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Essays on endogenous economic policy

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4. A Political Economic Analysis of Labor Migration and Redistribution[†]

1. Introduction

Migration is an important global issue. Its impact on the population composition is particularly visible in Europe where the sustained immigration, especially from Africa and Asia, has gradually replaced the shrinking and aging native population. As indicated by the EU Commission: "immigration is still the main element in the EU demographic growth and positive net migration is recorded in most Member States."[1] Moreover, after the completion of a common labor market, the recent Europen Union (EU) enlargements are likely to foster labor mobility also within the EU.[2] Some fear that cultural, religious and linguistic diversities may weaken community values and cause social tension leading to a reduced cooperation between natives and immigrants, more social stratification and less security. The extensive literature exploring, both theoretically and empirically, the economic impacts of immigration presents a varied view.[3]

[†] The content of this chapter appears partly in Mazza and van Winden (1996). Additional references to recent literature have been included mostly in sections 1 and 2.

[1] Commission of the European Communities (2007, p.3). At the beginning of 2006, the EU foreign residents coming from outside the EU-25 were about 18.5 million, namely 3.8% of the total population. In 2007, there were more than 2 million immigrants in the EU-27 (European Commission, 2007a). The top destination country was Spain. From 2000 to 2007, the growth of yearly immigration was particularly impressive in the Czech Republic (almost 1300 per cent), Italy (almost 1000 percent) Belgium (more than 400 percent) and, outside the EU, in Norway (about 400 per cent).

[2] Heinz and Warmedinger (2006) provide several estimates of the East-West migration flows that should follow the EU enlargement to 25 country members (i.e. excluding Romania and Bulgaria). Migration to Western Europe (EU-15) is forecasted to be in the range between 1.5 and 4.5 million within one or two decades after the full implementation of free circulation. These figures do not seem too impressive (immigration from the rest of the world to the EU-15 countries was of 1.75 million in 2003 alone), but it should be considered that a large portion of these migration inflows is expected to concentrate in Germany. See also Sinn *et al.* (2003).

[3] Among the issues raising more concerns among the public, attention has been devoted to: the effects of limiting immigration (Berry and Soligo 1989) or imposing skill or capital requirements to immigrants (Benhabib 1996; Fuest and Thum 2001) or allowing illegal immigration (Hillman and Weiss 1999; Myers and Papageorgiou 2000); the extension of welfare benefits to unemployed immigrants (Epstein and Hillman, 2003); the potential alleviation of the fiscal burden those countries suffering from aging population (Casarico

An important aspect of immigration concerns its redistributive effects that could put under pressure the welfare systems of the host countries.[4] According to economic theory labor mobility hinders redistributive policies (Oates 1972). Furthermore, it gives an incentive to fiscal competition, which may lead to inefficiencies due to fiscal externalities. This would provide a rationale for policy coordination or intervention from a higher government level (Brown and Oates 1987; Schwab and Oates 1991; Wellisch and Wildasin 1996; Wildasin 1991). However, these theoretical results are derived from analyses that neglect the political decision-making process. In the context of labor mobility this neglect is worrisome, because of the political relevance of changes in the demography of a jurisdiction. According to Goldin (1993), for example, the increasing share of foreigners in U.S. cities at the beginning of the previous century blocked the adoption of restrictive legislation concerning immigration, against the will of the rural population. In fact, the greater the share of foreign population the lower was the percentage of state representatives who voted against restrictions.

As we discuss in greater detail below, theoretical and empirical studies clearly suggest that the size of social groups is relevant for their political influence. This influence may be obtained via electoral channels, but also through participation in the exertion of political pressure by interest groups, such as unions. Considering the political effects of immigration, the latter option may be particularly important as full political rights are often not immediately granted to immigrants (an exception would be migration within a federation like the U.S.). But, even then the electoral impact may also play a role, as such rights may be obtainable within a politically relevant time-horizon;[5] think of naturalization, which in several countries can be obtained within a period ranging from few months to ten years, depending on the family ties and the country of origin.[6] Moreover, in case of the European Union, the restriction of political rights is thwarted by the formation of the single European market, to which the member states have committed themselves.[7] Therefore, we share Borjas

and Devillanova 2003); Roodenburg *et al.* 2004; Storesletten 2000). Mayda (2006) and O'Rourke and Sinnott (2006) provide insightful cross-country investigations of the economic and noneconomic determinants for individual preferences towards immigration. For a broader investigation of the economics of immigration see Bauer and Zimmermann (2002), Boeri *et al.* (2002), Layard *et al.* (1992), Siebert (1994).

[4] Wildasin (2004) points out that immigrants in Denmark, Germany and Sweden are recipient of over thirty percent of total cash, although they accounting for about ten percent of the population.

[5] Earnest (2003) presents a survey regarding non citizen voting rights across countries. A wide variety exists. Voting rights can be assigned to resident aliens of all nationalities or coming from specific countries. Some states also allow resident aliens to vote in national elections, whereas some others limit their voting to local elections. The picture is further complicated by the authority for states, regions or even towns within federations to decide about the voting rights of their alien residents. Overall, it is shown that there are twenty-two states, in Europe, Americas and Oceania, where resident aliens have at least some voting rights (in two more states constitutions allow their legislatures to enfranchise resident aliens).

[6] For example, in 2006, there were more than 51 thousand acquisitions of citizenship in Sweden, with a total population growth of about 65 thousand, and 29 thousand in the Netherlands, with a total population increase of 24 thousand. In Germany, population decreased by 123 thousand, but the new citizenships exceeded 124 thousand (Eurostat 2007b).

[7] The Treaty on EU states that every national of a member state is automatically citizen of the EU (art. 8). European citizenship provides, among others, the rights to move and reside freely within the EU and the right to vote and stand in local and European Parliamentary elections in the citizen's place of residence. Although voting rights for the European Parliament are guaranteed (see Council Directive 93/109), local

(1994, p.1693) point of view that «further research on the political economy of immigration policy might greatly improve our understanding of the properties of equilibrium in the immigration market».

Labor mobility raises a number of interesting issues from this perspective. For example, what are the consequences for redistribution policy if immigrant workers add to the political influence of labor (via or outside elections)? What difference does it make if immigration is stimulated by income differentials or occurs for other reasons? What is the attractiveness of using regulation - of immigration or political rights - as a policy instrument? And what about the attractiveness and feasibility of policy coordination when political decision making is explicitly taken into account?

In this essay we will try to throw some light on these issues with a simple two-country general equilibrium model, where the "foreign country" represents the relevant out-migration area for the domestic country that is focused upon. Policymakers in both countries face two social groups in the private sector, one endowed with (mobile) labor and another owning a fixed factor of production ("capital"). Since we focus on the political impact of migration, only labor is assumed to be mobile. For, unlike capital flows, migration changes the political constituency.[8] Redistribution affecting migration is considered the result of a policymaking process, and not motivated by altruism (as in Pauly 1973, Brown and Oates 1987, Wellisch and Wildasin 1996, Wildasin 1991).

In this study, redistribution policy is derived according to the maximization of a political welfare function, where the weights assigned to the groups of capital owners and workers depend on their size and homogeneity. Theoretical support to this political economic model is provided by the analysis of electoral competition with probabilistic voting (Coughlin 1992; Grossman and Helpman 1996; Lindbeck and Weibull 1987). Immigrants are assumed to affect the political weight of workers in two ways. On one hand, they increase the political relevance of the labor union, by increasing their size. This positive impact can be further reinforced by the assignment of voting rights to immigrants. On the other hand, because of cultural and social differences, immigrants may reduce the homogeneity of the trade union, reducing its political influence.

There is a small political economic literature investigating the influence of immigration on income distribution. Some studies rely on the median voter approach.[9] In Epple and Romer

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voting rights are not uniformly regulated yet. However the European Court «has the authority to rule an extension of the right to vote and stand for elective office in national elections if it can be demonstrated that lack of political rights is a barrier to movement» (Koslowski 1994, p. 381). See Heinz and Warmedinger (2006) for a summary of the policies towards immigrants from the EU-8 (Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Slovenia and Slovakia). Intra-EU mobility was rather limited in the 1990s as less than 4.4% of the population moved to another member state (European Commission 2001).

[8] Although it is convenient to assume that only labor is mobile across economies, it should also be noted that international capital mobility is a controversial issue. For example, Feldstein (1995) finds a very strong correlation between savings and investment in twenty-three OECD countries suggesting that «although there are large daily flows of capital around the world, when the dust settles most of the saving done in each country remains in that country» (p. 91). See also Feldstein and Horioka (1980). Wellisch and Wildasin (1996) and Razin and Sadka (1999) present a model where both capital and labor are mobile, but transfer policies are derived for exogenously specified level of immigration.

[9] These studies focus on the receiving country or jurisdiction. A different perspective is examined by Epstein *et al.* (1999) where losers in rent-seeking contests may be induced to leave their country.

(1991) local majorities choose a combination of tax and transfers, taking into account the impact that redistributive policies may have on immigration. Forward looking voters are also considered in Cremer and Pestieau (1998) investigating the comparative political support for different social insurance systems. Epstein and Hillman (2003) show that also national workers, in addition to capital owners, may vote in favor of transfers to unemployed immigrants when unemployment is due to efficiency wages and national workers have a priority in receiving the job offers. In this case immigration reduces real wage but can increase the probability of employment for a local worker. Thum (2004) suggests that the composition of government expenditure may be used by the median voter to inhibit immigration when regulation and discriminatory taxation are not viable. These studies differ from the analysis presented here, not only for their political economic model based on majority voting, but also because they assume that immigrants are not part of the constituency and then have no direct influence on policymaking.[10] In contrast, immigrants are assumed to receive voting rights in Razin et al. (2002). There, it is shown that immigration reduces redistribution because natives will realize that more transfers will go to low-skill immigrants. This effect is reversed only if immigrants add sufficiently to the pro-tax voters. Mayr (2007) extends their analysis by accounting for skilled migration and, similarly to our study, endogenous migration determined by income differentials.

