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Assaf Razin
Efraim Sadka

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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 policies 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.

Assaf Razin
Department of Economics
Cornell University
Uris 422
Ithaca, NY 14853
and NBER
ar256@cornell.edu

Efraim Sadka
Tel Aviv University
Eitan Berglas School of Economics
P.O.B. 39040
Ramat Aviv, Tel Aviv, 69978, ISRAEL
sadka@post.tau.ac.il

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 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.

[1] For a general-equilibrium fiscal-competion 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.

[2] Recall 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 comprehensibly 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 descendents 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 descendents. 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 countries[3], Dustmann at al (2009) bring evidence of no welfare migration. The average age of the A8 migrants during the period 2004[4]-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

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

[4] More 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 level[5].

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 migration[6]. 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-

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

[6] See 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 migration policies and the generosity of the welfare state[7].

3.1 The Host-Country Economy

Assume a Cobb-Douglas production function, with two labor inputs, skilled and unskilled[8]:

$$Y = AL_s^{\alpha} L_u^{1\square\alpha},\ 0 < \alpha < 1 \tag{1}$$

where, Y is 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

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

Note that the abundancy of skilled labor raises the wage of the unskilled, and the abundancy of unskilled labor raises the wage of the skilled.

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

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

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

$$N = 1 + \mu. \tag{4}$$

[7] See 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.

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

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

$$Nb = \tau Y. \tag{5}$$

Note that we assume that migrants are fully entitled to the welfare state system. That is, the pay the tax rate τ and receive the benefit b.

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

$$u_i = c_i \square \frac{\varepsilon}{1+\varepsilon} l_i^{\frac{1+\varepsilon}{\varepsilon}} + \ln(b), \tag{6}$$

where c_i denotes consumption of an individual with skill level i, and $\varepsilon > 0$, in the labor supply elasticity. Note that we interpet b not just as a pure cash transfer, but rather as some public service that renders a utility of ln(b)[9].

The budget constraint of an individual with skill level i is

$$c_i = (1 \square \tau)\, l_i w_i. \tag{7}$$

Individual utility-maximization yields the following the labor supply equation

$$l_i = ((1 \square \tau)\, w_i)^{\varepsilon}. \tag{8}$$

The indirect utility function of an individual of skill level $i \in \{s, u\}$ is given by

$$V_i = \ln(b) + \frac{1}{1+\varepsilon} ((1 \square \tau)\, w_i)^{1+\varepsilon}. \tag{9}$$

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

$$\begin{aligned} w_s &= A \left(\square \alpha \delta^{\varepsilon} \theta^{1 \square \alpha} \right)^{\frac{1}{1+\varepsilon}} \\ w_u &= A \left(\square (1 \square \alpha)\, \delta^{\varepsilon} \theta^{\square \alpha} \right)^{\frac{1}{1+\varepsilon}} \end{aligned} \tag{10}$$

[9]Note that this interpretation of b is also called for in order to ensure that everyone, including the rich, opts for some positive level of b and is willing to support some taxation

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

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

$$\frac{\alpha(1 \square S + (1 \square \sigma)\mu)}{(1 \square \alpha)(S + \sigma\mu)} > 1. \tag{11}$$

.

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 $[0, \overline{c}^*]$. Throughout an asterisk $(*)$ denotes the source country variables.

The description of the source country economy is similar to that of the host country economy. Production is as in equation (1), except for a different total productivity factor:

$$Y = A^* L_s^{*\alpha} L_u^{*(1 \square \alpha)}, \tag{12}$$

where $A^* < A$. The competitive wage rates are given by equation (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":

$$L_s^* = (S \square \sigma\mu) l_s^* \tag{13}$$

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

Note that we assume the same pre-migration skill composition in the two countries.

Total population in the source country is

$$N^* = 1 \square \mu. \tag{14}$$

The utility function of source country residents is given by equation (2), with asterisks attached to the variables.

