)}, 0 < \alpha < 1, \quad (11)$$

where $A^* < A$ but $\alpha^* = \alpha$. The competitive wage rates are given by equation (2.2) with asterisks attached to the variables. The aggregate labor supplies in the source country are different than in the host because the former is "sending" what the latter is receiving:

$$L_s^* = (S^* - \sigma\mu)l_s^* \quad (12)$$

$$L_u^* = (1 - S^* - (1 - \sigma)\mu)l_u^*$$

We assume the same pre-migration skill composition in the two countries, that is, $S^* = S$

Total population in the source country is

$$N^* = 1 - \mu. \quad (13)$$

The utility function of source function residents is given by equation (4.2), with asterisks attached to the variables.

The competitive equilibrium wage rates are given by:

$$w_s^*(\sigma, \mu; A^*, S^*) = A^* (\alpha^* \delta^{*\epsilon} \theta^{*(1-\alpha)})^{\frac{1}{1+\epsilon^*}} \quad (14)$$

$$w_u^*(\sigma, \mu; A^*, S^*) = A^* ((1 - \alpha^*) \delta^{*\epsilon} \theta^{*(-\alpha^*)})^{\frac{1}{1+\epsilon^*}}$$

$$\text{where } \delta^* \equiv (\alpha^*)^{\alpha^*} (1 - \alpha^A)^{1-\alpha^*}$$

$$\text{and } \theta^* \equiv \frac{1 - S^* - (1 - \sigma)\mu}{S^* - \sigma\rho}.$$

Note that $\epsilon^* = \epsilon$. Similarly to the condition in equation (2.10), We also assume that

$$\frac{\alpha^*(1 - S^* - (1 - \sigma)\mu)}{(1 - \alpha^*)(S^* - \sigma\mu)} > 1, \quad (15)$$

so that $w_s^* > w_u^*$.

The indirect utility function is given by (4.4) with asterisks attached to the variables. The government budget constraint is given by

$$b^* = \frac{\tau^*(1-\tau^*)^{\epsilon^*}(\alpha^*)^{\epsilon^*\alpha^*}(1-\alpha^*)^{\epsilon^*(1-\alpha^*)}A^{*(1+\epsilon^*)}(S^*-\sigma\mu)^{\alpha^*}(1-S^*-(1-\sigma)\mu)^{1-\alpha^*}}{1-\mu}. \quad (16)$$

3.3 Migrant Supply Function

Each resident in the source country, skilled or unskilled, decides whether to migrate to the host country or stay in her source country, depending on where her utility is higher (taking into account migration costs). Consider first a skilled resident with migration cost of c^* . If she stays in her source country, her utility level is $V_s(\tau^*, \sigma, \mu)$. If she migrates to the host country she enjoys a utility level of $V_s(\tau, \sigma, \mu) - c^*$. Thus, there will be a cutoff level of the cost, denoted by \widehat{c}_s^* , such that all skilled persons with c^* below \widehat{c}_s^* will migrate and all others stay behind. The cutoff level of the cost is given by:

$$V_s(\tau^*, \sigma, \mu) = V_s(\tau, \sigma, \mu) - \widehat{c}_s^*. \quad (17)$$

The number of skilled migrants (m_s) is therefore given by

$$m_s = S^*\widehat{c}_s^*/\bar{c}^* \quad (18)$$

Similarly, for the unskilled too there will be a cutoff level of the migration cost, denoted by \widehat{c}_u^* which is given by

$$V_u(\tau^*, \sigma, \mu) = V_u(\tau, \sigma, \mu) - \widehat{c}_u^*. \quad (19)$$

The number of unskilled migrants (m_u) is then given by

$$m_u = (1 - S^*)\widehat{c}_u^*/\bar{c}^*. \quad (20)$$

Hence, the total number of migrants, (μ) is given by

$$\mu = m_s + m_u = (S^*\widehat{c}_s^* + (1 - S^*)\widehat{c}_u^*)/\bar{c}^*, \quad (21)$$

and the share of the skilled migrants in the total migration is given by

$$\sigma = m_s/(m_s + m_u). \quad (22)$$

With the model described by (9.1)-(9.11) we are ready to formulate various interactions between the source and the host-country.

3.4 Fiscal and Migration Competition

Each one of the two countries independently determines its tax-benefit policy $((\tau, b)$ and $(\tau^*, b^*))$ by majority voting. That is, the policy is determined by maximization of the (indirect) utility function of the skilled or the unskilled, depending on which of the two groups forms a majority. In doing so, voters in each country take the tax-benefit policy of the other country as given (Nash-equilibrium). Also, voters take into account that migration takes place according to the following mechanism.

To simplify the exposition we assume that the two countries are identical in the technology and preferences parameters, except from the productivity factors, A and A^* . We assume that $A > A^*$. This productivity advantage is the driver of migration flows from the source country to the host country in our stylized model.