A different theoretical approach considers immigration policy influenced by organized groups of workers and entrepreneurs that lobby, respectively, to restrict or ease immigration.[11] In Amegashie (2004), the lobbying contest (having the form of an all-pay-auction) determines the number of immigrants admitted and, subsequently, firm and union bargain over the wage of natives, while immigrants receive a reservation price. Epstein and Nitzan (2006b) investigate under which conditions the migration quota represents a compromise between the levels preferred by the lobbies and when, instead, a more extreme quota is selected by the policymaker. In Bellettini and Berti Ceroni (2008), only the entrepreneurs engage in lobbying to support immigration; then unionization is beneficial for the workers to contrast their political pressure.[12] As in the previous studies based on the median voter, also the latter disregard the direct impact of immigrants on the influence of the labor's union.

Similarly to our study, Lejour and Verbon (1994) and Kemnitz (2002, 2006) adopt an influence function model. In the first paper, mobility concerns workers with different unemployment risks and redistribution among workers is determined by the (given) political influence of different groups of labor modeled according to the influence function

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[10] Lorz and Nastassine (2007) consider the effect that migration may have on political participation. Considering a citizen-candidate model of decisionmaking, they suggest that mobility may reduce political participation of citizens, as they expect to relocate in another jurisdiction. Therefore, if immobile citizens are less educated and with higher preferences for welfare expenditure than mobile ones, it results that mobility increases welfare programs.

[11] Facchini *et al.* (2007) provide evidence that interest groups with opposite preferences for immigration have a statistically significant impact on its regulation: barriers to immigration tend to be lower in sector where business groups spend more for lobbying and higher in sectors where labor unions are more important in political terms.

[12] See also Fuest and Thum (2000) for an analysis of the impact of immigration on wage bargaining between labor unions and employers.

approach.[13] Kemnitz (2002) extends that analysis by allowing immigrants to enhance the political influence of workers, and Kemnitz (2006) shows that unemployment insurance to immigrants may serve as a commitment device helping the government to restrain wage claims by the labor union. Both studies, unlike this one, assume exogenous migration and overlook the political difficulties that cultural differences, between native and migrant workers, may cause.

Our analysis considers two types of migration: exogenous migration and endogenous migration, where only the latter is influenced by income redistribution policies. Even though endogenous migration is a significant phenomenon, migration motivated by other reasons than income differentials - such as political and social tensions or social cultural factors - can play an important role as well (Zimmermann 1994). In addition to income redistribution policy, attention will be also paid to the policy option of regulating migration. Moreover, as regards policy competition, we will consider the case where policymakers reckon with the impact of their own policy on foreign factor prices, as well as the situation where one of the countries is "small" (in the sense that its government takes foreign factor prices as given), or both countries are. The latter case is becoming increasingly important because, due to better information and diminishing traveling costs, migration is less and less restricted to neighboring countries or to countries with which special (like colonial) bonds exist (see Appleyard 1991).

Our results indicate that not only transfers to workers but also their income can increase with larger immigration. They also show that an increase in the labor force, which negatively affects the wage rate, may lead to a higher immigration level. These outcomes are in contrast with maintained hypotheses (see, e.g., Layard *et al.* 1992). Another striking result is that all social groups - at home and abroad - in small open polities may profit from policy competition, given that a specific condition regarding the nature of the political regimes in the countries is satisfied. This condition requires that the countries are different regarding their political bias towards labor and capital. The same condition appears to be incompatible with (redistribution) policy coordination under the constraint of free labor mobility. But, it is compatible with policy coordination concerning the regulation of migration, which improves political welfare in that case. This would suggest that a common labor market stands a better chance with countries that are political likes. Given the stylized model that we use to get tractable results, and the complexity of the issues involved, the reader should consider these results with caution. However, the illustration of the political economic impact of immigration and the intuition provided make the analysis an interesting exploration, in our view.

The chapter is organized as follows. Section 2 presents the basic model and analyzes the impact of exogenous and endogenous migration, assuming that policymakers take the level of migration as given. The next two sections study what happens if policymakers take into account the effect of their policies on migration. Section 3 considers the policy option of regulation, whereas section 4 goes into the effects of policy competition, using tax-transfer policies, and the feasibility of policy coordination (concerning tax-transfer policies and regulation). Section 5 closes with some concluding remarks and policy implications.

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[13] As will be shown below, the way the policies of jurisdictions are modeled in Lejour and Verbon (1994) and Wildasin (1991) can be interpreted as a special case of our model.

2. The Model with Exogenous and Endogenous Migration

After the presentation of the two-country model, this section analyzes the general equilibrium solutions in case of exogenous migration (subsection 2.1.) and endogenous migration (subsection 2.2.). We will initially assume that in each country the level of migration is taken as given. This case is relevant when the domestic policymakers are not well informed about the foreign economy or about the (partly psychological) mobility costs of potential immigrants. In addition, it provides a useful benchmark for our analysis in section 4, where we study the consequences of the alternative assumption that policymakers take into account the impact of redistribution on immigration.

For expositional reasons, we shall focus on the domestic country; variables related to the foreign country will be denoted by an asterisk (*). There are two social groups: W internationally mobile workers (group w), each supplying one unit of labor, and K individuals - called capitalists - owning one unit of a fixed production factor (group k). A non-traded consumption good, X, is produced under a Cobb-Douglas technology, with the fixed factor and labor as inputs. Individuals have identical utility functions that are logarithmic in income. Income consists of the sum of the respective factor return (p_k, p_w) and a lump-sum government transfer (s_k, s_w) (cf. Brown and Oates 1987; Wellisch and Wildasin 1996; Wildasin 1991). Transfers are endogenously determined through a (balanced budget) political redistribution process. The main reason for the production and utility functions that we use is to get tractable results (see, e.g.: Casarico and Devillanova 2003; Bellettini and Berti Ceroni 2008; Epple and Romer 1991; Kemnitz 2002, 2006; Perotti 2001). However, it is noticed that empirical support for the former is presented in Berndt (1976), and for the latter in van Herwaarden and Kapteyn (1981). We will also discuss how results presented in this section would be affected by employing more general specifications.

The following relations summarize the model of the private sector. Production is determined by

$$x = l^{\alpha} \quad with \ x = X/K, \quad l = (W+I)/K \quad and \quad 0<\alpha<1 \qquad (4.1)$$

where *I* indicates the number of immigrants (leaving W^*-*I* as labor input in the foreign country). For simplicity, we assume a perfectly competitive labor market, and the same productivity level for immigrants and domestic workers (as in Bond and Chen 1987, Kemnitz 2002). In this context, it is noted first that our results would not change in a qualitative sense if a fixed productivity differential is assumed. Secondly, there is empirical evidence that immigrants and native workers are indeed substitutes (see, e.g., Borjas 1994; Greenwood and Hunt 1995; Grossman 1982)[14], although the former may be complementary to white-collar

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[14] However, also in this case, the effect of immigrants on native wages is rather low. One explanation is that immigrants could cause an increase in local demand which positively affects employment and wages (Greenwood and Hunt 1995). Borjas (1994, 1995) suggests that the weak correlation between immigration and native labor wages may not indicate a low substitubility but just that local labor markets are not closed, so that immigration induces natives to emigrate. An additional explanation could be that the negative impact of immigration on wage is accommodated by an increase in the exports of intensive productions (see Boeri *et al.*

workers.[15] The explicit incorporation of complementary labor into our model would clearly complicate the analysis, whereas the results presented in this section would basically remain the same. The reason is that these workers would partly share the interest of the other workers, and partly the interests of capital. The former is due to the effect of immigration on the political influence of labor (see below), and the latter to its factor price effect.

The utility function for a member of social group j is given by

$$u_j = ln\ y_j \qquad j = k,\ w \qquad (4.2)$$

where y_j denotes disposable income, which is fully consumed. Furthermore,

$$y_j = p_j + s_j \qquad j = k,\ w \qquad (4.3)$$

Assuming that workers are paid their marginal product[16], and using the consumption good as numéraire, one obtains for the factor returns

$$p_w = \alpha[K/(W+I)]^{1-\alpha} \quad and \quad p_k = (1-\alpha)[(W+I)/K]^{\alpha} \qquad (4.4)$$

Because of their lump-sum character, factor prices are not affected by the government transfers. The redistribution of income between the two social groups comprises the only government activity that will be focused upon at this stage. The choice of the size of the transfers s_k and s_w is assumed to be in accordance with the maximization of a weighted combination of the interests of workers and capitalists, where the weights reflect the relative influence of the two groups. Formally, transfers are determined by the following program:

$$max\ P = \Theta u_w + (1-\Theta)u_k \qquad (4.5)$$
$$s_k, s_w$$
$$s.t.$$
$$s_w(W+I) + s_k K = 0$$

where Θ is the political influence weight of workers. Theoretical as well as empirical arguments support this assumption. Theoretically, Coughlin *et al.* (1990) have shown that expected vote (plurality) maximizing politicians, who are uncertain about the (idiosyncratic) party bias of voters, will maximize a weighted sum of the utility functions of the representative individuals of the social groups to which these voters belong, as in (4.5). In

2002).

[15] See De New and Zimmermann (1994) and Gang and Rivera-Batiz (1994). Ottaviano and Peri (2005) suggest that nationals and foreign born workers with the same education are imperfect substitutes in the U.S market. Roemer (2006) provides a theoretical analysis of (low-skilled) labor immigration into a market with high and low skilled workers. In Hillman and Weiss (1999) and Verbon and Meijdam (2008) unskilled immigrants represent a sector-specific factor of production.

[16] In our analysis we allow for discrimination against immigrants through regulation (see section 3), but abstract from plain wage discrimination in the labor market. The latter type of discrimination would leave an extra rent with capital owners, making immigration more attractive to them, while the attractiveness of the domestic country for potential immigrants would diminish.

their model the political influence weights are endogenously determined by the numerical strength and the homogeneity of the social groups[17]. Empirically, several studies have indicated the usefulness of the so-called interest function approach for the explanation of government policies, which also entails a specification like (4.5). These studies show a significant political impact of the relative size of social groups that are actively involved in the production process, used as a proxy for the influence weight (see, e.g., Renaud 1989; van Velthoven 1989)[18]. The concern about higher birth-rates among immigrant groups, that time and again pops up in political discussions on immigration, is also suggestive in this respect[19].

