Fiscal and Migration Competition

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Abstract

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. 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. It models the host country stylistically as a core EU welfare state, with tax financed benefits and migration policies, and the migration source country as an accession country (following the EU enlargement to 27 states), with its own welfare (tax-benefit) policy. We let these two asymmetric countries (in terms of their productivity) engage in fiscal competition. Using numerical simulations we examine how the migration and tax policies are shaped, and how they are affected by whether the skilled or the unskilled are in power. As the driving force behind migration is a productivity gap, we also analyze the implications of the productivity gap for the design of migration and tax policies.

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1 Introduction

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 the host country who receives the immigrants stylistically as a core EU welfare state, with tax financed benefits and immigration policies, and the source country as an accession EU country (following the EU enlargement to 27 states), with its own welfare (tax-benefit) policy. The two countries are except the Total factor productivity in the host country is asumed to be higher that that of the source country, wich takes into account the possibility of emigration [1]. We let these two countries engage in fiscal competition. The host country sets also an immigration policy, whereas the source country takes this policy into account when shaping its fiscal policy. Using numerical simulations we examine how the emmigration and tax policies are shaped, and how they are affected by whether the skilled or the unskilled are in power. As the driving force behind migration is a productivity gap, we also analyze the implications of the productivity gap for the design of immigration and tax policies.

Would the tax competition lead to a "race to the bottom"? In general, tax competition may lead to such a race due to three mutually reinforcing factors. First, in order to attract mobile factors or pervent 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 persumed to reduce the renumeration of the immobile factors, and, consequently, their tax payments [2]. However, in our model the mobile factor is labor of various skills. These factors consider not only their economic returns when making their migration deasision, but rather also the social benefits offered by the countries. This is the key element that nullifies the "race to the bottom hypothesis" in our model.

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 concludes.

[1] 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.

[2] For a general-equilibrium application to Europe without Race-to-the-bottom finding see Mendoza and Tesar (2005)

2 Some Evidence on the Fiscal Aspects of Migration

This section reviews some evidence on the fiscal apects of migration and on native born attitudes toward immigration.

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

[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.

educated than the native-born. For instance, the percentage of those 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 apear 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

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

[6] See also Mayda (2006)

out the skilled migrants, and produce essentially similar outcomes despite of their different legal characteristics.

3 The Analytical Framework

We now turn to the analysis of a political-economy theory of the way migration policiies and the generosity of the welfarte state are jointly determined by majority voting. This section presents a styllitic two-country model of migration and intra country redistribution policies. [7]

3.1 The Host Country

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

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

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

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

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

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

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

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

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

$$u_i = c_i - \frac{\varepsilon}{1+\varepsilon} l_i^{\frac{1+\varepsilon}{\varepsilon}} \tag{6}$$

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

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

Individual utility-maximization yields the following the labor supply equation

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

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

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

where $\delta \equiv \alpha^{\alpha}\left(1-\alpha\right)^{1-\alpha}$ 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

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

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

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

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

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:

$$L_s^* = (S^* - \sigma\mu) l_s^* \tag{12}$$

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

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

Total population in the source country is

$$N^* = 1 - \mu. \tag{13}$$

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:

$$\begin{aligned} w_s^*(\sigma, \mu; A^*, S^*) &= A^*(\alpha^* \delta^{*\epsilon} \theta^{*(1-\alpha)})^{\frac{1}{1+\epsilon^*}} \\ w_u^*(\sigma, \mu; A^*, S^*) &= A^*((1-\alpha^*)\delta^{*\epsilon} \theta^{*(-\alpha^*)})^{\frac{1}{1+\epsilon^*}} \\ \text{where } \delta^* &\equiv (\alpha^*)^{\alpha^*}(1-\alpha^A)^{1-\alpha^*} \\ \text{and } \quad \theta^* &\equiv \frac{1 - S^* - (1-\sigma)\mu}{S^* - \sigma\rho}. \end{aligned} \tag{14}$$

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

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

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

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

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

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

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

$$m_s = S^*\widehat{c}_s^*/\overline{c}^* \tag{18}$$

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

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

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

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

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

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

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

$$\sigma = m_s/(m_s + m_u). \tag{22}$$

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 Migration and Fiscal 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). Also, voters take into account that migration takes place according to the mechanism described in the preceding sub-section.