The competitive equilibrium wage rates are given by:

$$
\begin{aligned}
w_s^*(\sigma,\mu;A^*,S^*) &= A^*(\alpha\delta^{*\epsilon}\theta^{*(1\square\alpha)})^{\frac{1}{1+\epsilon}} \\
w_u^*(\sigma,\mu;A^*,S^*) &= A^*((1\square\alpha)\delta^{*\epsilon}\theta^{*(\square\alpha)})^{\frac{1}{1+\epsilon}} \\
\text{where } \delta^* &\equiv (\alpha)^{\alpha}(1\square\alpha)^{1\square\alpha} \\
\text{and } \quad \theta^* &\equiv \frac{1\square S^*\square(1\square\sigma)\mu}{S^*\square\sigma\mu}.
\end{aligned}
\tag{15}
$$

Similar to the condition in equation (10), we also assume that

$$
\frac{\alpha(1\square S^*\square(1\square\sigma)\mu)}{(1\square\alpha)(S^*\square\sigma\mu)} > 1, \tag{16}
$$

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

The indirect utility function is given by

$$
V_i^* = \ln(b^*) + \frac{1}{1+\varepsilon}\left((1\square\tau^*)\,w_i^*\right)^{1+\varepsilon}. \tag{17}
$$

The government budget constraint is given by

$$
b^* = \frac{\tau^*(1\square\tau^*)^{\epsilon}(\alpha)^{\epsilon\alpha}(1\square\alpha)^{\epsilon(1\square\alpha)}A^{*(1+\epsilon)}(S\square\sigma\mu)^{\alpha}(1\square S\square(1\square\sigma)\mu)^{1\square\alpha}}{1\square\mu}. \tag{18}
$$

Note that we assumed that the countries are identical except for the productivity parameter. This is why we wrote A* (instead of A) in equation (18), but we used the same symbols for all other parameters. Note also that the tax rate is a policy country-specific variable, so that we employ different symbols, τ and τ^*, for the host and source country, respectively.

3.3 Migrant Supply

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 $V_s(\tau,\sigma,\mu)\,\square\,c^*$. 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:

$$
V_s(\tau^*,\sigma,\mu) = V_s(\tau,\sigma,\mu)\,\square\,\widehat{c}_s^*. \tag{19}
$$

Given the uniform distribution of $\widehat{c}_s^*$ over the interval $[0, \overline{c}^*]$, the number of skilled migrants (m_s) is then given by

$$m_s = S\widehat{c}_s^*/\overline{c}^* \tag{20}$$

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

$$V_u(\tau^*, \sigma, \mu) = V_u(\tau, \sigma, \mu) \square \widehat{c}_u^*. \tag{21}$$

The number or unskilled migrants (m_u), is then given by

$$m_u = (1 \square S)\widehat{c}_u^*/\overline{c}^*. \tag{22}$$

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

$$\mu = m_s + m_u = (S\widehat{c}_s^* + (1 \square S)\widehat{c}_u^*)/\overline{c}^*, \tag{23}$$

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

$$\sigma = m_s/(m_s + m_u). \tag{24}$$

3.4 Fiscal and Migration Competition

Each one of the two countries independently determines its tax-benefit policy ((τ, b) and (τ^*, 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).

Note that we assume that the host country is more productive than the source country, that is, $A > A^*$. 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 in equilibrium of the skilled and the unskilled in the host country, respectively, can be computed as:

$$V_s = (1 \square \tau)^{1+\varepsilon} \frac{A^{1+\varepsilon}}{1+\varepsilon} (\alpha)^{1+\alpha\varepsilon} (1 \square \alpha)^{(1 \square \alpha)\varepsilon} \left(\frac{(1 \square S) + \mu(1 \square \sigma)}{S + \sigma\mu} \right)^{1 \square \alpha} + \ln(b) \tag{25}$$

$$V_u = (1 \square \tau)^{1+\varepsilon} \frac{A^{1+\varepsilon}}{1+\varepsilon} (\alpha)^{\alpha\varepsilon} (1 \square \alpha)^{1+(1 \square \alpha)\varepsilon} \left(\frac{S + \mu\sigma}{(1 \square S) + \mu(1 \square \sigma)} \right)^{\alpha} + \ln(b) \tag{26}$$

The per-capita benefit (public service) in equilibrium is given by:

$$b = b(\tau; A) \equiv \frac{\tau(1 \square \tau)^{\varepsilon}}{1+\mu}(\alpha)^{\alpha\varepsilon}(1\square\alpha)^{(1\square\alpha)\varepsilon}A^{1+\varepsilon}(S+\sigma\mu)^{\alpha}[(1\square S)+\mu(1\square\sigma)]^{1\square\alpha} \tag{27}$$