For the study of labor migration these results are of obvious importance. First of all, as mentioned in the Introduction, immigrants may change the size and composition of the electorate immediately, or they may do so within a politically relevant time period. Secondly, even without voting rights, immigrants increase the size of social groups, including ones that are organized (Zimmermann 1994). In the Netherlands, for example, trade unions have been interested in the integration of immigrants in order to avoid competition from irregular labor (Molle and Zandvliet 1994). Therefore, in addition to the case where the political influence weights Θ and $1-\Theta$ are fixed as in Lejour and Verbon (1994), it is interesting to consider the consequences of those weights being affected by immigration. In the latter case we will allow for a negative impact of limited voting rights and loss of group homogeneity (e.g., due to cultural differences between immigrants and native workers (cf. Layard *et al.* 1992, ch. 3). More specifically, we assume that

$$\Theta^n = \Theta_w/(\Theta_w+\Theta_k) \quad \text{with} \quad \Theta_w = \gamma(W+I), \; \Theta_k = \tau K, \; \gamma = \mu W/(W+\varphi I), \; \gamma,\tau>0, \; \varphi\geq0$$

$$\text{thus,} \quad \Theta^n = \mu W(W+I)/[\mu W(W+I)+\tau K(W+\varphi I)] \tag{4.6}$$

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[17] It is worth emphasizing that it is the self-interest (re-election) -and not a normative criterion of "social welfare" - that leads politicians to use their discretionary power in this way. Furthermore, we note that if the more general utility function $u_j=y_j^{1-\varepsilon}/(1-\varepsilon)$ is employed, the specification of P in (4.5) - with lny_j substituted for u_j - can be derived again from an electoral competition model with probabilistic voting, where the weights reflect the numerical strengths of the groups (see Coughlin and Nitzan 1981).

[18] The interest function approach focuses on the relationship between government decision making and the interests of the representative individuals of social groups (which are used as focal points in the political sphere). Policymakers are assumed to further their own interests but are constrained by the existing economic and political institutional structure (democratic elections, for instance), on the one hand, and by the reactions of other (groups of) individuals, such as represented by political parties, voters and pressure groups, on the other hand. These reactions force policymakers to take the interests of other social groups into account. As argued by van Winden (1983), the outcome of these different games concerning government policies can be fruitfully approximated by the maximization of a so-called complex interest function, which is a weighted representation of the interests of the representative individuals of the different social groups, where the weights reflect their relative political influence [as in (4.5)]. Apart from a different (non-normative) interpretation of these weights, there are other reasons for not labeling this a social welfare function (see section 3).

[19] Examining data for 130 countries, Kimenyi *et al.* (1988) find a positive correlation between population heterogeneity and fertility rates, *ceteris paribus*. They interpret this result as support for the hypothesis that the size of interest groups affects political decisions: groups would increase their membership in order to get larger transfers. Potters and Sloof (1996), after reviewing the empirical literature on the influence of interest groups, conclude that an increase in the size of organized groups typically goes along with greater political influence and that most studies dealing with unorganized groups show the same effect (Potters and Sloof 1995).

where the superscript *n* refers to the endogeneity of the political influence weights.

The proportionality factors *γ* and *τ* scale the political influence per group member as an implicit function of group characteristics (homogeneity, for example). Hence, these "equivalence factors" indicate the specific ability of a social group to transform its numerical strength into political influence. To account for the fact that immigrants may not improve the political influence of labor as much as native workers would do, the impact of immigration on the influence of workers is represented by the parameter *φ* in the equivalence factor for this group. In the extreme case that *φ=0*, immigrants just add to the numerical strength of workers: there are no social integration problems and immigrants have full political rights. When *φ=1*, the political influence weight of workers is, on balance, not affected by immigration. This case would represent the situation where lack of political rights and loss of homogeneity among workers or cohesion in the labor union exactly offsets the increase in numerical strength. Beyond this point (*φ>1*) the balance would even become negative, resulting in a loss of political influence. If *1>φ>0*, immigration only partially translates into an increase in the political influence of workers. This is probably the most frequent case, because the integration of immigrants in interest groups (like unions) takes time, and most of them do not acquire political rights on entry, but may do so in a politically relevant period of time.

With exogenous political influence weights (*Θ*), the solution of (4.5), using (4.2) and (4.3), gives:

$$s_w = \{\Theta[p_k K + p_w(W+I)] - p_w(W+I)\}/(W+I)$$

$$s_k = \{(1-\Theta)[p_k K + p_w(W+I)] - p_k K\}/K \qquad (4.7)$$

With endogenous weights, using (4.6), one obtains:

$$s_w^n = (\gamma p_k - \tau p_w) K / [\gamma(W+I) + \tau K], \quad s_k^n = (\tau p_w - \gamma p_k)(W+I)/[\gamma(W+I) + \tau K] \qquad (4.8)$$

where the superscript *n* is employed, as in the sequel, to indicate the use of endogenous political influence weights.

Eqs. (4.7) show that, with exogenous influence weights, total transfers to a social group equal the differential between the influence determined fraction of national income that is allocated to the group (the first term) and its factor income (the second term). In case of endogenous weights (4.8) the differential between the equivalence factor weighted factor prices becomes crucial. The reason is the relationship between political influence and numerical strength in this case. This is easily understood by assuming identical equivalence factors (*τ=γ*). Then the complex interest function *P* of the government becomes *formally* equivalent to a utilitarian social welfare function, causing the transfers to be chosen such that disposable income is equalized ($y_k = p_k + s_k = y_w = p_w + s_w$). Through redistribution, the difference in gross (factor) income is evened out in that case. However, if the social groups start with equal equivalence factors (*τ=γ*) at *I=0*, then as long as *φ>0* immigration will improve the relative political influence of the capitalists and lead to $y_k > y_w$.

Note, furthermore, that the transfers to a group are increasing with the productivity and relative size of the group providing them, and with the equivalence factor (or the exogenous

influence weight) of the receiving group. Finally, as the factor prices are independent of the (lump-sum) government transfers, given the immigration level, it makes no difference here whether the government is assumed to behave as a Stackelberg leader or as a Nash player vis-à-vis the private sector; this changes in section 4, where policymakers are assumed to take the impact of redistribution on immigration into account.

2.1. General Equilibrium with Exogenous Migration

In this subsection we analyze the case where migration is not induced by income differentials but by events abroad (such as political conflict, racial discrimination, or a natural catastrophe). For expositional reasons, we present and discuss the equilibrium outcomes only for the domestic country. Substituting (4.4) into (4.7) and (4.8) one obtains the general equilibrium solution for the transfers, given the immigration level:

$$s_w^{(n)} = (\Theta^{(n)}-\alpha)[K/(W+I)]^{1-\alpha}, \quad s_k^{(n)} = -(\Theta^{(n)}-\alpha)[(W+I)/K]^{\alpha} \qquad (4.9)$$

where Θ^n is determined by (4.6). Note that (4.9) can be rewritten as $s_w^{(n)} = [(\Theta^{(n)}-\alpha)/\alpha]p_w$ and $s_k^{(n)}=[-(\Theta^{(n)}-\alpha)/(1-\alpha)]p_k$. These equations show the importance of the differential between the political influence weight, $\Theta^{(n)}$, and the (labor) factor share parameter, α. This differential, $\Theta^{(n)}-\alpha$, can be interpreted as the *political bias* in favor of (or, if negative, against) labor. In case of a pro-labor bias ($\Theta^{(n)}>\alpha$) income will be redistributed from capital to labor, and the other way round in case of a pro-capital bias ($\Theta^{(n)}<\alpha$). From a comparative perspective, the Scandinavian countries or the Netherlands would seem to represent clear examples of pro-labor countries, in contrast with the U.S. or the U.K., for instance.

The impact of immigration (I) on transfers depends crucially on the exogeneity or endogeneity of the political influence weights. With fixed influence weights it is easy to see that $\partial s_w/\partial I \lesseqgtr 0$ and $\partial s_k/\partial I \lesseqgtr 0$ iff $\Theta \gtreqless \alpha$ (and, thus, $s_w \gtreqless 0$ and $s_k \lesseqgtr 0$). The transfers to workers and capitalists are affected in the same direction in that case, with the direction depending on the political bias. For example, with pro-labor redistribution, immigration leads to smaller transfers to workers and higher taxes to capital owners (see Razin *et al.* 2002). However, in case of endogenous influence weights the general equilibrium effects are:

$$s_w^n/\partial I \lesseqgtr 0 \text{ iff } [(1-\varphi)\Theta^n(1-\Theta^n)]/[1+\varphi(I/W)] \lesseqgtr (1-\alpha)(\Theta^n-\alpha) \qquad (4.10)$$

and

$$\partial s_k^n/\partial I \lesseqgtr 0 \text{ iff } [(1-\varphi)\Theta^n(1-\Theta^n)]/[1+\varphi(I/W)] \gtreqless \alpha(\alpha-\Theta^n)$$

Though $\Theta^n>\alpha$ implies again that $\partial s_k^n/\partial I<0$ (assuming $\varphi<1$), now $\partial s_w^n/\partial I<0$ only holds if Θ^n is sufficiently larger than α. Similarly, $\Theta^n<\alpha$ implies again that $\partial s_w^n/\partial I>0$, but now $\partial s_k^n/\partial I>0$ only holds for Θ^n sufficiently smaller than α. Both effects are due to the diminishing marginal effect of the numerical strength of a group on its political influence. Because $\partial s_w^n/\partial I>0$ may hold if $\Theta^n \geq \alpha$, the following interesting result is obtained.

RESULT 1. *Under exogenous immigration and fixed influence weights an increase in the transfers to workers is only possible with negative transfers to this group. In case of*

endogenous weights, this type of immigration may actually increase an already positive transfers to workers if the fiscal system is "mildly" redistributive (Θ^n larger than but sufficiently close to α). Moreover, in that case a switch from negative to positive transfers becomes possible, with sufficiently large immigration (through the impact of I on Θ^n).