The indirect utility functions of the skilled and the unskilled in the host country, respectively, can be computed as:

$$V_s = (1-\tau)^{1+\varepsilon} \frac{A^{1+\varepsilon}}{1+\varepsilon} (\alpha)^{1+\alpha\varepsilon} (1-\alpha)^{(1-\alpha)\varepsilon} \left(\frac{(1-S) + \mu(1-\sigma)}{S + \sigma\mu} \right)^{1-\alpha} + \ln(b) \quad (23)$$

$$V_u = (1-\tau)^{1+\varepsilon} \frac{A^{1+\varepsilon}}{1+\varepsilon} (\alpha)^{\alpha\varepsilon} (1-\alpha)^{1+(1-\alpha)\varepsilon} \left(\frac{S + \mu\sigma}{(1-S) + \mu(1-\sigma)} \right)^\alpha + \ln(b) \quad (24)$$

The per-capita benefit is given by:

$$b(\tau; A) = \frac{\tau(1-\tau)^\varepsilon}{1+\mu} (\alpha)^{\alpha\varepsilon} (1-\alpha)^{(1-\alpha)\varepsilon} A^{1+\varepsilon} (S + \sigma\mu)^\alpha [(1-S) + \mu(1-\sigma)]^{1-\alpha} \quad (25)$$

Similarly, the source-country indirect utility functions and per-capita benefit are:

$$V_s(\tau^*; A^*) = (1-\tau^*)^{1+\varepsilon} \frac{A^{*1+\varepsilon}}{1+\varepsilon} (\alpha)^{1+\alpha\varepsilon} (1-\alpha)^{(1-\alpha)\varepsilon} \left(\frac{(1-S) - \mu(1-\sigma)}{S - \sigma\mu} \right)^{1-\alpha} + \ln(b^*(\tau^*; A^*)) \quad (26)$$

$$V_u(\tau^*; A^*) = (1-\tau^*)^{1+\varepsilon} \frac{A^{*1+\varepsilon}}{1+\varepsilon} (\alpha)^{\alpha\varepsilon} (1-\alpha)^{1+(1-\alpha)\varepsilon} \left(\frac{S - \mu\sigma}{(1-S) - \mu(1-\sigma)} \right)^\alpha + \ln(b(\tau^*; A^*)) \quad (27)$$

$$b(\tau^*; A^*) = \frac{\tau^*(1 - \tau^*)^\varepsilon}{1 + \mu} (\alpha)^{\alpha\varepsilon} (1 - \alpha)^{(1 - \alpha)\varepsilon} A^{*1 + \varepsilon} (S - \sigma\mu)^\alpha [(1 - S) - \mu(1 - \sigma)]^{1 - \alpha} \quad (28)$$

The migration (incentive compatible) equations are⁹:

$$V_s(\tau^*; A^*) = V_s(\tau; A) - \hat{c}_s^* \quad (29)$$

$$m_s = S\hat{c}_s^*/\bar{c}^* \quad (30)$$

$$V_u(\tau^*; A^*) = V_u(\tau; A) - \hat{c}_u^* \quad (31)$$

$$m_u = (1 - S)\hat{c}_u^*/\bar{c}^* \quad (32)$$

Finally, the definitions of σ and μ are:

$$\mu = m_s + m_u \quad (33)$$

$$\sigma = \frac{m_s}{m_s + m_u} \quad (34)$$

We now turn to the analysis of the fiscal-competition problem.

3.5 Nash Equilibrium of the Policy Game

To fix ideas we consider the case where the skilled are in the majority in both the source and the host countries.

The fiscal-competition Nash-game is as follows:

(I) The Host Country

$$\text{Max}_{\{V_s, \tau, b, \sigma, \mu, \hat{c}_u^*, \hat{c}_s^*, m_s, m_u\}} (V_s)$$

Subject to equations (23), (25), (29)-(34)

(II) The Source Country

$$\text{Max}_{\{V_s, \tau^*, b^*\}} (V_s)$$

Subject to equations (24) and (28)

Note that while the host-country regulate immigration, the source-country does not attempt to regulate the emigration outflows. The fiscal competition Nash-equilibrium is the solution to (I) and (II).

We now compare the equilibrium policies (determining the generosity of the welfare state) with the policies that will ensue in the absence of migration; that is, when μ is set at zero. We carry this comparison via numerical simulation.

⁹We assume that the distribution of the reservation utilities is uniform, defined on the range $[0, \bar{c}^*]$, for each skill level. \hat{c}_i^* is the cutoff reservation utility for skill level i , $i = s, u$

4 The identity of the Decisive Voter and Fiscal and Migration Competition: Simulations

Consider first the case where the skilled are the majority (in both countries). As the productivity gap rises, the skilled majority in the host country opts to raise the volume of migration, and to decrease the share of skilled migrants. This is because the rise in the productivity gap strengthens the positive effect on the marginal productivity of all complementary inputs (unskilled labor) and generates also strong negative effects on the marginal productivity of all competing inputs (skilled labor). Things are different in the case where the unskilled are the ma-

majority (in both countries). As the productivity gap rises, the unskilled majority in the host country opts for a larger share of skilled among the migrants, and also a larger volume of migration.