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

$$V_s(\tau^*; A^*) = (1\square\tau^*)^{1+\varepsilon}\frac{A^{*1+\varepsilon}}{1+\varepsilon}(\alpha)^{1+\alpha\varepsilon}(1\square\alpha)^{(1\square\alpha)\varepsilon}\left(\frac{(1 \square S) \square \mu(1 \square \sigma)}{S \square \sigma\mu}\right)^{1\square\alpha} + \ln(b^*(\tau^*; A^*)) \tag{28}$$

$$V_u(\tau^*; A^*) = (1\square\tau^*)^{1+\varepsilon}\frac{A^{*1+\varepsilon}}{1+\varepsilon}(\alpha)^{\alpha\varepsilon}(1\square\alpha)^{1+(1\square\alpha)\varepsilon}\left(\frac{S \square \mu\sigma}{(1 \square S) \square \mu(1 \square \sigma)}\right)^{\alpha} + \ln(b(\tau^*; A^*)) \tag{29}$$

$$b = b(\tau^*; A^*) \equiv \frac{\tau^*(1 \square \tau^*)^{\varepsilon}}{1 \square \mu}(\alpha)^{\alpha\varepsilon}(1\square\alpha)^{(1\square\alpha)\varepsilon}A^{*1+\varepsilon}(S\square\sigma\mu)^{\alpha}[(1\square S)\square\mu(1\square\sigma)]^{1\square\alpha} \tag{30}$$

The migration (incentive compatible) equations are:

$$V_s(\tau^*; A^*) = V_s(\tau; A) \square \hat{c}_s^* \tag{31}$$

$$m_s = S\hat{c}_s^*/\bar{c}^* \tag{32}$$

$$V_u(\tau^*; A^*) = V_u(\tau; A) \square \hat{c}_u^* \tag{33}$$

$$m_u = (1 \square S)\hat{c}_u^*/\bar{c}^* \tag{34}$$

Finally, the definitions of σ and μ are:

$$\mu = m_s + m_u \tag{35}$$

$$\sigma = \frac{m_s}{m_s + m_u} \tag{36}$$

Equations (31)-(34) determine the volume and skill composition of migration when the later is free. Alternatively, the host country adopt an active migration policy by which it directly controls m_s and m_u.

However, as migration can not be "forced" by the host country to come, these levels of m_s and m_u can not exceed their free-migration level. Thus, equation (32) and (34) should be replaced by inequalities

$$m_s \leq S\hat{c}_s^*/\bar{c}^* \tag{32'}$$

and

$$m_u \leq (1 \square S)\hat{c}_u^*/\bar{c}^*, \tag{34'}$$

respectively. In the remainder of this paper we assume that in the migration-controlled regime the inequalities are npt binding and simply drop equations (31)-(34) for this regime.

We now turn to the analysis of the fiscal-competition problem, with and without free migration.

3.5 Nash Equilibrium of the Policy Game

Consider first the case of conrolled migration. To fix ideas we consider the case where the skilled are in the majority in both the source and the host countries. Each country chooses its policy variables assuming that the other country's variables are given (Nash-equilibrium).

Formally, the Nash-equilibrium is as follows:

(I) The host country solves the given following optimization problem:

$\text{Max}_{\{V_s,\tau,b,\sigma,\mu,m_s,m_u\}}V_s$

subject to equations (25), (27), (35) and (36)

(II) The source country solves the following optimization problem:

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

subject to equations (26) and (30)

Note that this formulation assumes that the host-country regulates directly immigration, but the source country does not. Note that it is technically impossible for the two countries to affect independently the same migration policy. More importantly, we chose the host country as the one that controls migration, because it is more common for voters to engage in setting immigration policies than emigration policies.

A Nash-equilibrium is the solution to (I) and (II) above.

We first compare in the next section these equilibrium policies, (with controlled migration) with the policies that will ensue in the absence of migration; that is, when μ is set exogenously at zero. We carry this comparison via numerical simulations.

Another regime that we study is where migration is free. In this case, the host country's optimization problem (I) changes to:

(I') The host country solves the given following optimization problem:
$\text{Max}_{\{V_s,\tau,b\}} V_s$
subject to equations (25) and (27)

The optimization problem of the source country (II) does not change. The equilibrium is given by (I'), (II), and in addition, the free migration equations (31) - (36) determine the migration variables $\sigma, \mu, m_s, m_u, \hat{c}_s^*$, and $\hat{c}_u^*$. We study this free-migration regeme and compare it to the controlled migration regime in section 5.

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

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 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.