It also follows that countries with strong pro-labor redistribution policies are particularly likely to experience decreasing transfers to labor under exogenous immigration. So far, we focused on transfers. We will now discuss the impact of immigration on welfare (disposable income). Using (4.3), (4.4) and (4.9), one obtains for the level of disposable income:

$$^{(n)} = \Theta^{(n)}[K/(W+I)]^{1-\alpha}, \quad y_k^{(n)} = (1-\Theta^{(n)})[(W+I)/K]^{\alpha} \tag{4.11}$$

which implies that $y_w^{(n)}=\Theta^{(n)}X/L$ and $y_k^{(n)} = (1-\Theta^{(n)})X/K$. The conventional wisdom holds that capital gains and labor loses when immigrants are substitutes for native workers, as is assumed here (see Layard *et al.* 1992, ch. 3; Simon 1989, ch. 7)][20]. This is indeed what we obtain when we neglect - as is common in the literature - the endogeneity of redistribution policy by taking the political influence weights as fixed. In case of endogenous weights it follows that

$$\partial y_w^n /\partial I \lesseqgtr 0 \Leftrightarrow [(1-\Theta^n)(1-\varphi)]/[1+\varphi(I/W)] \lesseqgtr (1-\alpha) \tag{4.12}$$

and

$$\partial y_k^n /\partial I \lesseqgtr 0 \Leftrightarrow [\Theta^n(1-\varphi)]/[1+\varphi(I/W)] \gtreqless \alpha$$

These inequalities show that the conditions under which immigration will be favored by profit *and* wage earners depend on the direction of redistribution, indicated by the sign of the political bias Θ^n-α, and on the effect of immigrants on the political influence of workers, indicated by φ. Immigration reduces the factor price of labor and - for given political influence - the transfer it gets or the tax it pays. On the other hand, immigrants increase the political influence of workers at a rate which decreases with φ until, at $\varphi>1$, the effect becomes negative. For capital, the effects are opposite. It turns out that the political influence effect is too weak to upset the effects of immigration on the factor price and the tax or transfer, if the latter two effects point in the same direction. This happens to labor when $\Theta^n>\alpha$ (both effects are negative) and to capital when $\Theta^n<\alpha$ (both effects are positive). However, if $\Theta^n<\alpha$ an increase in immigration lowers the tax paid by labor. In that case the negative effect on the wage rate can be overcome by a sufficiently strong positive effect on

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[20] Of course, on balance native workers and capitalists *as a group* may gain from immigration (cf. Borjas 1995; Simon 1989, ch. 7). It is straightforward to show this result with no redistribution and a linearly homogeneous production function. With redistribution, but fixed influence weights, the same result follows if there is a pro-capital bias ($\Theta<\alpha$). In this paper the focus is quite different, however. As indicated below the increase in the political influence of labor due to immigration may cause an income redistribution which would over-compensate the *workers* for the wage decrease leaving them *and* the *capitalists* better off than without immigration. In addition to the political influence effect examined here, immigration may improve the welfare of natives in other ways; for example, through increases in productivity (Simon 1989), production complementarities (Borjas 1995), incentives to domestic and foreign investments (Greenwood and McDowell 1986), and an increase of local demand (Greenwood and Hunt 1995).

the political influence of labor (that is, φ sufficiently small), resulting in an increase of the income of workers. Similarly, if $\Theta^n > \alpha$ the joint increase in the tax paid by capital and the political influence of labor will dominate the positive effect on the factor price of capital if φ is sufficiently small.

RESULT 2. With fixed influence weights workers lose and capitalists benefit from immigration. With endogenous influence weights, immigration increases (decreases) the disposable income of both workers and capitalists when redistribution is pro-capital (labor), and φ is sufficiently small[21].

This result suggests that immigration is likely to hurt the welfare of both groups in countries characterized by pro-labor redistribution policies and ease of political integration for immigrants. In section 3 we shall examine to what extent the regulation of political rights or immigration becomes an attractive option. Here, we only notice that the outcome that immigration may benefit all groups in case of countries with a more pro-capital political bias seems consistent with the historical openness of the U.S. towards immigrants.

Table 1 in the Appendix summarizes the comparative statics results for changes in the political influence parameters and the immigration level.[22] The effects of the influence parameters μ and τ, which have not been discussed so far, are all straightforward.

2.2. General Equilibrium with Endogenous Migration

We will now focus on that part of immigration that is not exogenous but induced by a difference in the disposable income levels for workers in the two countries. We maintain the assumption that policymakers take the level of immigration as given (the exogenous part can be taken account of via W). The decision to migrate or not will be determined by the income differential taking account of mobility costs (cf. Stiglitz 1977).[23] Immigration will be induced as long as $y_w > (1+d)y_w^*$, where it is assumed that mobility cost (dy_w^*) increases with income. This assumption seems a reasonable first approximation since migration costs depend on time costs (see Borjas and Trejo 1993) and rich people typically have to move or sell more

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[21] More specifically, it is required that $\varphi < (\alpha-\Theta^n)/[(1-\Theta^n)+(1-\alpha)(I/W)]$ if $\alpha > \Theta^n$ (pro-capital redistribution), and $\varphi < (\Theta^n-\alpha)/[\Theta^n+\alpha(I/W)]$ if $\Theta^n > \alpha$ (pro-labor redistribution).

[22] It is noted that «virtually all of the formal theoretical work on the effects of immigration assumes constant returns to scale» (Greenwood and McDowell 1986, p. 1750). The use of a more general (CES) production function of the form $X=[\alpha L^\rho+(1-\alpha)K^\rho]^{1/\rho}$ produces similar qualitative results. For labor variables (income and transfer) the results are the same both with exogenous and endogenous weights when $\varphi=0$ or $\varphi>1$ $(\rho<1)$. Only for the transfer, the impact of I is somewhat different when weights are exogenous, or endogenous for $\varphi>1$, and $\rho<0$ as now immigration may have a positive effect on s_w even if this is positive. This is due to the fact that, whereas the political bias - which again determines the size of the transfer - still equals the difference between the political influence of workers ($\Theta^{(n)}$) and the factor share of labor, this share is now dependent on I [more specifically, this share equals $\alpha(X/L)^{-\rho}$]. If the substitution elasticity is sufficiently small (that is, ρ is sufficiently negative) the increase in the political bias more than compensates the negative effect of I on X/L [cf.(4.9)].

[23] Although there is substantial empirical evidence supporting this assumption, it should be noted that there are also other determinants of migration, like the supply of public amenities (cf. Treyz *et al.* 1993). We will return to this issue in section 5.

assets than poor people, when they emigrate[24]. Then, the following condition is necessary and sufficient for the equilibrium outcomes in the previous section to represent a general equilibrium solution for the two countries with endogenous migration:

$$y_w = (1+d)y_w^* \qquad\qquad (4.13)$$

When influence weights are fixed, we obtain the following equilibrium level of endogenous immigration:

$$I_e = (W^*-WF)/(1+F) \qquad\qquad (4.14)$$

where $F \equiv (K^*/K)[(1+d)\Theta^*/\Theta]^{1/(1-\alpha)}$. Immigration increases if the political influence of workers or the marginal productivity of labor increases relative to the foreign country (that is, Θ/Θ^*, K/K^*, or W^*/W increases), or when the mobility costs (d) become smaller. Consequently, if the domestic country also faces some *exogenous* migration from the foreign country - which can be represented by a decrease in W^*/W - this will have a negative effect on the level of *endogenous* migration from that country. An increasing number of asylum seekers from the foreign country, for example, would reduce immigration caused by income differentials. The general equilibrium outcomes for the other variables (p_j and s_j, $j=w, k$) are obtained by substituting I_e into equations (4.4) and (4.9). The impact of the immigration level on these variables has been discussed already in the previous section (see Table 1 of the Appendix).

We now turn to the case of endogenous political influence weights (Θ^n). In this case the equilibrium immigration level is implicitly determined by the expression for I_e in (4.14), where the influence weights are now a function of I. In order to obtain some further insight, the mobility cost factor ($1+d$) is non-linearized here in the following way[25]:

$$(1+d) = \delta(L/L^*)^\alpha = \delta[(W+I)/(W^*-I)]^\alpha \qquad\qquad (4.15)$$

where the value of the scaling factor δ is assumed to be such that $(1+d)\geq 1$ at $I=0$. Thus, when $I=0$, mobility costs are allowed to be the same as in the fixed proportional case above, but these costs increase now with the level of migration[26].

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[24] Faini and Venturini (1993) find an inverse-U pattern for the propensity to migrate as a function of income. For low income levels, income growth increases migration because it relaxes financial constraints, but the effect is reversed for sufficiently high income levels. For example, estimations for Spain and Italy show that income growth has a negative impact on migration.

[25] With endogenous influence weights, the sign of the comparative-static effects on the immigration level cannot be determined explicitly from eq. (4.13). A crucial factor here is the direction of the political bias $\Theta^{n(*)}-\alpha$. In the sequel we will focus again on linear mobility costs.

[26] On the one hand, one could think of the cost increasing impact of distance (first closest move, then those further away; see Greenwood 1975) and of a growing "xenophobia". On the other hand, there could be a negative (cost decreasing) counter-effect of a growing community of fellow-immigrants. Furthermore, the positive effect of W (and the negative effect of W^*) could be related to congestion. The main effect of this non-linear cost function is to curb immigration in comparison with the proportional case (4.13). From a comparative-static point of view the effects are similar. This is shown by the equilibrium immigration level under fixed influence weights, which is as in (4.14), except that now $F=\delta(\Theta^*/\Theta)(K^*/K)^{(1-\alpha)}$. The sign of the impact of $W^{(*)}$, $K^{(*)}$, $\Theta^{(*)}$, and the exogenous cost factor, remains unaffected. In case of endogenous influence weights we obtain,

The comparative-statics effects appear to be similar to the ones obtained with fixed influence weights, except that the impact of capital and (host country) labor endowments are now ambiguous. The ambiguity of the endowment effects is due to the fact that the impact on disposable income hinges on the sign of $\Theta^{n(*)}-\alpha$, which is caused by the interplay of the effects on marginal productivity and political influence. Table 2 of the Appendix summarizes the comparative-statics effects of the influence and mobility cost parameters. We will focus here on the consequences of an increase in the political influence of workers through immigration (a decrease of φ), and the effects of a decrease in mobility costs (a decrease of d or δ). Not surprisingly, a smaller φ unambiguously increases the transfers and income of workers, whereas the opposite holds for capitalists. The implications for the regulation of the political rights of immigrants are addressed in the next section. Lower mobility costs - which may be due to better information or lower traveling costs - have a more complicated impact. However, as these costs always negatively affect the equilibrium immigration level (under exogenous as well as endogenous influence weights), the effects are similar to those of an increase in immigration indicated by Result 2. Under endogenous influence weights, both workers and capitalists will welcome a decrease in mobility cost only in case of pro-capital redistribution ($\Theta^{n}<\alpha$), and a sufficient impact of immigrants on the political influence of workers (φ sufficiently small). Otherwise, such a decrease will be valued negatively by workers and positively (unless $\Theta^{n}>\alpha$ and φ sufficiently small) by capitalists.