Figures 1 and 2 describe the effect of a rise in the productivity gap and of migration on the tax rates and per-capita benefits, respectively, in the two countries for the case in which the skilled are in the majority (in both countries). Note that the host-country has a lower tax rate with a larger per-capita benefit, compared to the source-country, thanks to its productivity advantage. In other words, the productivity advantage implies that the host country can provide more generous benefits than the source country with a smaller tax rate.

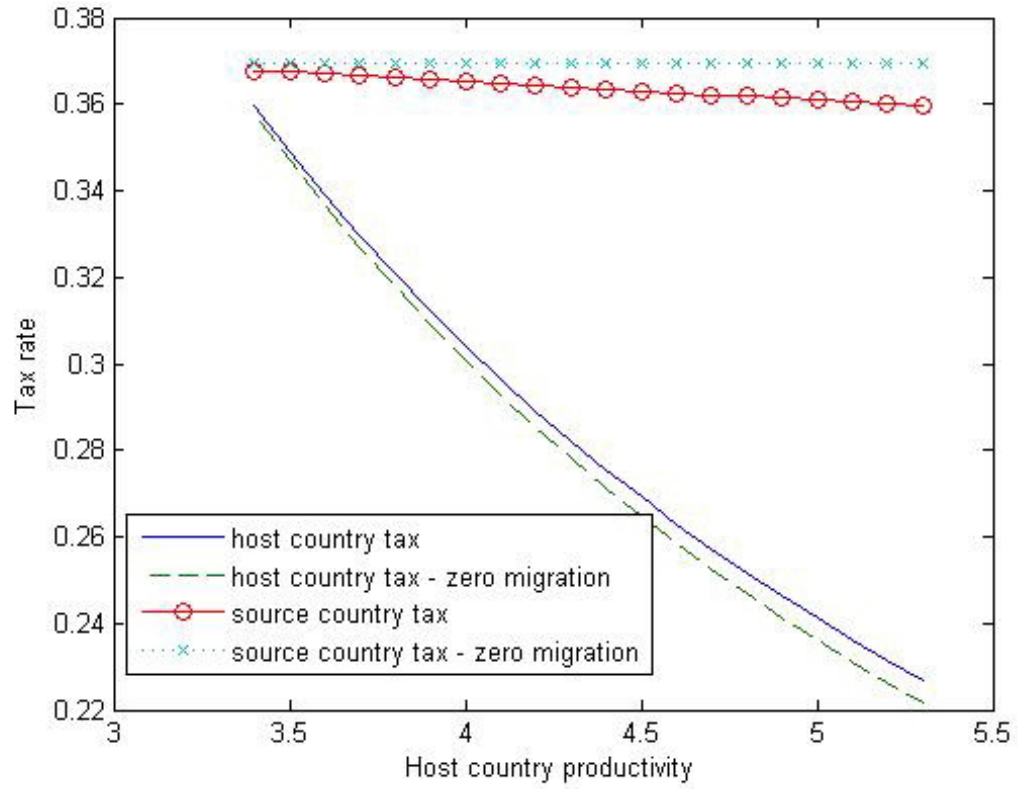


Figure 1: The effect of the productivity gap and migration on the source- and host-country taxes; The skilled are the majority