3.5 Fiscal Competition Model

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:

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

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

The per-capita benefit is given by:

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

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

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

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

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

The migration (incentive compatible) equations are[9]:

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

$$m_s = S\hat{c}_s^*/\bar{c}^* \tag{30}$$

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

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

Finally, the definitions of σ and μ are:

$$\mu = m_s + m_u \tag{33}$$

$$\sigma = \frac{m_s}{m_s+m_u} \tag{34}$$

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

3.6 Nash Equilibrium of 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

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

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

Subject to equations (9.13),(9.15),(9.19)-(9.24)
(II) The Source Country
$\text{Max}_{\{V_s,\tau^*,b^*\}}(V_s)$
Subject to equations (9.14) and (9.18)

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.

4 The Effect of Migration on Tax Policies: 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 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.

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.

Figures 3 and 4 describe the effect of 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 unskilled are in the majority (in both countries).

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 ans Sadka (2002a) and (2002b).

5 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 methhods 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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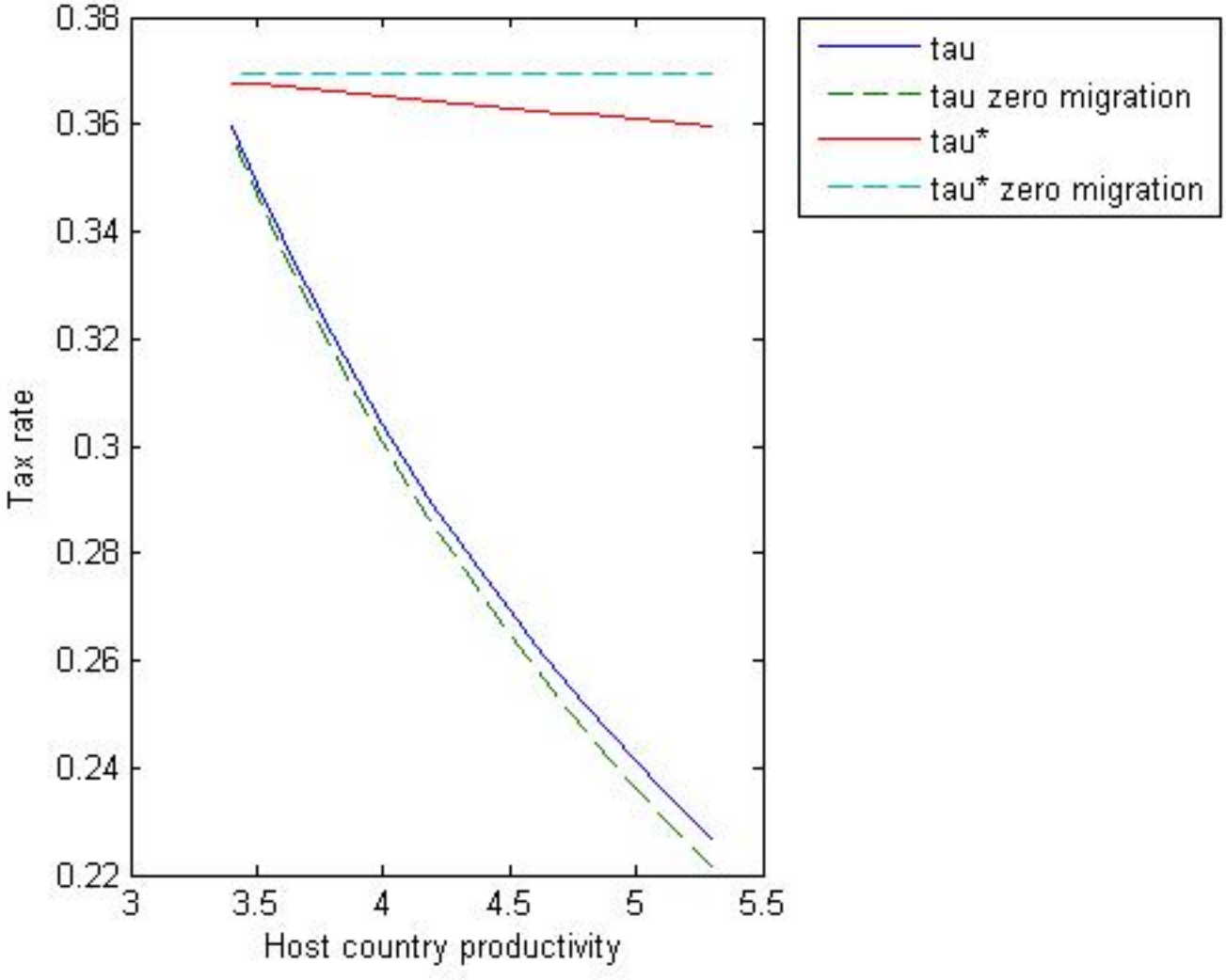
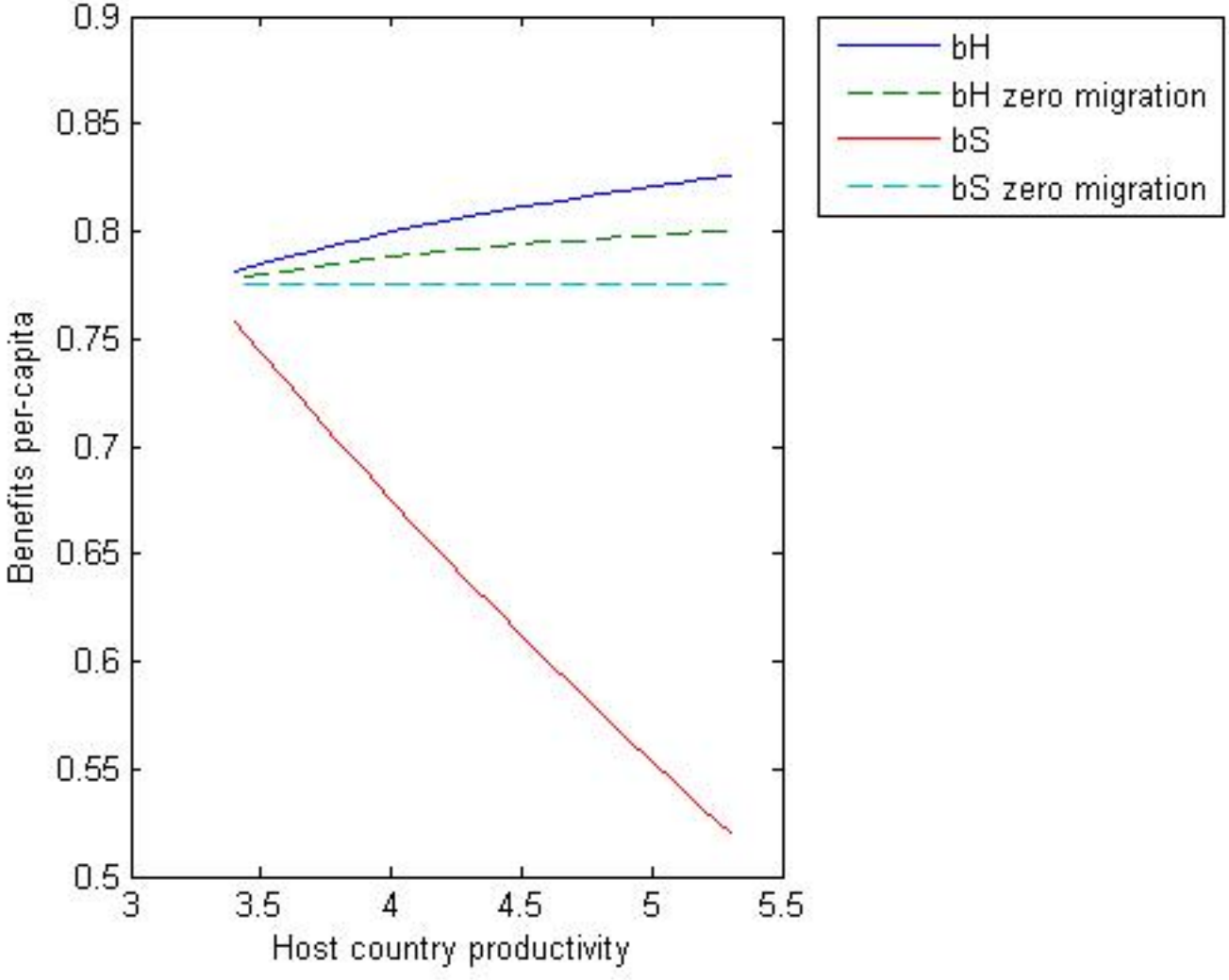
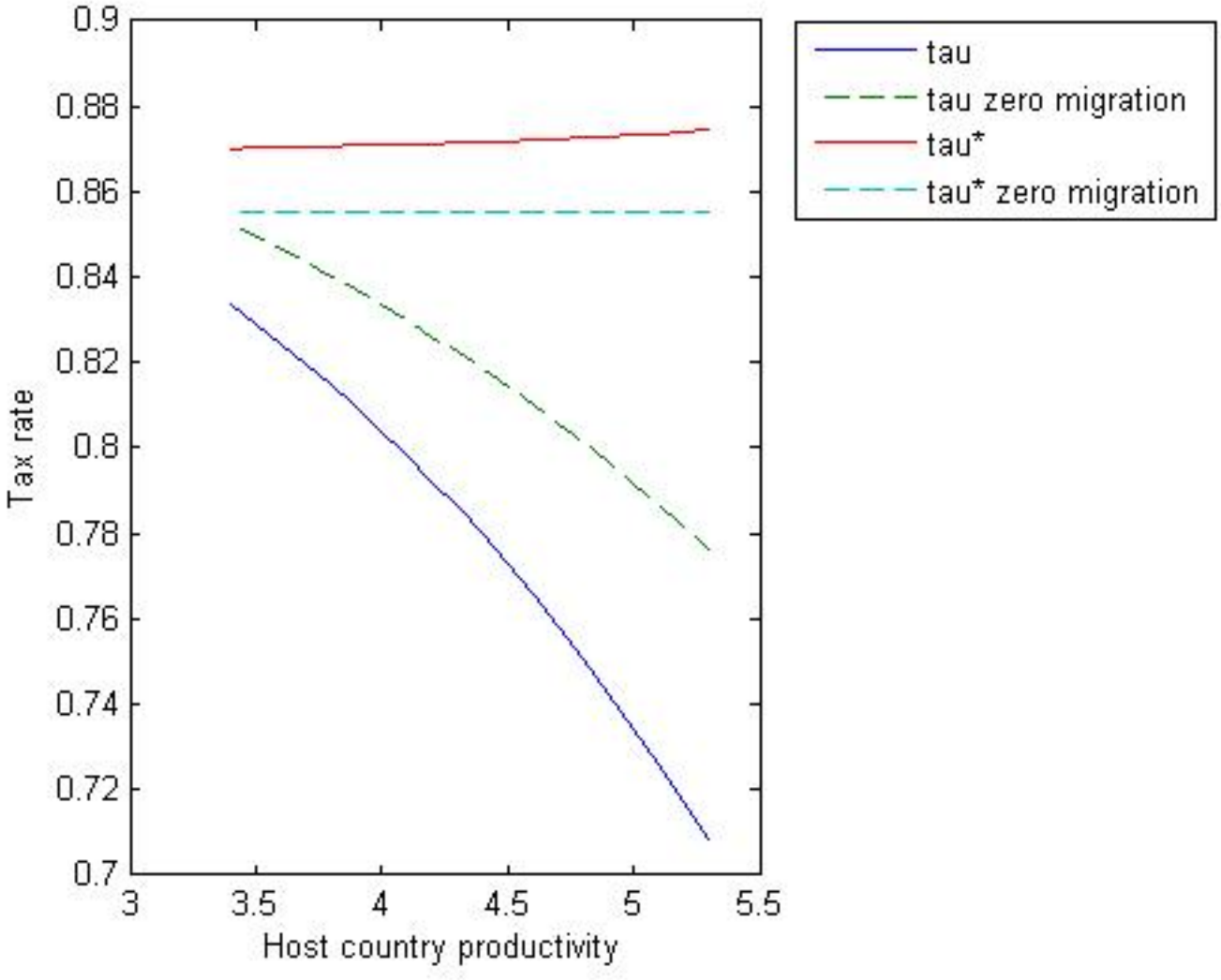
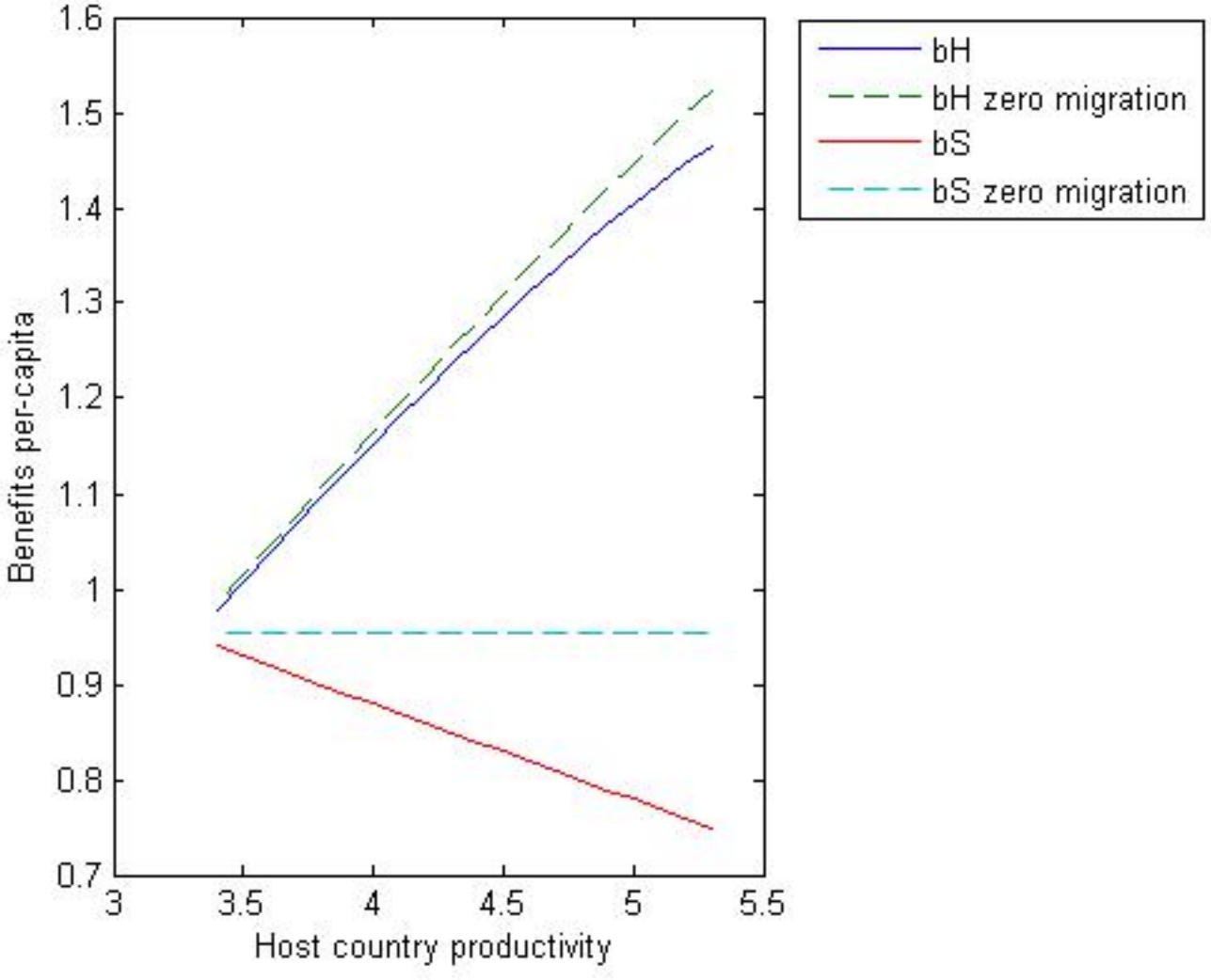

0.38
0.36
0.34
0.32
0.3
0.28
0.26
0.24
0.22
Tax rate
3
3.5
4
4.5
5
5.5
Host country productivity
tau
tau zero migration
tau*
tau* zero migration


0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
Benefits per-capita
3
3.5
4
4.5
5
5.5
Host country productivity
bH
bH zero migration
bS
bS zero migration


0.9
0.88
0.86
0.84
0.82
0.8
0.78
0.76
0.74
0.72
0.7
Tax rate
3
3.5
4
4.5
5
5.5
Host country productivity
tau
tau zero migration
tau*
tau* zero migration


bH
bH zero migration
bS
bS zero migration
Benefits per-capita
Host country productivity
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
3
3.5
4
4.5
5
5.5

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