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Global Competition for Mobile Resources: Implications
for Equity, Efficiency, and Political Economy

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Global Competition for Mobile Resources: Implications for Equity, Efficiency, and Political Economy

Abstract

International integration of markets for labor and capital has far-reaching policy implications in economies where governments pursue extensive programs of redistribution through tax and transfer policies. The large fiscal impacts that result from movement of high- and low-income populations, as well as of capital, affect the benefits, costs, and political payoffs of redistributive policies, creating incentives for fiscal competition that may limit the extent of redistribution over time. Migration and capital flows are dynamic adjustment mechanisms, analysis of which can shed light on the consequences of structural changes such as globalization of factor markets and EU enlargement.

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1 Introduction

The competition for mobile resources is a greater or lesser issue facing every government. The economic analysis of the implications of such competition goes back at least a half-century to work such as Tiebout (1956) and Stigler (1957), and for the past decade or so this topic has been the subject of a rapidly-growing and now very rich literature. The development of analytical models to address tax competition traces its roots to the 1970s literature on the incidence of local property taxation in the US, exemplified by Mieszkowski (1972) (see also Zodrow (2001)). Models in this tradition view the local property tax as a source-based tax on capital used by small governments (i.e., governments situated within a larger economy with highly integrated capital markets) that have no other own-source revenue instruments at their disposal with which to finance the provision of public goods – an analytical framework which, naturally, tends to emphasize the connection between competition for mobile capital and the level of provision of local public goods. Analyses in the Tiebout-Stigler-Oates (1969) tradition follow the classical short-run/long-run distinction which views labor or population as variable or mobile in the short-run while capital – e.g., in Oates (1969), the stock of residential housing (treated as an asset whose capitalized value reflects the impact of fiscal variables) – is variable in the long run, and analyses in the Mieszkowski tradition would thus normally be viewed as models of the long-run effects of property taxation. Studies such as Hamilton (1975) and Fischel (2001) emphasize the potential importance of regulatory constraints (specifically, land-use controls) as instruments that link capital and population movements, so that local property taxes become, implicitly, a form of entry fee for households that wish to reside in a given locality.

As these brief remarks indicate, the modeling traditions in the literature of fiscal competition owe a lot to the particular policy and institutional context of local government finance in the US. This is noteworthy given that a significant part of the recent interest in fiscal competition seems to stem from concerns with competition for capital, by national governments, at the international level. Not infrequently, and in parallel with earlier analyses of local government property taxation, this literature also assumes that a source-based capital tax – usually interpreted in this context as a national-level corporation income tax – is the sole source of revenue at the disposal of the (national) government. In an inversion of the usual short-run/long-run distinction, many studies in this vein assume that capital is freely mobile while labor is fixed or immobile.

It goes without saying that a wide variety of specific modeling approaches can be found in the literature¹, and thus, the above characterization is oversimplified. In general, however, it is fair to say that the mobility of households has generally received relatively little attention in the context of international fiscal competition. In this paper, I wish to draw attention to this comparatively

¹Already, the body of survey articles and book-length treatments of the subject is growing to substantial size: see, e.g., Wildasin (1986, 1998), Wellisch (2000), Wilson (1999), Wilson and Wildasin (2004), Brueckner (2001), and Hauffer (2001) for surveys, syntheses, and many citations to additional literature. See also a special issue of the *Journal of Public Economic Theory* on this topic from April, 2003.

neglected area of study, identifying some of the reasons why international labor mobility – as well as international capital mobility – is of great importance both for public policy and for economic analysis in general.

A principle theme of the paper is that the the public-finance implications of labor and capital mobility depend critically on the spatial and temporal dimensions of factor markets, that is, the definition of these markets both in space and time. The flow of production in an economy depends on flows of inputs, notably labor and capital services. These *flows* derive from *stocks* of labor and capital (and from the utilization of these stocks). The movement of capital and labor across national boundaries are *flows* that result in changes in capital and labor *stocks*, and thus affect the evolution of the economy over time. The adjustment of these stocks is costly and thus occurs gradually: the movement of factors of production across *space* is part of an adjustment of stocks through *time*. An obvious consequence of these observations is that the spatial linkages between factor markets – the degree of “integration” of factor markets – depends on the time horizon over which labor and capital flows occur. Finding an operational definition of the “size” of a factor market presents a formidable analytical challenge, not unlike the familiar problem in industrial organization of defining the size of a market for a good or service, one that deserves considerably more attention than it has received so far.