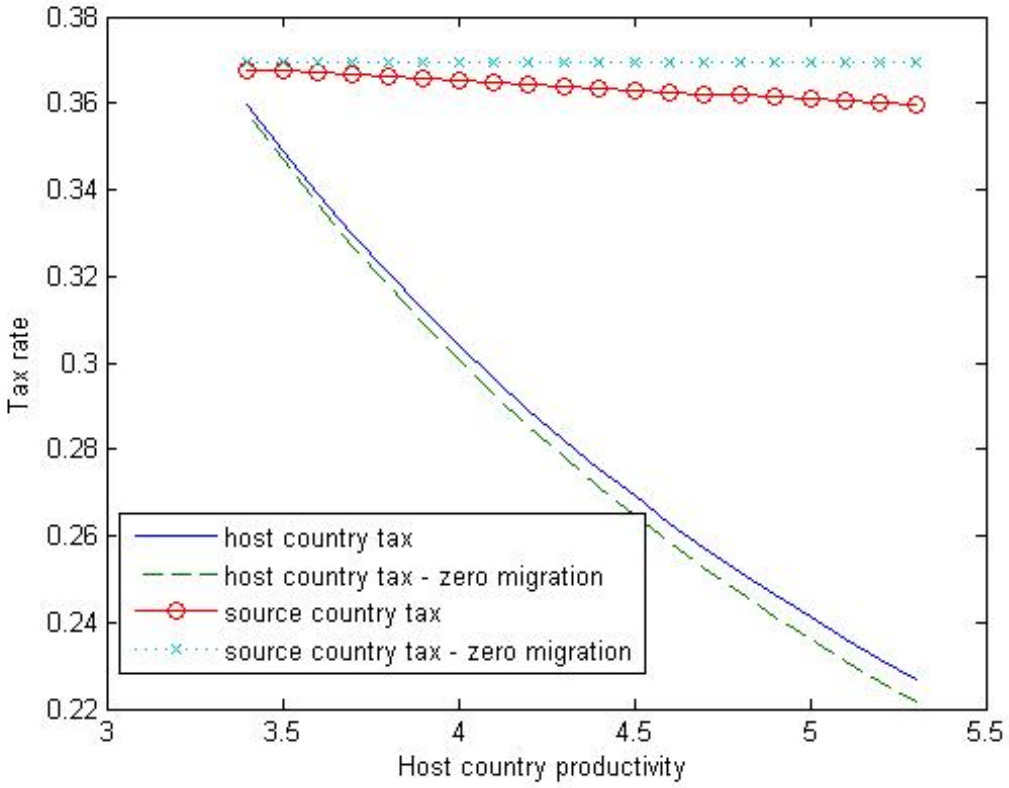

Figure 1: The effect of the productivity gap and migration on the source- and host-country taxes; The skilled are the majority