Another result related to the endogeneity of political influence concerns the effects of a shrinking labor force (a decrease of W). This is an interesting issue in view of the demographic developments in the West. Conventional analysis suggests that this would encourage immigration, by boosting the marginal productivity (income) of labor. This is indeed what we would obtain with fixed influence weights [see (4.14)]. However, in case of endogenous influence weights there is an additional, negative, effect on the political influence of workers if immigrants are not perfect substitutes for domestic workers from a political influence point of view ($\varphi>0$). As a consequence a smaller domestic labor force may induce less, instead of more, immigration. More generally, the following result holds.

RESULT 3. *If immigrants are not perfect substitutes for domestic workers in the production of political influence ($\varphi>0$), the size of the domestic labor force (W) can have a positive impact on the immigration level.*

This result is quite intuitive. If immigrants weaken the political influence of labor the (ex-ante) size of labor unions will influence the ability of achieving compensation, through redistribution, for the reduction in wages caused by larger immigration. By not taking account of the endogenous character of government policies, this possibility does not show up in other studies (cf., e.g. Layard *et al.* 1992; Amegashie 2004).

Up to this point our analysis concerned the political and economic effects of labor mobility when policymakers at home and abroad take the migration level as given. In the following sections this assumption will be relaxed. In the next section we investigate the case where governments may unilaterally regulate migration. In the section thereafter we focus on

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using (4.15):
$I_e^n = \{(\tau^*/\mu^*)K^* + W^* - \delta[W + (\tau/\mu)K](K^*/K)^{1-\alpha}\}/\{1 + \delta(K^*/K)^{1-\alpha}[1 + (\varphi\tau K/\mu W)]\}$

policy competition through the tax-transfer policies, and policy coordination.

3. Regulation

In this section we study the option of putting a cap on the immigration level, if the total supply of immigrants is considered to be larger than optimal[27]. Let the optimal level in case of fixed influence weights be denoted by I_r, and under endogenous influence weights by I_r^n. Furthermore, let $I^t \equiv I_e^{(n)} + I'$ stand for the total supply of immigrants, with I' indicating the exogenous component. The optimal level then follows from the maximization of the complex interest function P in (4.5) with respect to I $(0 \leq I \leq I^t)$, using (4.2), (4.6) and (4.11).

Before we proceed with this analysis it is important to pay attention to the following issue, concerning the correct treatment of the influence weights attached to the interests of the social groups (u_w and u_k) in (4.5). If endogenous, these weights should be taken as given when maximizing P, in contrast with the weights that appear in y_w^n and y_k^n, determining u_w and u_k, respectively [see (4.11)]. The reason for this procedure is that P does not represent the value of an individual utility function, but reflects the interests of social groups and their influence. These groups are not interested in the weighted sum of utilities as such but only in their own interests (utilities). Thus, it cannot be, for instance, that a policy is chosen which would harm the interests of both groups. Exactly this might happen, though, if also the weights in front of the utilities in (4.5) are taken as endogenous when solving the program. To show this more formally, consider the first-order condition for the maximization of $P(I) = \Theta^n(I)u_w(I) + [1-\Theta^n(I)]u_k(I)$, which can be written as: $(u_w - u_k)(d\Theta^n/dI) + \Theta^n(du_w/dI) + (1-\Theta^n)(du_k/dI) = 0$. Let $I^\circ (>0)$ indicate the value of I that satisfies the condition. Now suppose that $u_w(I^\circ) > u_k(I^\circ)$ and $d\Theta^n(I^\circ)/dI > 0$, then it is allowed that both $du_w(I^\circ)/dI$ and $du_k(I^\circ)/dI$ are negative. If one were dealing with the social welfare function of a benevolent dictator, with the weights indicating the group sizes, this could make sense (in general, albeit problematic in our case where I stands for immigrants; cf. Bhagwati and Srinivasan 1983). However, if P represents a complex interest function, formalizing the outcome of a political decision-making process in which influential agents participate, then this is clearly not the appropriate approach. The outcome discussed above could never have been effectuated under the existing political influence structure. The right procedure then is to take these weights as given when maximizing P, but to require for an equilibrium that the resulting policy reproduces these weights[28].

More specifically, for an "immigration regulation equilibrium", with cap $I_r^{(n)}$, it is required that the following conditions are met: (1) $I = I_r^{(n)}$ maximizes $P = \Theta_{(R)}ln\{\Theta^{(n)}[K/(W+I)]^{1-\alpha}\} + (1-\Theta_{(R)})ln\{(1-\Theta^{(n)})[(W+I)/K]^\alpha\}$, with $0 \leq I \leq I^t$ and Θ_R given; (2) $\Theta_R = \Theta^n(I_r^n)$. Of course, the cap

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[27] In practice, the restriction of immigration can be realized in various ways. The usual method is to reduce the supply of working permits (see Molle and Zandvliet 1994; Zimmermann 1994).

[28] Interestingly, in one of the generalizations discussed in Wildasin (1991), concerning a reinterpretation of his model of government policy, this policy is determined by a social welfare function depending on the incomes of the rich and the (mobile) poor, with weights denoting the number of households *initially* located in a jurisdiction. In our view an equilibrium demands, however, that the weights are reproduced by the equilibrium policies (for a similar definition in the context of a median voter model, see Epple and Romer 1991). Both studies show some formal similarity to our model in case of fixed weights.

only bites if $I_r^{(n)} < I^t$. The properties of a regulation equilibrium are summarized by the following result. For expositional reasons we focus here on the case where $I_r^{(n)} \leq I_r^{(n)*}$; otherwise, the foreign country $[I_r^{(n)*}]$ determines the equilibrium level of migration.

RESULT 4. (A) In case of fixed weights: (1) $I_r = I^t$ (no restriction) if $\Theta < \alpha$, (2) policymakers are indifferent if $\Theta = \alpha$, and (3) $I_r = 0$ if $\Theta > \alpha$. (B) In case of endogenous weights, and assuming that Θ^n increases with immigration ($\varphi < 1$): (1) an interior equilibrium is obtained with I_r^n determined by $\Theta^n = \alpha$, given that $\Theta^n(I=0) < \alpha$ and I^t sufficiently large; otherwise (2) $I_r^n = I^t$ if $\Theta^n < \alpha$ and (3) $I_r^n = 0$ if $\Theta^n \geq \alpha$[29] (see Appendix for proof).

For the foreign country $[I_r^{(n)*}]$, $\Theta^{(n)*}$ should be substituted for $\Theta^{(n)}$ and the inequality signs should be reversed.

From Result 4 it follows that optimal regulation for countries with a pro-labor political bias implies that no immigration is allowed. This result is quite intuitive when compared with Result 2. In countries with a pro-capital bias immigration will be regulated ($0 < I_r^n < I^t$) when influence weights are endogenous and I^t is sufficiently large. Moreover, in that case immigration would cause the initial political bias to vanish $[\Theta^n(I_r^n) = \alpha]$. We should emphasize, however, that our analysis abstracts from the costs of regulation, which may be substantial (Brown and Oates 1987). Allowing for such costs would make regulation less attractive, of course, and perhaps even undesirable (cf. Bond and Chen 1987).

Nevertheless, from a comparative perspective it is interesting to note that the outcome that pro-labor countries will be more restrictive than pro-capital countries in regulating immigration seems consistent with the difference in immigration policies between the EU countries (with respect to non-EU workers) and the U.S.: «leaving aside refugees, the United States at present admits each year 160,000 primary migrants (without family ties in the United States). Europe admits virtually *none*» (italics added) (Layard *et al.* 1992, p. 7). The fact that regulation among the EU-countries has disappeared can be related to the absence of important income differentials, in addition to persisting linguistic barriers (cf. Eichengreen 1994).

Apart from direct regulation of immigration policymakers might consider the regulation of φ, by extending or curtailing the political rights of immigrants, for instance. In case of exogenous immigration an extension of political rights (causing a decrease of φ) has no effect on the immigration level but positively affects the political influence of labor. Consequently, labor would favor such a policy, whereas capitalists would oppose it. Using our model it turns out that the marginal benefit to workers of a decrease in φ (extension of rights) exactly equals the loss to capitalists. This follows from the fact that $\partial \Theta^n / \partial \varphi = -\partial(1 - \Theta^n)/\partial \varphi$, which implies that $\partial P / \partial \varphi = 0$. Thus, the status quo would prevail if regulation of φ is considered. This outcome does not hold for endogenous migration, however; that is, if policymakers take this endogeneity into account. In that situation a decrease of φ raises the immigration level (through the positive effect on labor income). This effect would even be stronger if the granting of political rights attracts immigrants by lowering the psychic mobility costs of

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[29] In case of endogenous weights and $\varphi \geq 1$: (1) $I_r^n = I^t$ (no restriction) if $\Theta^n(I=0) < \alpha$, (2) $I_r^n = 0$ only if $\Theta^n(I=0) \geq \alpha$. In addition, if $\Theta^n(I=0) > \alpha$, $\varphi > 1$ and I^t sufficiently large, there is also an interior equilibrium in this case with I_r^n determined by $\Theta^n = \alpha$.

migration (cf. Koslowski 1994). It is straightforward to show that in this case countries with a pro-labor political bias would prefer to curtail these rights, whereas pro-capital countries would like to extend them. Although perhaps contrary to expectation this outcome is in line with our results concerning direct regulation of immigration, for which changing φ becomes an alternative under endogenous migration. Interestingly, also this result seems consistent with the difference in immigration policies between the U.S. and the EU, as naturalization usually requires ten years of residence in the former (for non-EU citizens) but only five years in the latter. Again, it should be noted that there may be other determining factors for regulation. Apart from regulation cost one could think of the influences of a democratic ideology, for example.

4. Policy Competition and Coordination

So far our analysis focused on cases where either the immigration level is regulated or taken as given by policymakers. However, if policymakers have information on the variables that are pertinent to the decision to migrate, it is likely that they will try to reckon with the impact of redistribution on mobility. Decisions on redistribution policy become subject to the mobility constraint (4.13) in that case. In this section we study the consequences thereof, focusing first on small open polities, where policymakers take the transfers as well as the factor prices abroad as given. This seems to be an interesting case - at least as a benchmark - since, due to better information and lower traveling costs, migration is less and less restricted to neighboring countries (jurisdictions) or to countries with which special bonds exist (Appleyard 1991). Next, we analyze the conditions for coordination, concerning tax-transfer policies as well as the joint (coordinated) regulation of migration. Finally, we consider the migration between a small and a big country, and the interaction between two big countries, where the policymakers of a big country take the impact of their policies on the factor prices in the other country into account.