The integration of international capital markets has been discussed and analyzed extensively in recent years (many of the studies cited in n. 1 above focus on capital markets), but integration of labor markets on an international scale is somewhat less frequently discussed. To help motivate interest in labor mobility in addition to capital mobility, Section 2 reviews some basic facts about migration among and within developed countries, and between less-developed and advanced economies. It also highlights the fundamental importance of population mobility for public finance. Section 3 then turns to the problem of “factor market integration” more generally and some of the modeling challenges that it presents. Section 4 concludes with a review of some major policy issues in which labor or capital mobility play an especially important role. A short appendix comments on the disparate modeling traditions that have arisen in the fields of international and public economics – traditions that arise from a historical context in which international factor mobility was frequently perceived to be relatively inconsequential.

2 Migration and Fiscal Policy: Some Background

2.1 The Growing Importance of International Migration

The issue of immigration has become a highly sensitive one in a number of advanced economies in recent years, and it might therefore seem obvious that “migration” is an economically important phenomenon. Political debates can easily become detached from reality, however, so a brief review of some basic data on migration will be useful as a backdrop to the following discussion.

To begin with, Table 1 presents some data on international migration flows for a selection of OECD countries. The table shows annual migration rates, i.e., population inflows and outflows expressed as a percentage of total population. In addition, it shows *gross* migration rates, that is, the sum of inflows and outflows as a percentage of total population, and the ratio of gross to net migration. Note that gross migration rates exceed net migration rates, commonly by a factor of 2 or 3. Although net migration is positive for virtually every country in every year, these net inflows are residuals obtained after subtracting outflows of significant magnitude. For several EU countries, gross migration rates in 2000 exceeded 1% of total population: Austria, Belgium, and Germany all fall into this category. Most other EU countries show gross migration rates between 0.5 and 1%. The importance of gross migration rates for fiscal policy is discussed further below.

Tables 2 and 3 show the shares of foreign-born and foreign population for a number of OECD countries. In contrast to Table 1, these are “stock” rather than “flow” data. Note that “foreign” population (Table 3) represents people residing in a country who are not citizens there; typically, these will be foreign-born people (Table 2) but in some countries nativity does not necessarily confer citizenship (Switzerland, for example) and thus there can be “native foreigners.” More importantly, it is possible for a country to reduce its “foreign” population by awarding citizenship to foreign residents. Many EU countries maintain population records based on citizenship status and do not track the size of the foreign-born population, whereas the opposite is true from some other countries (the US, Australia) – a fact that must be borne in mind in making international comparisons. The fact that these officially-reported data typically omit illegal immigrants, and thus systematically underestimate the importance of immigration, must also be kept in mind. It is of course impossible to measure illegal immigration accurately but US data (see further discussion below) suggests that illegal immigrants have accounted for around one-fourth of total immigration flows during the past decade, and one might plausibly assume that the same is true for EU countries experiencing high levels of immigration.

As Tables 2 and 3 show, the proportion of foreign-born and foreign residents in OECD countries varies widely. Among European countries that report the relevant data, the foreign-born account for approximately 10% of the total population in Austria, France, the Netherlands, and Sweden, that is, about the same share as in the US. A comparison of the figures in Tables 2 and 3, where possible, shows the importance of the foreign/foreign-born distinction: the share of foreigners in France, the Netherlands, Norway, and Sweden is less than two-thirds of the share of foreign-born. Thus, Belgium and Germany, with foreign populations of about 9%, stand out in Table 3, but the lower share of foreign populations in other relatively high-income EU countries reflects differences in naturalization policies as much as differences in the numbers of foreign-born migrants. In short, immigrants are an important presence in OECD countries today.