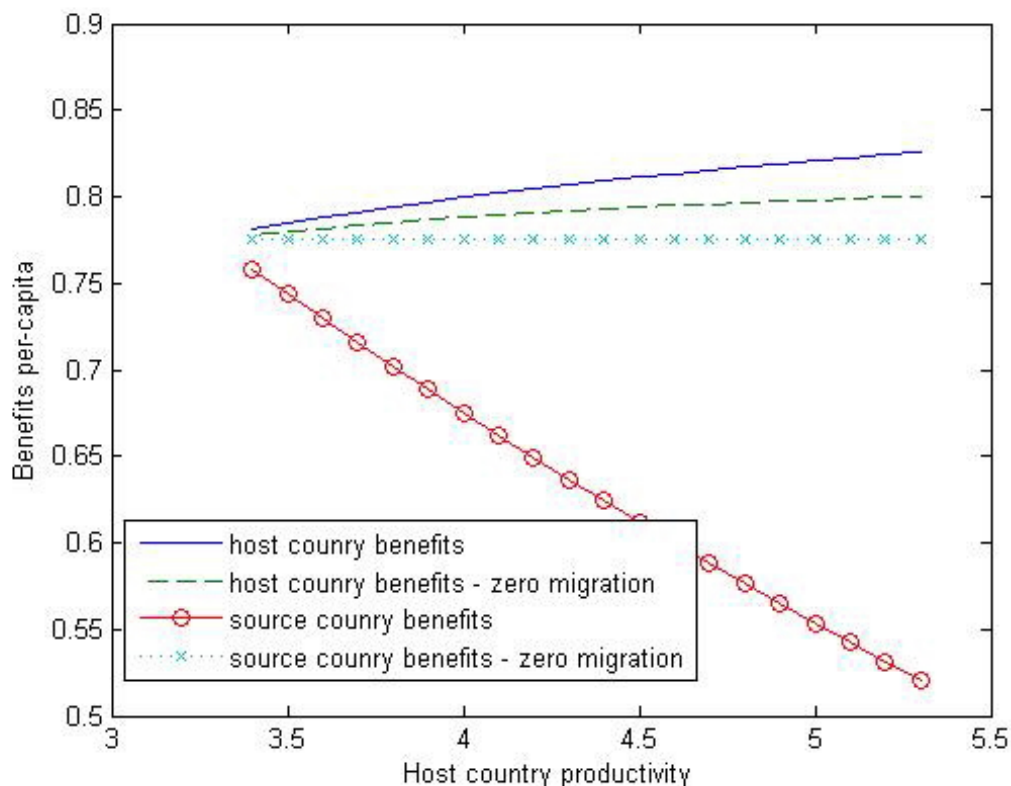


Figure 2: The effect of the productivity gap and migration on the source- and host-country per-capita benefit; The skilled are the majority

Consider now the effect of an increase in the host-source productivity, holding the source-country productivity fixed, thereby raising the productivity gap. Tax rates in both the host and the source country fall. From Figure 2 we can see that the host-country benefits rise whereas the source-country benefits fall.

Comparing the migration with the no migration case, Figure 1 shows that migration raises the host-country tax rate, whereas it lowers the source-country tax rate. This is an unexpected result in view of the literature (see e.g. Chari and Kehoe (1990)). As far as the generosity of the welfare state is concerned, comparing again the migration and the no migration cases, Figure 2 shows that migration raises the host-country benefits but lowers the source-country benefits, as expected in view of the behavior of the tax rates.

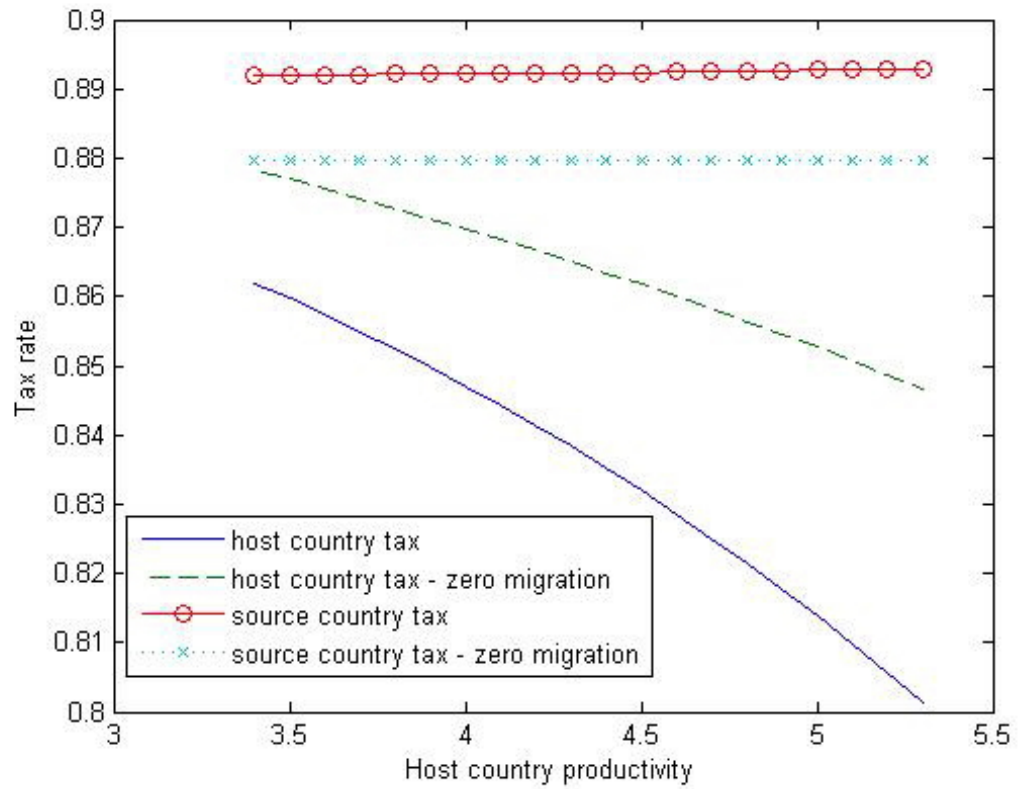


Figure 3: The effect of the productivity gap and migration on the source- and host-country taxes; The unskilled are the majority.