4.1. Small Open Polities

In this case policymakers take foreign factor prices and transfers as given, but allow for the fact that redistribution policy may affect the level of migration and, consequently, the factor prices at home (see, in this context, Buiter *et al.* 1993; Epple and Zelenitz 1981). This leads to a competitive situation for the governments. Focusing again on the domestic country, it implies that transfers will be determined by the solution of program (4.5), including the mobility constraint (4.13), and taking y_w^* as given. From this assumption it follows that domestic disposable income of workers is determined by the level abroad, adjusted for mobility costs. This renders the following result, where the outcomes for this type of policy competition are indicated by the subscript "o".

RESULT 5. *In case of fixed or endogenous influence weights there is no redistribution, i.e.:* $s_{jo}^{(n)}=0$ *(j=k,w). With fixed influence weights,* $I_o \lesseqgtr I_e$ *if* $\Theta \gtreqless \Theta^*$*; in case of endogenous weights, assuming again that* $\varphi<1$*, immigration decreases (*$I^n_o<I^n_e$*) if* $\Theta^n>\Theta^{n*}$ *at I=0, and increases*

$(I^n_o > I^n_e)$ only if Θ^n is sufficiently smaller than Θ^{n*} at $I=0$[30] (see Appendix for proof).

The reason why transfers go to zero, independent of the endogeneity of the influence weights, is that it is optimal to attract immigrants up to the point where the product of the marginal immigrant equals the given cost [that is, where in equilibrium $p_w = (1+d)y_w^* = (1+d)p_w^*$]. This result provides support for the argument that political competition will have a negative effect on transfers. Moreover, it implies that total output $(X+X^*)$ will be maximized if mobility costs go to zero, as in that case $I_o^{(n)}$ equalizes the marginal productivity of labor in the domestic country and abroad (cf. Wildasin 1986).

Furthermore, with fixed influence weights, Result 5 shows that the immigration level will be lower under policy competition if the political bias in the domestic country is more pro-labor than it is abroad ($\Theta > \Theta^*$), and it will be higher if the bias is more pro-capital ($\Theta < \Theta^*$). The reason is that if $\Theta > \Theta^*$, for example, the transfer to workers is a larger fraction of factor income in the domestic country than abroad [see eq. (4.9)]. In that case policy competition has a negative effect on immigration because it implies a relatively larger fall in labor income in the domestic country. In case of endogenous influence weights the immigration level can still be lower under policy competition even though $\Theta^n \leq \Theta^{n*}$ at $I=0$, because of the additional effect of immigration on the political influence of labor, which makes $\Theta^n > \Theta^{n*}$ possible at I_e.

An interesting next question is under what conditions a country may profit or loose from policy competition. For an answer we focus on the "political welfare" of a country as indicated by the value P of the interest function in (4.5). In case of endogenous influence weights we keep the weights in (4.5) fixed at the value they have under no competition (cf. the argumentation in section 3). The index n will be dropped for convenience. The following condition is obtained, using (4.4), (4.11), and the expressions for I_e and I_o in (4.14) and note 26:

$$P_e \gtreqless P_o \quad \text{if}$$
$$\Theta(ln\,\Theta - ln\,\alpha) + (1-\Theta)[ln(1-\Theta) - ln(1-\alpha)] \gtreqless (\alpha-\Theta)[ln(W+I_o) - ln(W+I_e)] \qquad (4.16)$$

The left-hand side of this expression indicates the loss in political welfare due to competition, when the immigration level does not change ($I_o = I_e$). This loss is always positive when there is (pro-labor or pro-capital) redistribution in the domestic country. It can be compensated, however, by a change of the immigration level in the right direction, that is, by a decrease of immigration ($I_o < I_e$) when redistribution is pro-labor ($\Theta > \alpha$), and the reverse if redistribution is in favor of capital. For example, if $\Theta > \Theta^*$ then it follows from Result 5 that $I_o < I_e$. In that event, if political influence is biased in favor of labor ($\Theta > \alpha$), the policymaker may have an interest in competition because it reduces immigration (cf. Result 4). With this explanation and that provided for Result 5, the next result is rather straightforward.

RESULT 6. *Comparing the political welfare levels under policy competition (P_o) and no competition (P_e): [1] political welfare does not change ($P_o=P_e$) if there is no political bias*

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[30] Where $I^{(n)}_o = (W^* - WT)/(1+T)$ and $T \equiv (K^*/K)(1+d)^{1/(1-\alpha)}$. In case of endogenous influence weights and non-linear mobility costs it is obtained, using (4.15): $s^n_{jo} = 0$ (j = k, w) and $I^n_o = (W^* - WT^n)/(1+T^n)$, where $T^n = \delta(K^*/K)^{1-\alpha}$.

and, thus, redistribution is zero ($\Theta = \alpha$); [2] political welfare decreases ($P_o < P_e$) if the domestic country, compared to the foreign country: (a) has the same political bias ($\Theta = \Theta^* \neq \alpha$), (b) is less pro-capital ($\Theta^* < \Theta < \alpha$), or (c) is less pro-labor ($\Theta^* > \Theta > \alpha$); [3] political welfare increases ($P_o > P_e$) if the domestic country is: (a) pro-capital ($\Theta < \alpha$) and Θ is sufficiently smaller than Θ^*, or (b) pro-labor ($\Theta > \alpha$) and Θ is sufficiently larger than Θ^* (See Appendix for proof).

Similar results hold for the foreign country, substituting Θ^* for Θ and interchanging I_e and I_o. The fact that political welfare may increase under policy competition raises the question whether political welfare in the domestic country and abroad can increase simultaneously under policy competition, implying that $P_o > P_e$ and $P_o^* > P_e^*$. This turns out to be the case. In fact we are able to proof the following stronger result.

RESULT 7. *The political welfare in both countries may increase under policy competition, that is, $P_o > P_e$ and $P_o^* > P_e^*$. In fact, all social groups, in the domestic country and abroad, may benefit from policy competition, in terms of welfare (utility). In both cases either $\Theta < \alpha < \Theta^*$ or $\Theta > \alpha > \Theta^*$ should hold. Moreover, not all social groups in each country experience a loss of welfare from policy competition* (See Appendix for proof).

Thus, policy competition may be beneficial to *all* social groups at home and abroad, even though the transfer to those that enjoyed a political bias in their favor under no competition decreases (in fact, goes to zero). In any case, the change in immigration caused by competition will be advantageous for at least one social group in each country, independent of the political bias (direction of redistribution) in the two countries. Finally, it is noted with respect to *regulation* - as an alternative to tax-transfer policy competition - that the results presented in section 3 carry over to this model of endogenous migration (substituting $I_o^{(n)} + I'$ for I^t).

4.2. Coordination

Since governments in this model of policy competition do not take account of fiscal externalities, coordination may lead to a welfare improvement. They have two options here: they can coordinate their tax-transfer policies, keeping free mobility of labor (a common labor market), or they can coordinate on the regulation of migration. In the first case they have to take into account the mobility constraint (4.13). Both options will be studied only from the point of view whether coordination is feasible, which requires a Pareto-improvement in the political welfare indicated by P and P^*[31].

Consider first the coordination of tax-transfer policies. The advantage of coordination is that two transfers become available for manipulation, instead of only one. Evaluating the total differential of $P^{(*)}$ at the equilibrium under policy competition, we obtain the following result.

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[31] To determine whether coordination will actually take place, and what its nature will be in that event, one needs a formalization of the bargaining process that it entails, which goes beyond the scope of this paper.

RESULT 8. Coordination of tax-transfer policies, under free mobility of labor, is feasible if and only if the political bias ($\Theta^{(*)} \neq \alpha$) does not go in different directions in the domestic country and abroad[32] (See Appendix for proof).

We know from section 3 (Result 4) that with a similar political bias countries have opposite interests concerning the regulation of migration. Now, the present result shows that these countries can coordinate their tax-transfer policies while retaining free mobility of labor. This result is quite intuitive given the fact that transfers in both countries can be jointly determined. With respect to the coordination of the regulation of migration, on the other hand, we have the following result[33].

RESULT 9. Coordinated regulation of migration is feasible if and only if the political bias in the domestic country and abroad go in different directions (that is, $\Theta < \alpha < \Theta^*$ or $\Theta > \alpha > \Theta^*$) (proof follows from Result 4).

These results suggest that free mobility of labor (a common labor market) has a better chance under policy coordination when the coordinating countries are political likes. According to this outcome labor mobility could represent a problem for the potential extension of the EU towards Eastern Europe, given the seemingly pro-capital nature of these countries.

4.3. Other Types of Competition

So far we have considered a strong form of policy competition, where policymakers not only take foreign taxes and subsidies but also foreign factor prices as given. In this subsection we will relax this assumption and discuss what happens in case of policy competition between either a small (domestic) country and a big country, or two big countries. In the first case, the government of the small country takes again foreign transfers and foreign factor prices as given, whereas the government of the big country takes account of the policy of the small country and how the factor prices in that country are affected by its own policy. In the second case, governments take each other's policy as given but reckon with the impact of their policies on foreign factor prices. For simplicity, it is assumed in the following discussion that the political influence weights are fixed.

First, it is noted that equilibrium outcomes are the same under all different forms of policy competition if $\Theta = \Theta^* = \alpha$. If there is no political bias in favor of labor or capitalists, transfers will be zero and factor prices are determined by the migration level given in (4.14).

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[32] In case of endogenous influence weights one should either take $\Theta^{(*)}$ at $I=0$, if the comparison of competition and coordination is made before immigration takes place, or its value at the equilibrium under competition, if coordination is considered in that situation. The first treatment suits the model better in case of positive mobility costs, as the model does not allow for reverse migration in that case [cf.(4.13)].

[33] Recall that the comparison here is with competition. We cannot have an improvement for each country if the comparison is with uncoordinated regulation, as the one who regulated will experience a loss of political welfare.

Consequently, political welfare $P^{(*)}$ is identical for all cases that have been distinguished. Moreover, total output $(X+X^*)$ is maximized, allowing for mobility costs[34].