Their importance, demographically speaking, is almost certain to grow substantially in the coming decades, barring major catastrophes like war, epidemic, or economic depression. First, since immigrants are generally younger than native

populations, the latter are disproportionately represented in high-mortality population age groups. Even if immigration were halted immediately, the foreign-born share of the population would continue to rise for a considerable period of time in any country that has experienced significant immigration flows in the recent past. Second, as is well known, fertility rates have dropped dramatically in many EU countries. Table 4 shows total fertility rates for selected OECD countries. Many of these countries have fertility rates far below the 2.1 replacement rate that would allow a population to sustain itself in the long run. Annual net immigration flows have exceeded annual births for the EU countries in aggregate (excluding Greece and Portugal) for approximately the past 15 years, making immigration the principal source of population growth for many countries. Third, the fertility behavior of recent immigrants tends to converge to that of native residents with a lag. Recent immigrants to high-income countries thus generally have fertility rates that are high by local standards, implying that the future demographic impact of immigration is relatively large. Like many demographic factors, all of these trends show a high degree of persistence over time, insuring that the demographic and other impacts of international immigration will be of increasing importance for many years to come.

2.2 Internal Migration

The distinction between international migration and migration within countries is a familiar one, and one that is important from many perspectives. As an economic process, however, the two share many fundamental characteristics. In particular, both international and internal migration represent actions taken by people who hope to improve their well-being, whether through the attainment of higher incomes or otherwise. International and internal migration can both be expected to affect the supply of labor and, thus, labor market conditions, in origin and destination regions. And both forms of migration have fiscal consequences for relevant jurisdictions, national or subnational as the case may be. Comparisons of internal and international migration are thus potentially instructive.

Tables 5 and 6 present data on internal migration within the US and Canada, respectively. The US data are displayed for four major Census regions, each of roughly similar size and thus somewhat larger than but similar in population to the larger EU countries; internal migration rates for smaller geographic units, such as states, are of course larger than for these large Census regions. The Canadian data in Table 6 are shown at the provincial level, which are quite disparate in population and geographic size.

Observe, first, that internal migration is a persistent characteristic of the US economy. The data shown in Table 5, showing inflows and outflows from all four regions over a period of 30 years, are quite typical of US experience throughout the entire postwar period, as revealed in annual Census data. This suggests, on the one hand, that there are no severe impediments to labor mobility within the US, and, on the other hand, that population movements are a feature of the dynamic equilibrium of the US economy, showing no tendency to disappear over

time. Second, note that every region, in every year, experiences both inflows and outflows of population, and that net migration, the difference between the two, is generally rather modest in magnitude by comparison: *gross* migration rates are frequently an order of magnitude greater than net rates.

Table 6 reveals a broadly similar picture for Canada for 1996: every province experiences non-trivial population inflows in every year. Compared to other provinces, Ontario and Quebec, the two largest provinces, stand out: the rates of inflow from other provinces are notably smaller, and the rates of intraprovincial migration are correspondingly larger, for these two provinces. This is a reflection of the fact that each of these provinces is large both geographically and in terms of population, each containing about one quarter of the national population. The interprovincial migration rates for Canada are similar in magnitude to the migration rates for US regions. Although the table does not display interprovincial outflows, the fact that every province experiences significant inward interprovincial migration means that gross migration rates are substantially larger than net migration rates in Canada, as in the US and as was seen previously for international migration rates.

Comparing these data with Table 1, we see that rates of international migration for OECD countries tend to be smaller than the internal migration rates for the US and Canada shown in Tables 5 and 6. Since nations do not allow unrestricted immigration or movement across boundaries, it is not surprising that international migration rates are generally lower than is the case for internal migration in the US and Canada. Tables 4 and 5 also shows that differential between gross and net migration rates is substantially higher for internal migration in the US and Canada than is true for the international migration data shown in Table 1.

2.3 Migration and Redistributive Policy

The discussion so far has outlined some basic facts about international and internal migration. One way to assess the empirical importance of migration, whether internal or international, is by use of the “head count metric”, i.e., by simple counting of the number of migrants. A lesson to draw from the above comparison of gross and net migration flows is that the former generally exceed the latter by a substantial margin. Just as gross rather than net trade flows are used to assess the degree of “openness” of an economy to trade, gross rather than net migration flows are better indicators of the openness of a national or regional labor market.² By this metric, changes in international migration flows over time indicate that competition for mobile labor is increasing on a global

²As discussed further in the next section, gross flows, whether of goods and services or of factors of production, understate the degree of openness or integration of markets. As is well known, the magnitude of trade or factor flows between regions depends not only upon the absence of impediments to such flows, but upon incentives for such flows to occur. These incentives – and the gains from exchange – typically arise from differences in tastes, technologies, and endowments. Large and persistent gross interregional flows of labor in the highly integrated economies of North America provides evidence that incentives for spatial reallocation of resources are continuously regenerated in dynamic economies.

scale.