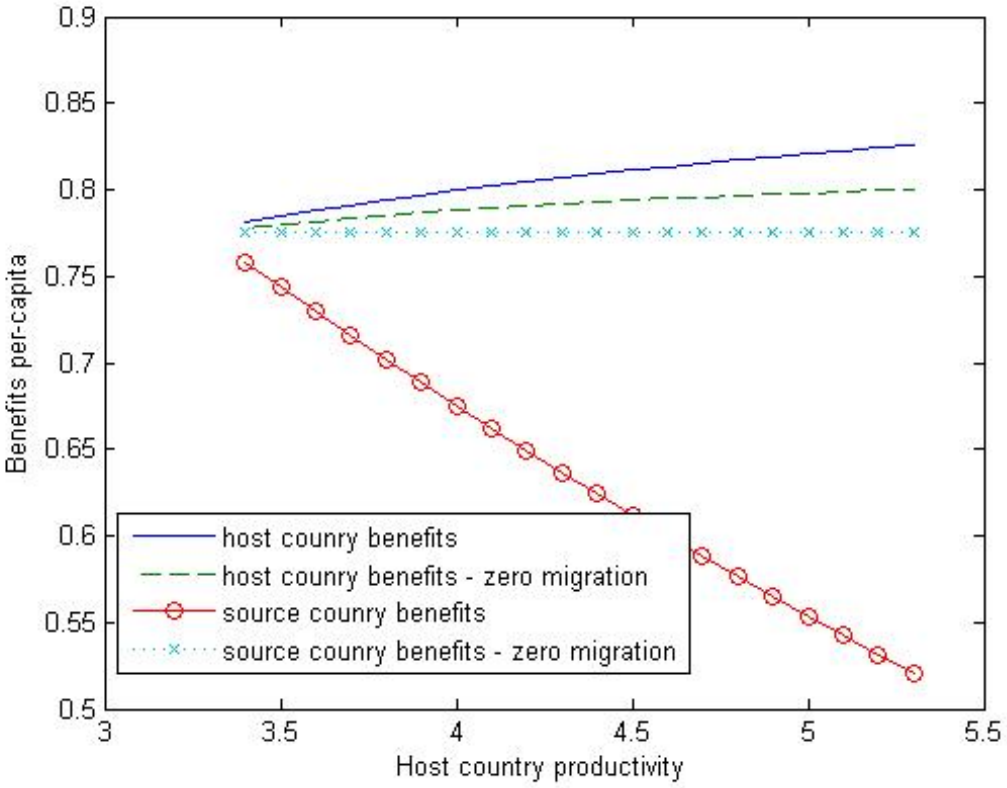

Figure 2: The effect of the productivity gap and migration on the source- and host-country per-capita benefit; The skilled are the majority

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.

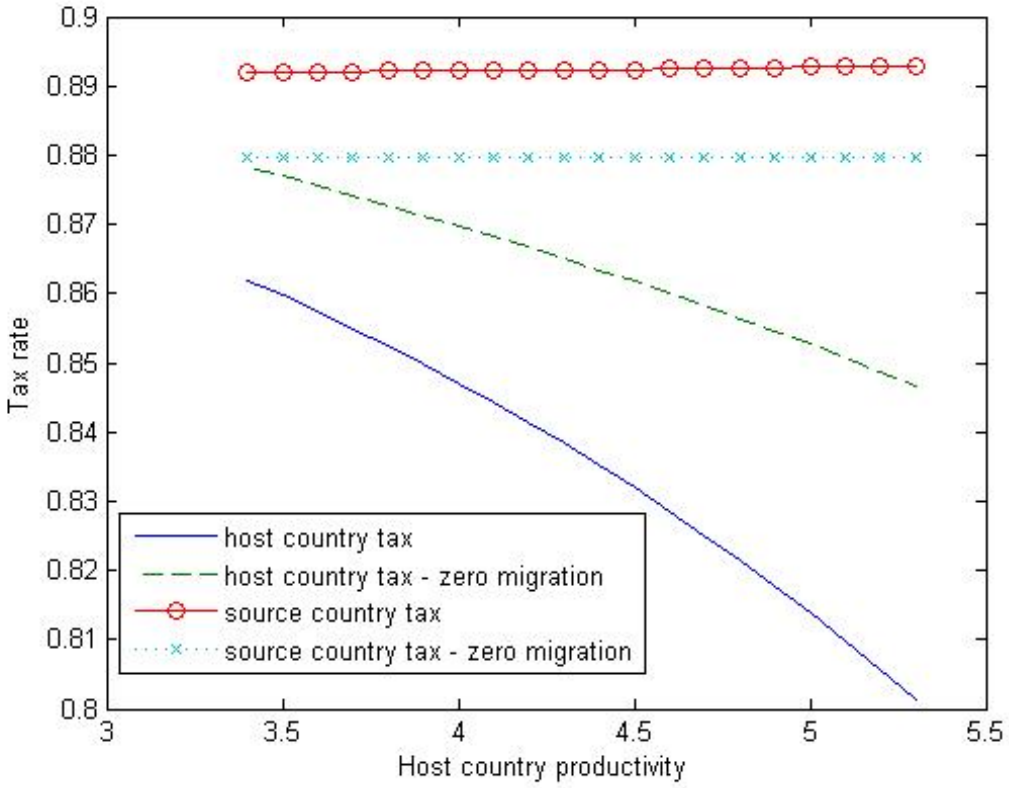

Figure 3: The effect of the productivity gap and migration on the source- and host-country taxes; The unskilled are the majority.