Second, if there is a political bias in the domestic country and/or abroad, the governments of big countries have an incentive to choose transfers to workers that are smaller in absolute value (but still different from zero) when compared with the case where the mobility constraint is neglected; the government of a small country will opt again for zero transfers, as discussed above. This is due to the fact that big countries take into account the positive effect on the migration level of a larger subsidy to (or a smaller tax on) workers. This effect is positively valued by capitalists, as it increases the return on capital, but it is negatively valued by workers, since it decreases the wage rate. The additional effect on labor income via the impact on the foreign wage rate, causes the transfers to be different from zero[35]. The impact on the migration level depends on Θ, Θ^*, and α. For instance, if $\Theta>\alpha>\Theta^*$ then $I_e>I_q>I_o$, whereas $I_e<I_q<I_o$ if $\Theta<\alpha<\Theta^*$, where q either indicates the big versus big country case or the small versus big country case. This can be shown by using the first-order conditions of (4.5) for both countries.

Third, using again the aforementioned first-order conditions, it appears that the disposable income (utility) of workers in the domestic country and abroad is negatively related to the degree of policy competition when there is a move away from $\Theta=\Theta^*=\alpha$ towards a political bias in favor of labor in one of the two countries ($y_{we}^{(*)}>y_{wq}^{(*)}>y_{wo}^{(*)}$); the relationship is positive in case of a political bias in favor of capitalists ($y_{we}^{(*)}<y_{wq}^{(*)}<y_{wo}^{(*)}$)[36]. For the small versus big country case it turns out, more generally, that these orderings hold if the political bias is in the indicated direction in either one or both of the two countries[37].

Finally, evaluating the total differential of P and P^* in the equilibrium under the respective form of policy competition, as discussed above for small open polities, it turns out that coordination of tax-transfer policies is feasible if there is a political bias in at least one of the countries. Moreover, in contrast with the small open polities case, the political bias may go in different directions now[38].

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[34] It is easily shown that with endogenous influence weights the same results can be obtained as equilibrium outcomes if in any of the cases distinguished $\Theta^n=\Theta^{*n}=\alpha$ holds in equilibrium.

[35] In the small versus big country case it can be proved, indeed, that the absolute value of the transfer to workers in the big country will be smaller, except for the political bias regimes where $\Theta>\alpha>\Theta^*$ or $\Theta^*>\alpha>\Theta$, whereas Θ should be sufficiently close to α in the regimes where $\alpha>\Theta>\Theta^*$ or $\Theta^*>\Theta>\alpha$. This can be proved by using the mobility constraint (4.13) and the first order conditions for (4.5) for both countries. For the big versus big country case we are able to show this result only for the regimes where either Θ or Θ^* is equal to α (note that in the country where this equality holds the transfers would be zero). For the other regimes we cannot exclude that the absolute value of the transfer in one of the countries is higher in equilibrium.

[36] There is one exception. Letting $y_{ws}^{(*)}$ stand for labor income in the small versus big country case, $y_{ws}^{(*)}=y_{wo}^{(*)}$ if $\Theta^*=\alpha$. Recall that it is assumed that the domestic country is small in case of a small country facing a big country.

[37] This follows from an inspection of the first order conditions, except that the result is unclear for $\Theta^*>\Theta>\alpha$ and $\alpha>\Theta>\Theta^*$ if Θ is not sufficiently close to α.

[38] Using again I and s_w as instruments, it turns out for the small versus big country case that $dP\geq0$ (at I_s) if $(\alpha-\Theta)[(\partial p_w/\partial I)dI+ds_w]\leq0$, and $dP^*\geq0$ if $(\partial P^*/\partial s_w)ds_w\geq0$. In case of the big versus big country case: $dP\geq0$ (at I_p) if $(\partial P/\partial I)dI+(\partial P/\partial s_w)ds_w\geq0$, and $dP^*\geq0$ if $(\partial P^*/\partial s_w)ds_w\geq0$. In both cases $(\partial P^*/\partial I)dI$ drops out, because this partial derivative is zero at the respective equilibrium under policy competition. Moreover, it can be shown that at these equilibria the above expressions $\partial P/\partial I$, $\partial P/\partial s_w$, and $\partial P^*/\partial s_w$ are all unequal to zero if there is a political bias (this is due to the fact that, under coordination, I and s_w can be used as separate instruments). Thus, coordination

5. Concluding Remarks

Our analysis shows the significance of taking political decision making into account when studying the determinants and effects of labor mobility. Outcomes can be strikingly different from those obtained neglecting politics. For example, transfers and disposable income for workers can increase if the number of immigrant workers rises. Furthermore, an increase in the domestic labor force may lead to a higher immigration level. On the other hand, an increase in exogenous migration decreases endogenous migration (motivated by income differentials). Important in this respect are the nature of the political regimes in the different countries, in terms of their political bias concerning the interests of social groups, and the responsiveness of the political decision-making process to changes in the size and homogeneity of these groups. The results concerning the policy interaction between the countries are, in our view, particularly interesting. Policy competition, among small open polities, was shown to be advantageous for all social groups, at home and abroad, only when countries have a different political bias (implying opposite directions of redistribution). In addition it turned out that coordination, improving political welfare, would be feasible in that case. However, in that situation coordination would have to be of the regulation type, which is incompatible with the maintenance of a common labor market (free mobility of labor). This would entail a policy implication for political associations considering extensions towards other countries. Not only the economic status of such countries appears to be a relevant issue of consideration, but also their political regimes. To maintain free mobility of labor an association of political likes seems to be important, if coordination is intended or foreseen. On the other hand, without coordination countries could be better off if they associate with countries that are different qua political bias.

Apart from the incorporation of trade (Ethier 1985; Hillman amd Weiss 1999; Michael 2003) or resource transfers (Hatzipanayotou and Michael 2005; Mansoorian and Myers 1993; Persson and Tabellini 1994), a dynamic analysis of the problems investigated here would be an important extension of the presented model, in particular from the perspective of the endogeneity of political influence. With respect to the incorporation of mobile capital it is interesting to note that, again, outcomes may differ when the political impact of immigration is taken into account. In case of fixed influence weights, capital mobility would have a stimulating effect on immigration. This is due to the inflow of capital attracted by a higher factor price causing in its turn an increase in labor income (Gerking and Mutti 1983; Perotti 2001). That is, if the political influence weights are fixed. In case of endogenous influence weights, and immigration sufficiently increasing the political influence of labor, immigration may actually have a negative effect on capital income lowering the equilibrium level of immigration.

Finally, concerning the incentives to migrate, one could reinterpret the mobility cost factor as to incorporate the monetized value of environmental amenities. Furthermore, transfers could represent both cash payments and the monetized value of quasi-private public goods (see Wildasin 1991). The latter reinterpretation is not very satisfactory, however, in case of a

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seems to be feasible in that case by an appropriate manipulation of these instruments.

positive political economic analysis. In fact, the explicit incorporation of the supply of public goods and services and their producers - civil servants or bureaucrats - as a social group could be one of the interesting extensions of the model, in view of the demand by immigrants for such goods and services. More generally, a further elaboration of the model in a political institutional sense is a prerequisite for a positive analysis of the determinants and effects of policy coordination and political (dis)integration. That is also why we restricted ourselves to a discussion of the feasibility of coordination only, whereas integration was only considered in the economic form of lower mobility costs. The actual decision-making process of policy coordination and political integration involves a whole new set of issues, such as the behavior and influence of country representatives, requiring a separate analysis.

Appendix

Proof of Result 4

(A). If immigration does not affect the political influence weight Θ, then the regulated level of immigration is derived by maximizing $P = \Theta ln\{\Theta[K/(W+I)]^{1-\alpha}\}+(1-\Theta)ln\{(1-\Theta)[(W+I)/K]^{\alpha}\}$. Since $(\partial P/\partial I) \gtreqqless 0 \Leftrightarrow \alpha \gtreqqless \Theta$, Result 4.(A) is obtained.

(B). In case that immigration influences the political weights then I_r^n is derived from the maximization of

$P = \Theta_R ln\{\Theta^n[K/(W+I)]^{1-\alpha}\}+(1-\Theta_R)ln\{(1-\Theta^n)[(W+I)/K]^{\alpha}\}$ with $\Theta^n = \mu(W+I)/[\mu(W+I)+(1+\varphi(I/W))\ \tau K]$. Differentiation shows that $(\partial P/\partial I) \gtreqqless 0 \Leftrightarrow [(\Theta_R-\Theta^n)/\Theta^n(1-\Theta^n)](\partial\Theta^n/\partial I) \gtreqqless (\Theta_R-\alpha)/(W+I)$. The results follow straight-forwardly by letting $\Theta_R=\Theta^n$, realizing that $\partial\Theta^n/\partial I \leq 0$ if $\varphi \geq 1$, and $\partial\Theta^n/\partial I > 0$ if $\varphi < 1$. It is noted, furthermore, that $\partial^2 P/\partial I^2 < 0$ at $\Theta_R=\Theta^n=\alpha$.

Proof of Result 5

(A). Recalling that y_w^* is given, note that *max P* in (4.5) is here equivalent to *max* y_k, as $y_w=(1+d)y_w^*$ (mobility constraint). Then using (4.3), (4.4) and (4.13) domestic policy is determined by the maximization of $y_k = (1-\alpha)[(W+I)/K]^{\alpha}+s_k$ with respect to I, where, from the budget and mobility constraints: $s_k=-s_w(W+I)/K=-[(W+I)/K]\{(1+d)y_w^*-\alpha[K/(W+I)]^{1-\alpha}\}$.

From the first order condition (noting that $\partial^2 y_k/\partial I^2 < 0$) one obtains: $I=K[\alpha/(1+d)y_w^*]^{1-\alpha}-W$. Inserting I into the migration equilibrium condition [i.e. $y_w=(1+d)y_w^*$] it follows that $s_{wo}=s_{ko}=0$. Using the same procedure for the foreign country, it is obtained that $s_{wo}^*=s_{ko}^*=0$, and, thus, $y_w^*=p_w^*$. Using (4.4) for p_w^* and solving for I renders the expression in note 26. Simple comparison of I_o with I_e [see (4.14)] shows that $I_o \gtreqqless I_e \Leftrightarrow \Theta^* \gtreqqless \Theta$.