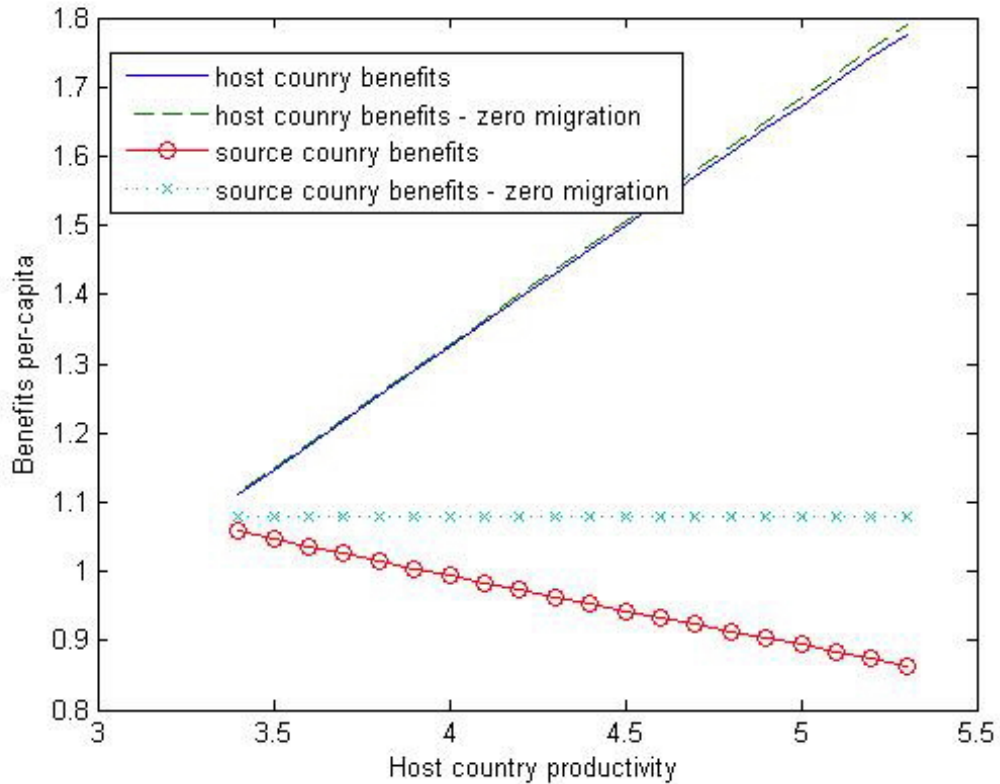


Figure 4: The effect of the productivity gap and migration on the source- and host-country taxes; The unskilled are the majority.

Figures 3 and 4 describe the effect of the productivity gap and migration on the tax rates and per-capita benefits, respectively, in the two countries for the case in which the unskilled are in the majority (in both the host and the source country).

Note that as in the case where the skilled are in the majority, the host-country has a lower tax rate and higher per-capita benefit, compared to the source-country, thanks to effect of productivity on political-economy based tax rate.

Consider now the effect of an increase in the productivity gap described in Figures 3 and 4. As the host-country productivity advantage rises, the tax rate in the host country falls as in the case where the skilled where the majority. But now the tax rate in the source-country rises rather than falls. From Figure 4 we can see that as the host-country productivity advantage rises, the host-country benefits fall. As the tax rate in the source country rises, so do the benefits.

Comparing the migration with the no-migration cases, Figure 3 shows

that migration lowers the host-country tax rate, as is indeed expected in view of the literature on factors mobility. However, in contrast to this literature, the tax rate in the source country is higher under migration than without migration. As far as the generosity of the welfare state is concerned, Figure 4 shows that the benefits behave in circumstance to the tax rates. As expected, the host country tax rate falls if migration is allowed because the native-born are reluctant to set high taxes, as the proceeds of these taxes serve to finance also benefits to immigrants ("fiscal leakage"), as in Razin and Sadka (2002a) and (2002b).

5 Free vs. Controlled Migration

In the previous sections migration is assumed to be controlled by the host country. In this section we analyze the case of free migration. We compare the difference between the tax policies of the host and source country for the controlled and free migration regimes.

Formally, free migration is incorporated into the model, by dropping the control variables $\sigma, \mu, \hat{C}_u^*, \hat{C}_s^*, m_s,$ and m_u from the fiscal competition model in the previous section; and adding the migration equations (29)-(34) to the equilibrium equation set.

In the controlled migration regime the host country takes into account the migration equations which determine the volume and composition of migration, when setting its tax policy. But the source country which does have no direct policy towards migration, does not take into account the migration equations in setting its own tax policy. If migration is free, however, none of the countries "manipulate" the migration equations in setting its own tax policies.

Figure 5 compares the host-country tax rates, under free and controlled migration, for the case where the skilled-young is the largest voting group. Similarly, Figure 6 compares the source-country tax rates, under the controlled and free migration regimes, for the case where the largest group is the skilled-young. If the skilled-young is the largest group, the regime switch from free to controlled migration raises the tax rate in the host country, while it lowers the tax rate in the source country.

Similarly, Figures 7 and 8 compare the two migration regimes for the case where the unskilled-young is the largest voting group. In this case the regime switch from free to controlled migration lowers the tax rate in the host country and raises the tax rate in the source country.

Therefore, the ability to control migration affects the tax rates in the host and source countries differently. The tax effect crucially depends on which skill group is decisive.