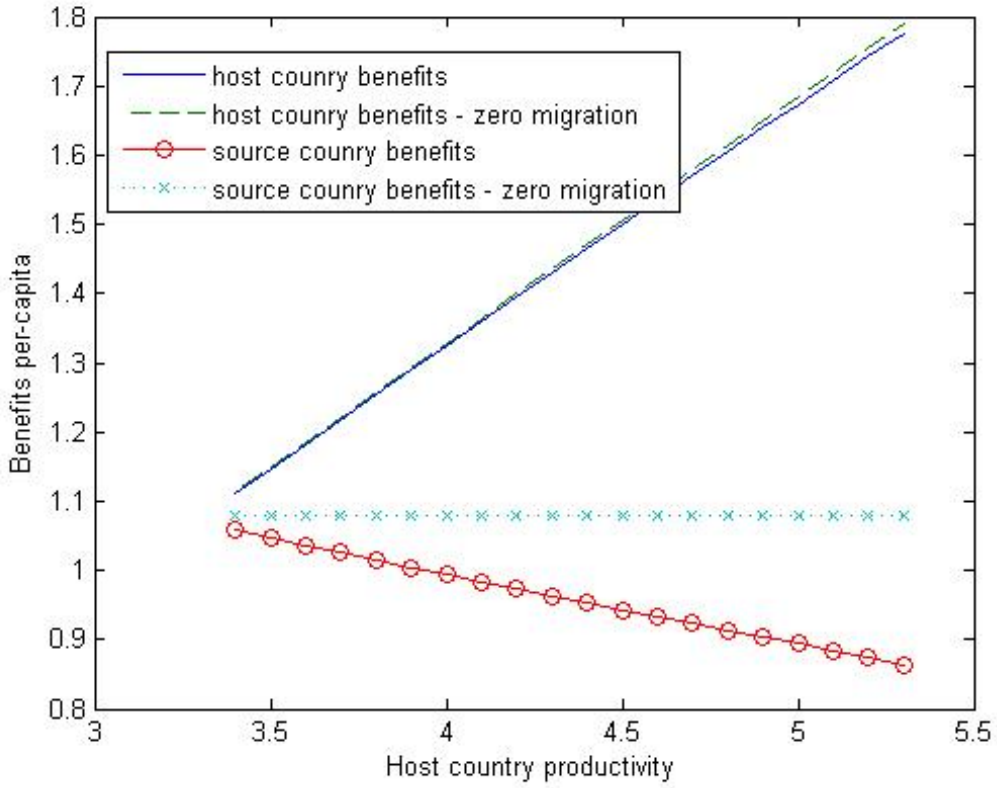

Figure 4: The effect of the productivity gap and migration on the source- and host-country taxes; The unskilled are the majority.

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 then 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.

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.

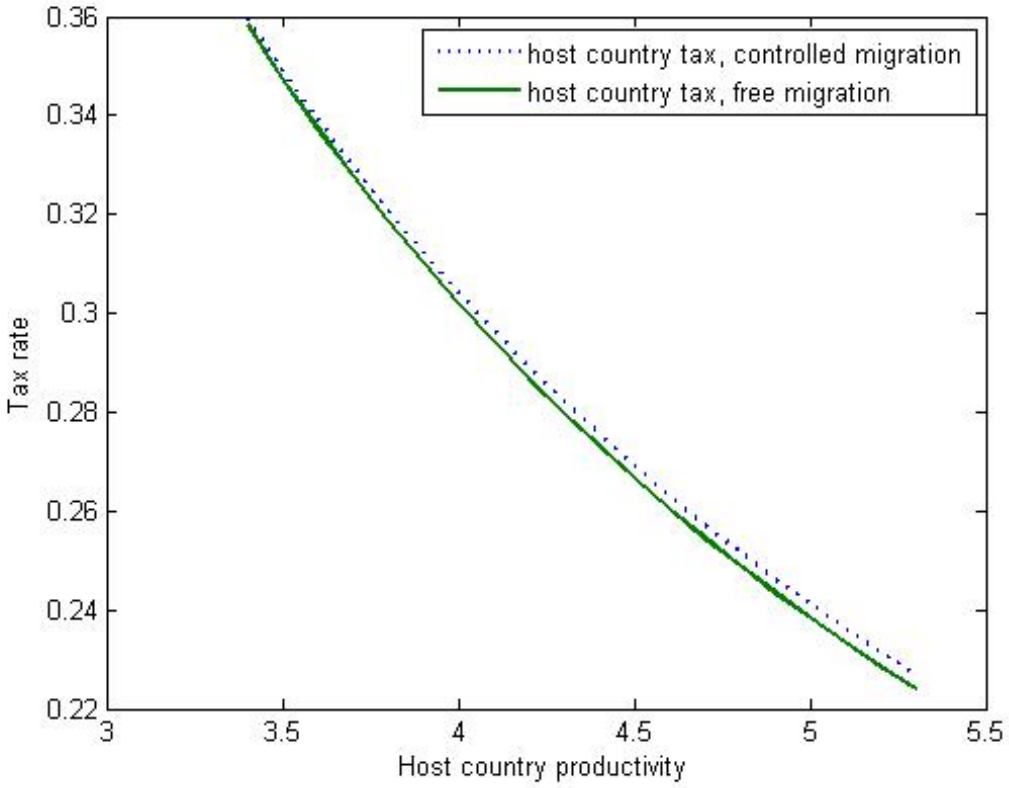

Figure 5: comparing the host-country tax rates under free and under controlled migration; Largest groups are the Skilled-Young