(B). In case of endogenous influence weights, $\Theta^{n(*)}$ again drops out of the optimization problem. Consequently $I_o^n=I_o$ is the competitive outcome also in this case. In addition, by comparison it is easily seen that $I_o^n<I_e^n$ if $\Theta^n|_{I=0}>\Theta^{n*}|_{I=0}$ and $\varphi<1$. However for some positive levels of immigration, it may be that $\Theta^n|_{I=0}<\Theta^{n*}|_{I=0}$ and still $I_o^n<I_e^n$, through the effect of I on $\Theta^{n(*)}$, for Θ^n sufficiently close to Θ^{n*} at $I=0$.

Proof of Result 6

Note that the left hand side (LHS) of (4.16) is zero at $\Theta=\alpha$. To see its sign we can take the derivative with respect to Θ. Note that the sign of $\partial(LHS)/\partial\Theta$ is given by the sign of $Z=[\Theta/(1-\Theta)]-[\alpha/(1-\alpha)]$.

Consequently $Z \gtreqqless 0 \Leftrightarrow \Theta \gtreqqless \alpha$. Reassuming the LHS of (4.16) is zero when $\Theta=\alpha$, increasing when $\Theta>\alpha$ and decreasing when $\Theta<\alpha$. Thus the LHS of (4.16) is positive if $\Theta \neq \alpha$. Recall that $I_o \gtreqqless I_e$ if $\Theta^* \gtreqqless \Theta$. Simple comparison leads to Result 6.

Proof of Result 7

Recall from (4.16), Result 5 and Result 6.3 that $P_o>P_e$ if (a) $\Theta<\alpha$ and I_o sufficiently larger than I_e (i.e. Θ^* sufficiently larger than Θ) or (b) $\Theta>\alpha$ and I_o sufficiently smaller than I_e (i.e. Θ^* sufficiently smaller than Θ); as regards the foreign country, $P_o^*>P_e^*$ if (c) $\Theta^*<\alpha$ and I_e sufficiently larger than I_o (i.e. Θ^* sufficiently smaller than Θ) or (d) $\Theta^*>\alpha$ and I_e sufficiently smaller than I_o (i.e. Θ^* sufficiently larger than Θ). Then it is evident that conditions (a) and (c) are in contrast. So are conditions (b) and (d). Therefore α has to be between the labor political influence weights, in order to have both $P_o>P_e$ and $P_o^*>P_e^*$. To check that this outcome is indeed possible take, for example, $\alpha=0.5$, $\Theta^*/\Theta=12/7$ and $(K^*/K)(1+d)^{1/(1-\alpha)}=1$, determine I_o and I_e from (4.14) and note 26, and use those values to evaluate (4.16).

To prove the last part of Result 7, use (4.14) and Result 5 obtaining that $y_{we} \gtreqqless y_{wo} \Leftrightarrow (\Theta/\alpha) \gtreqqless \{(1+T)/[1+T(\Theta^*/\Theta)^{1/1-\alpha}]\}^{1-\alpha}$ and $y_{ke} \gtreqqless y_{ko} \Leftrightarrow [(1-\Theta)/(1-\alpha)] \gtreqqless \{[1+T(\Theta^*/\Theta)^{1/1-\alpha}]/(1+T)\}^{\alpha}$, where $(\Theta/\alpha)^{1/(1-\alpha)}<[(1-\alpha)/(1-\Theta)]^{1/\alpha}$.

By comparing y_{je} with y_{jo} ($j = k, w$) some tedious algebra shows that if $\Theta>\Theta^* \geq \alpha$ or $\Theta^*>\Theta>\alpha$ ($\Theta^*<\Theta<\alpha$), then $y_{we}>y_{wo}$ ($y_{we}<y_{wo}$) but $y_{ke}<y_{ko}$ ($y_{ke}>y_{ko}$); if $\Theta=\Theta^* \neq \alpha$, or $\Theta^* \neq \alpha=\Theta$ then $y_{we}>y_{wo} \Leftrightarrow y_{ke}<y_{ko}$. The opposite result ($y_{jo}>y_{je}$; $j = w, k$) may be even obtained in the following cases: (i) $\alpha \geq \Theta^*>\Theta$, (ii) $\Theta>\alpha>\Theta^*$ and (iii) $\Theta^*>\alpha>\Theta$. In particular note that if $\alpha \geq \Theta^*>\Theta$ then $y_{we}<y_{wo}$; in order to have $y_{ke}<y_{ko}$ take for example $\alpha=0.5$, $T=1$, $\Theta=0.1$ and $\Theta^*=0.5$ or $\Theta^*=0.45$. When $\Theta>\alpha>\Theta^*$, notice that $y_{we}>y_{wo}$ implies $y_{ke}<y_{ko}$; however if $y_{we}<y_{wo}$ it is possible to have also $y_{ke}<y_{ko}$, by assuming for example $\alpha=0.5$, $T=10$, $\Theta=0.9$ and $\Theta^*=0.4$. Finally in case that $\Theta^*>\alpha>\Theta$, again $y_{we}>y_{wo}$ implies $y_{ke}<y_{ko}$. We can obtain $y_{je}<y_{jo}$ ($j = k, w$) when, for instance, $\alpha=0.5$, $T=1/3$, $\Theta=0.15$ and $\Theta^*=0.75$.

For the foreign country the outcomes are equivalent to those obtained for the domestic country, substituting Θ for Θ^*. Thus it cannot be that $y_{je}^*>y_{jo}^*$ for $j = w, k$. On the other hand $y_{je}^*<y_{jo}^*$ may hold in case that: (i) $\alpha \geq \Theta>\Theta^*$, (ii) $\Theta>\alpha>\Theta^*$ and (iii) $\Theta^*>\alpha>\Theta$.

Proof of Result 8

Recall that by the balanced budget constraint, $s_k=-s_w(W+I_o)/K$; moreover, under policy competition $s_{wo}=0$. Then by totally differentiating P, we obtain: $dP=(\Theta/p_w)[(\partial p_w/\partial I)dI+ds_w]+[(1-\Theta)/p_k][(\partial p_k/\partial I)dI-((W+I_o)/K)ds_w]$. Using (4.4), after rearranging, it results that: $dP \gtreqqless 0 \Leftrightarrow (\Theta-\alpha)ds_w \gtreqqless (\Theta-\alpha)(1-\alpha)\alpha(W+I_o)^{-1}[K/(W+I_o)]^{1-\alpha}dI$.

Then consider the foreign country. By using the mobility equilibrium condition $[y_w=(1+d)y_w^*]$ and the budget constraint $[s_w^*(W^*-I)+s_k^*K^*=0]$, the total differential of P^* (at I_o, i.e. $s_w=0=s_w^*$) is:

$$dP^* = \{(\Theta^*/p_w)(\partial p_w/\partial I) - (1-\Theta^*)(W^*-I_o)^{-1} +(1-\Theta^*)[(1-\alpha)(K^*/(W^*-I_o))^{1-\alpha}(W^*-I_o)^{-1}-(\partial p_w/\partial I)(1+d)^{-1}]\ [(K^*/(W^*-I_o))^{1-\alpha}-p_w(1+d)^{-1}]^{-1}\}dI+\{(\Theta^*/p_w)-(1-\Theta^*)(1+d)^{-1}[(K^*/(W^*-I_o))^{1-\alpha}-p_w(1+d)^{-1}]^{-1}\}ds_w$$

After rearranging and using (4.4), it results that $dP^* \gtreqqless 0$ if iff $(\Theta^*-\alpha)ds_w \gtreqqless (\Theta^*-\alpha)(1-\alpha)(W+I_o)^{-1}\alpha[K/(W+I_o)]^{1-\alpha}dI$. Comparing dP and dP^* we obtain Result 8, i.e.: $dP^{(*)} \geq 0 \Leftrightarrow (\Theta^{(*)}-\alpha)[(\partial p_w/\partial I)dI+ds_w] \geq 0$.

4. A political economic analysis of labor migration

Table 1 - Comparative statics: exogenous migration

	I				Θ	μ	τ	φ
s_w								
+		-			+			
-		+			+			
s_k								
+		+			-			
-		-			-			
	Φ=0	**<φ<1**	**φ=1**	**φ>1**				
s_w^n			-					
+	±	±	+	-		+	-	-
-	+	+		±		+	-	-
s_k^n								
+	±	±	+	+		-	+	+
-	-	-	-	±		-	+	+
y_w		-			+			
y_k		+			-			
y_w^n	**Φ=0**	**0<φ<1**	**φ=1**	**φ>1**				
if								
$s_w^n>0$	-	-	-	-		+	-	-
$s_w^n<0$	+	±	-	-		+	-	-
y_k^n								
if								
$s_w^n>0$	-	±	+	+		-	+	+
$s_w^n<0$	+	+	+	+		-	+	+

Table 2 - General equilibrium comparative statics: endogenous migration

	Θ	Θ*	μ	μ*				τ	τ*				φ	d, δ			
				A	**b**	**c**	**d**		**a**	**b**	**c**	**d**		**a**	**b**	**c**	**d**
s_w																	
	+	+	+											+			
	-	+	-											-			
s_k																	
	+	-	-											-			
	-	-	+											+			
s_w^n				**A**	**b**	**c**	**d**		**a**	**b**	**c**	**d**		**a**	**b**	**c**	**d**
	+		+	±	±	+	+	-	±	±	-	-	-	±	±	+	+
	-		+	-	-	-	±	-	+	+	+	±	-	-	-	-	±
s_k^n																	
	+		-	±	±	-	-	+	±	±	+	+	+	±	±	-	-
	-		-	+	+	+	±	+	-	-	-	±	+	+	+	+	±
y_w	+	+												+			
y_k	-	-												-			
y_w^n **if**				**A**	**b**	**c**	**d**		**a**	**b**	**c**	**d**		**a**	**b**	**c**	**d**
s_w^n>0			+	+	+	+	+	-	-	-	-	-	-	+	+	+	+
s_w^n<0			+	-	±	+	+	-	+	±	-	-	-	-	±	+	+
y_k^n **if**																	
s_w^n>0			-	+	±	-	-	+	-	±	+	+	+	+	±	-	-
s_w^n<0			-	-	-	-	-	+	+	+	+	+	+	-	-	-	-
I	+	-												-			
I^n			+		-				-				+	-			

Notes: ***a***:φ=0, ***b***:1>φ>0, ***c***:φ=1, ***d***:φ>1