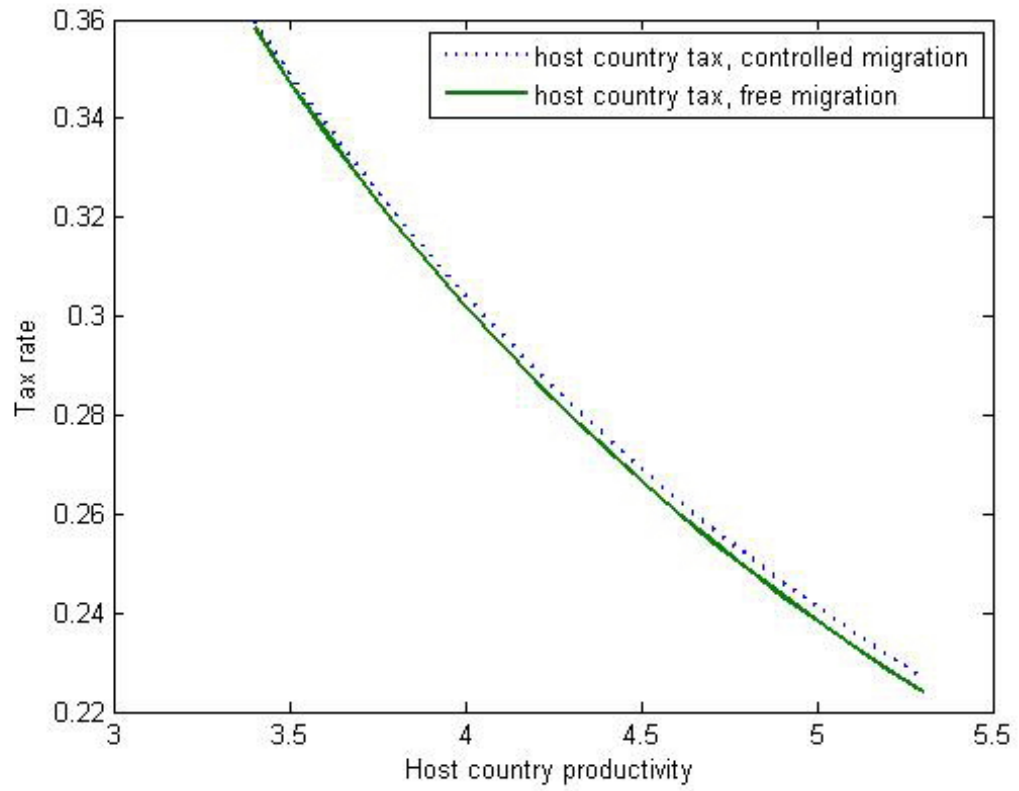


Figure 5: comparing the host-country tax rates under free and under controlled migration; Largest groups are the Skilled-Young

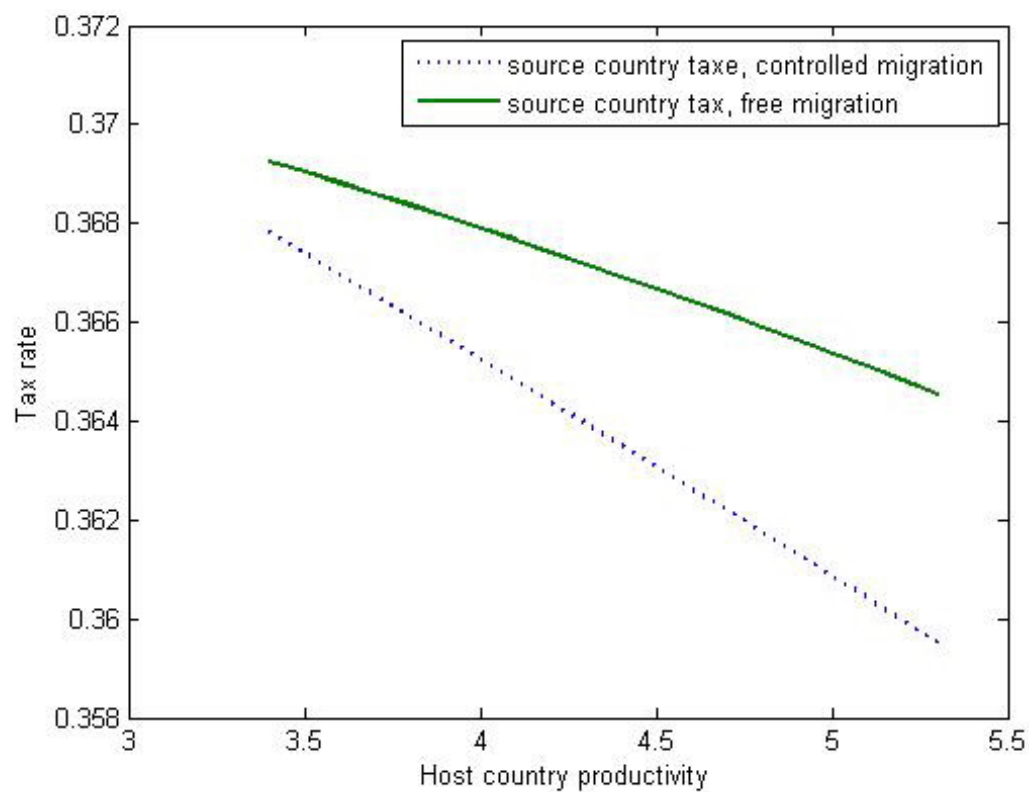


Figure 6: comparing the source-country tax rates under free and under controlled migration; Largest groups are the Skilled-Young