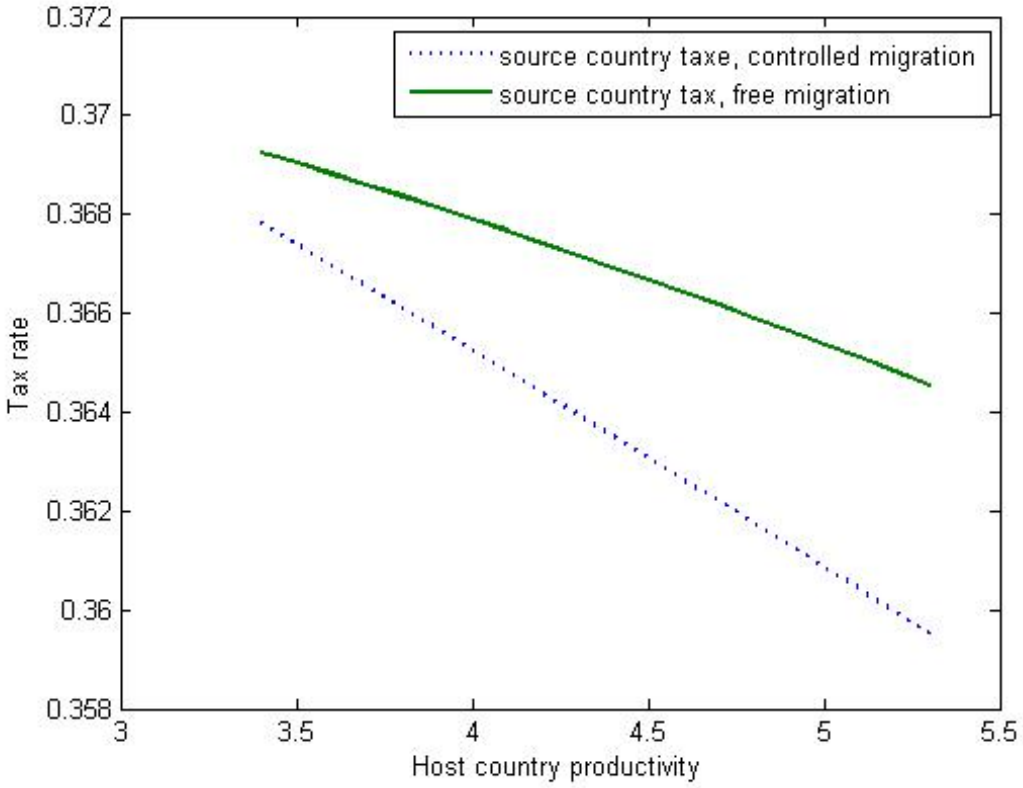

Figure 6: comparing the source-country tax rates under free and under controlled migration; Largest groups are the Skilled-Young

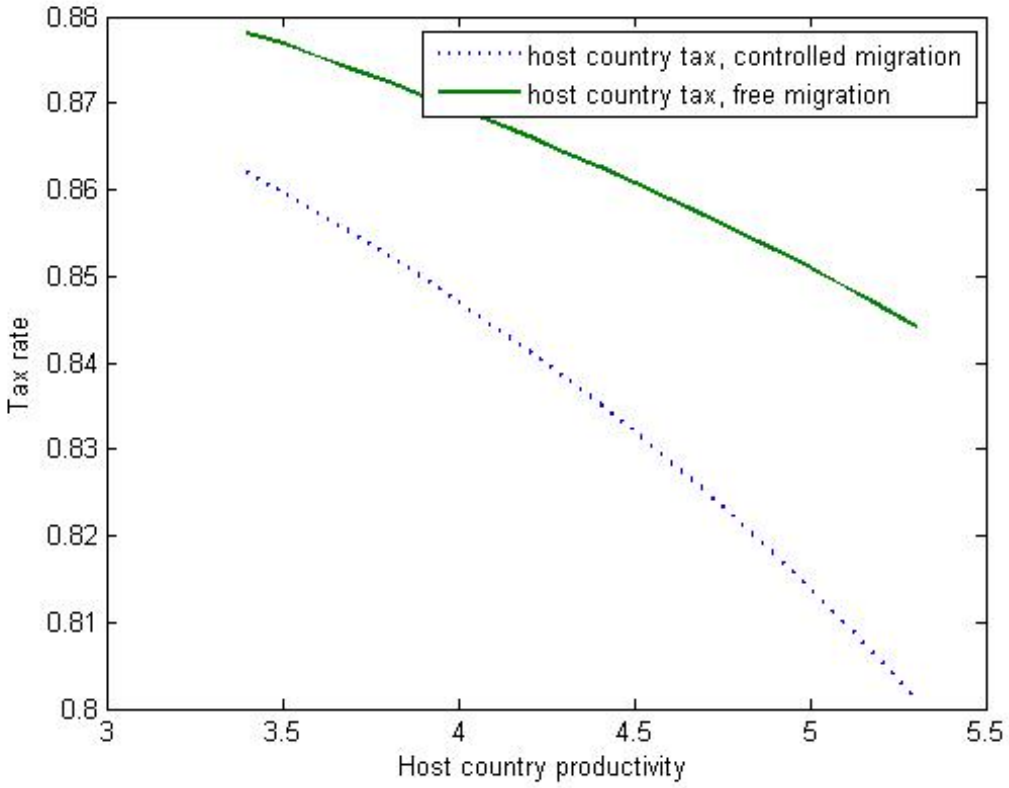

Figure 7: comparing the host-country tax rates under free and under controlled migration; Largest groups are the Unskilled-Young

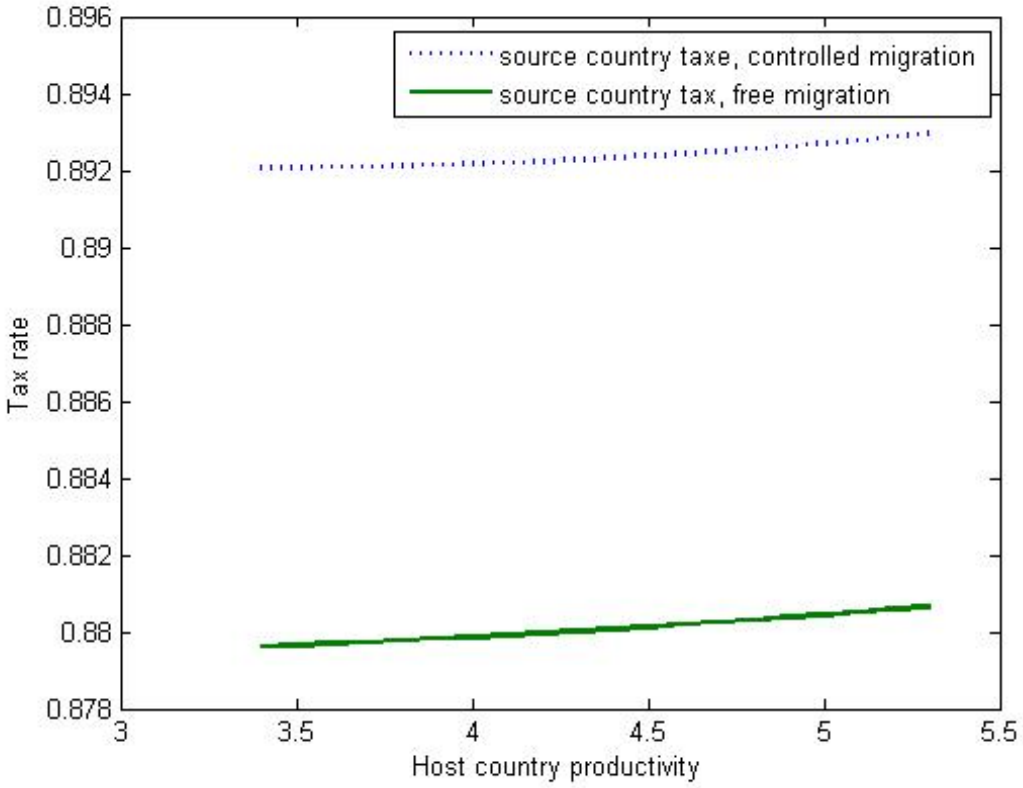

Figure 8: comparing the source-country tax rates under free and under controlled migration; Largest groups are the Unskilled-Young

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.

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