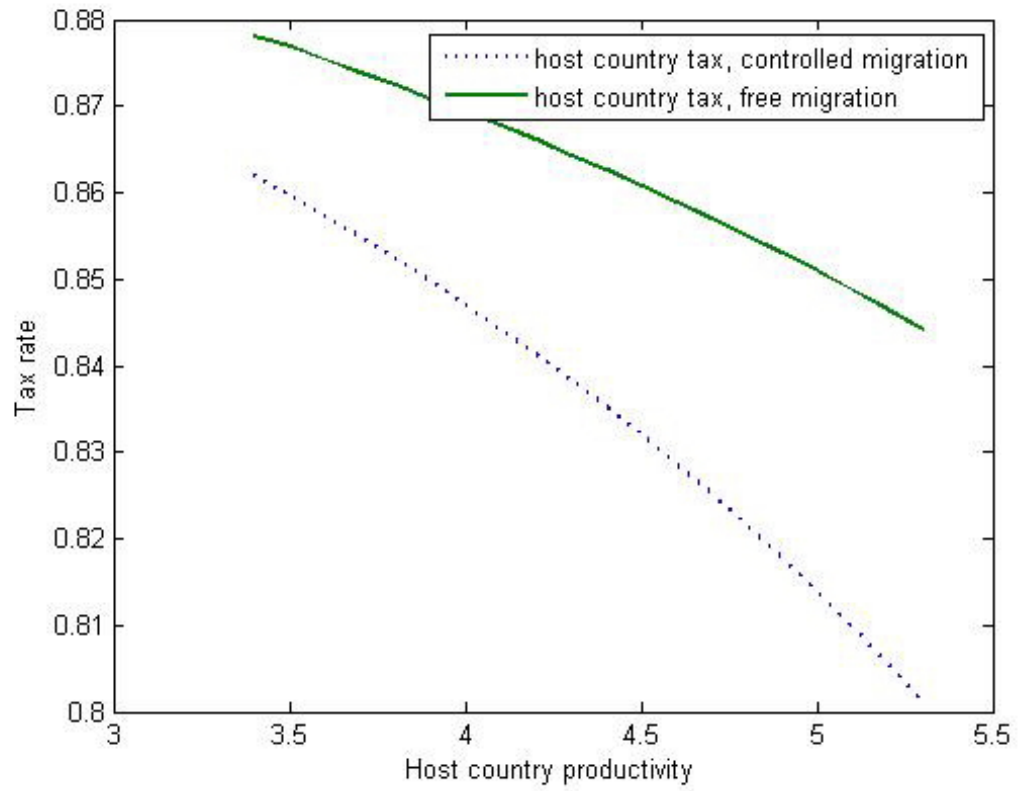


Figure 7: comparing the host-country tax rates under free and under controlled migration; Largest groups are the Unskilled-Young

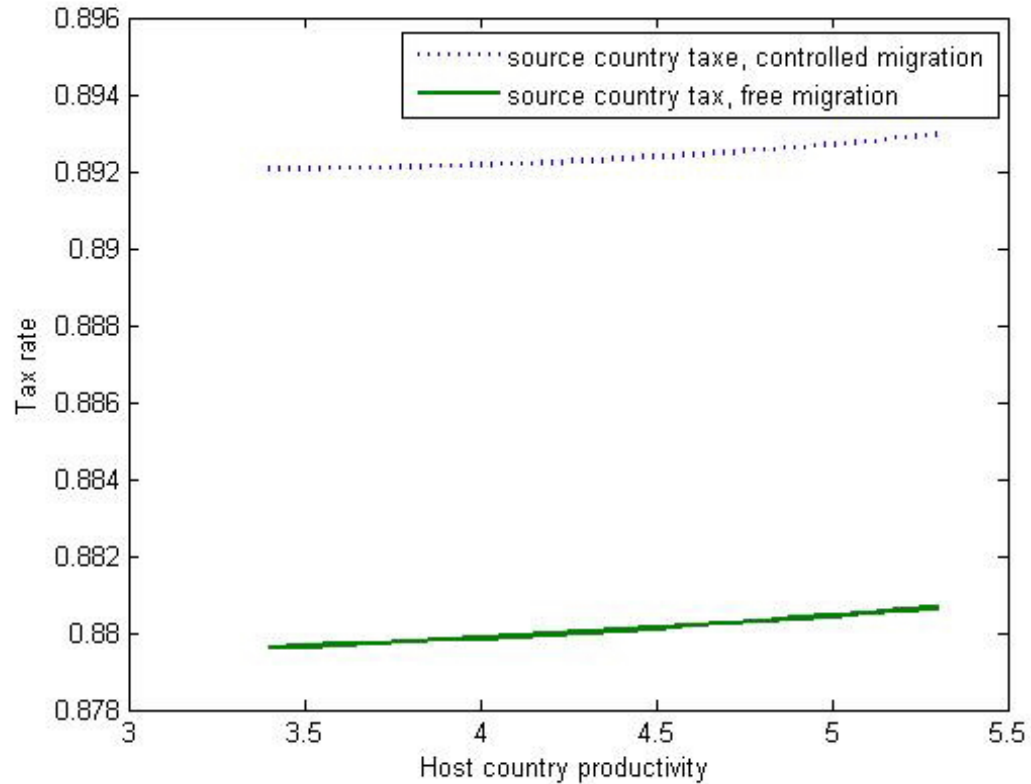


Figure 8: comparing the source-country tax rates under free and under controlled migration; Largest groups are the Unskilled-Young

6 Conclusion

It is often argued that tax competition may lead to a "race to the bottom". This result may indeed hold in the case of factor mobility (such as capital). However, in this paper we emphasize the unique feature of labor migration, that may nullify the "race to the bottom" hypothesis. Labor migration is governed not only by net-of-tax factor rewards, but rather importantly also by the benefits that the welfare state provides. Taking this consideration into account, countries are less reluctant to impose taxes that finance benefits to their residents in the presence of migration. Employing simulation methods we can indeed demonstrate that migration need not lower taxes in the source country, and may even give rise to higher taxes.

7 References.

References

- [1] Auerbach, A. and P. Oreopoulos (1999), "Analyzing the Economic Impact of U.S. Immigration," *American Economic Review Papers and Proceedings*, 89(2), 176-180.
- [2] Barbone, Luca, Bontch-Osmolovsky, Misha and Salman Zaidi (2009), "The Foreign-Born Population in the European Union and its Contribution to National Tax and Benefit Systems" Policy Research Working Paper, the World Bank (April).
- [3] Bhagwati, Jagdish and Gordon Hanson (2009), editors, *Skilled Immigration Today: Prospects, Problems and Policies*, Oxford University Press.
- [4] Boeri, Tito, Gordon Howard Hanson and Barry McCormick (2002a, 2002b), *Immigration Policy and the Welfare System: A Report for the Fondazione Rodolfo Debenedetti*, Oxford University Press.
- [5] Boeri, T., G. Hanson and B. McCormick (eds., 2002), *Immigration policy and the welfare system*, Oxford University Press, Oxford.
- [6] Chari, V. V. and P. J. Kehoe (1990), "International Coordination and Fiscal Policy in Limiting Economies", *Journal of Political Economy*, 98, 617-636.
- [7] Cohen, Alon, and Assaf Razin (2008), "The Skill Composition of Immigrants and the Generosity of the Welfare State: Free versus Policy-controlled Migration," *NBER Working Paper No. 144459*, October.
- [8] Cohen, Alon, Razin, Assaf and Efraim Sadka (2009), "The Skill Composition of Migration and the Generosity of the Welfare State," NBER Working Paper No. 14738, February.
- [9] Dustmann, C., Frattini, T. & Halls, C. (2009), "Assessing the Fiscal Costs and Benefits of A8 Migration to the UK", CReAM Discussion Paper No. 18/09
- [10] Hainmueller, Jens, and Michael J. Hiscox (2010), "Attitudes toward Highly Skilled and Low-skilled Immigration: Evidence from a Survey Experiment" *American Political Science Review*, 104, no 1, February, 61-84
- [11] Hanson, Gordon H. (2008), "The Economic Consequence of the International Migration of Labor," *NBER Working Paper No. 14490*, November.
- [12] Hanson, Gordon, Scheve, Kenneth, and Matthew J. Slaughter (2009) "Individual Preferences over High-Skilled Immigration in the United States," in Bhagwati, Jagdish and Gordon Hanson, editors, *Skilled Immigration Today: Prospects, Problems and Policies*, Ox-

- ford University Press.
- [13] Hanson, Gordon, Scheve Kenneth and Matthew J. Slaughter (2007), "Public Finance and Individual Preferences over Globalization Strategies" *Economics and Politics*, 19(1), March, 1-33
 - [14] Jasso, Guillermina and Mark R. Rosenzweig (2009) "Selection Criteria and the Skill Composition of Immigrants: A Comparative Analysis of Australian and U.S. Employment Immigration," in Bhagwati, Jagdish and Gordon Hanson, editors, *Skilled Immigration Today: Prospects, Problems and Policies*, Oxford University Press.
 - [15] Mayda, Anna Maria (2006), "Who Is Against Immigration? A Cross-Country Investigation of Individual Attitudes toward Immigrants", *Review of Economics and Statistics*.
 - [16] Mendoza, Enrique, G., and Linda L. Tesar (2005), "Why hasn't tax competition triggered a race to the bottom? Some quantitative lessons from the EU", *Journal of Monetary Economics*, 52, 163-204.
 - [17] Razin, Assaf, Sadka, Efraim and Phillip Swagel (2002a), "The aging population and the size of the welfare state,". *Journal of Political Economy* 110, 900—918.
 - [18] Razin, Assaf, Sadka, Efraim, and Phillip Swagel, (2002b). Tax burden and migration: a political economy theory and evidence," *Journal of Public Economics* 85,167—190.
 - [19] Smith, James P. and Barry Edmouston, editors, (1997), *The New Americans: Economic, Demographic and Fiscal Effects of Immigration*, National Academy Press, Washington, D.C