Despite its natural appeal, however, simple “head count” assessments of migration are seriously deficient as stand-alone measures of the policy impact of actual or potential migration. In particular, from a public finance perspective, migration matters not because of the raw numbers of migrants, but because of their impacts on the fiscal systems of origin and destination nations and subnational governments. As has been made clear from the long tradition of research on local public finance mentioned in the introduction, demographic shifts can have substantial effects both on the revenue and on the expenditure sides of fiscal accounts. A concise overview of the outlines of modern fiscal systems provides a basis for assessing the public finance implications of household mobility.

Note first that national governments – such as the governments of OECD nations, as shown in Table 7 – typically derive the bulk of their revenues from personal income taxation, payroll taxation, and, in Europe, the taxation of consumption through value-added taxes. For the most part, each of these is a *residence-based* tax – one that households pay if they reside within a country and do not pay if they do not reside there. These taxes raise much more revenue than corporation income taxes or other source-based taxes on capital income, which typically account for around 10% of total taxes. Unlike local governments in the United States, the fiscal systems of national governments are not very well characterized as systems that, to a first approximation, depend solely on source-based capital taxation for tax revenues; on the contrary, the taxation of households – their earnings, consumption, and non-wage income – accounts for the bulk of public-sector revenues.

On the expenditure side, a portion of public expenditures on the provision of public services and subsidies is directed toward the business sector and thus could be interpreted as source-based public expenditures that raise the return to capital investment. As Table 8 shows, however, a very large share of public expenditure is devoted to cash and in-kind transfers to households, including public pension expenditures, social welfare expenditures directed toward the poor, and subsidization of health care expenditures. Based on these data, a natural first approximation of the fiscal systems of advanced economies would be one that characterizes them mainly as redistributive mechanisms, taking resources from some people and transferring them to others.³

For these reasons, the movement of households across national boundaries, when it occurs, is fraught with importance for the fiscal systems of these countries. When new residents arrive in a country, they receive incomes there and they engage in consumption. In modern economies, a very substantial share of the incomes that these residents receive accrues, on average, to the rest of the society in the form of tax revenues, and a very substantial share of the consumption

³Of course, as is well known, the compulsory redistribution of resources among households can be viewed as the ex post implementation of an ex ante social insurance contract. See, e.g., Harsanyi (1955), Varian (1980), and many others. Sinn (1995, 1996, 1997), Wildasin (1995, 2000b), and Wildasin and Wilson (1998), *inter alia*, discuss the importance of labor mobility for different aspects of social risk management. By affecting the allocation of risks, especially in instances where private markets are incomplete or imperfect, these “redistributive” policies may thus affect the efficiency of resource allocation.

that they undertake is financed by the rest of society in the form of public expenditures. The departure of existing residents has the same effects, in reverse. For any individual household, the balance between tax contributions and public expenditure burdens depends crucially on a household's demographic and economic characteristics as well as on many detailed characteristics of government programs and policies. The direction, magnitude, and composition of population movements across national boundaries can have major implications for the public sector.

Comprehensive empirical analysis of the fiscal impacts of international migration is very difficult, since migration affects the entirety of the fiscal system; furthermore, its impact on the fiscal system operates not only through direct impacts but through general-equilibrium adjustments of the economy. The importance of such analysis is increasingly recognized, however, and the literature on this subject is growing. Because the fiscal impacts of migration depend so importantly on the extent of public sector redistribution, it is naturally of interest to pay close attention to the ways that households at the extreme ends of the income distribution – the rich and the poor – interface with the fiscal system.

Taxation of the Rich. In societies where significant amounts of tax are imposed on personal income or its correlates, the rich will be large fiscal contributors. This is well-illustrated by US experience. As shown in Table 9, a very large share of personal income taxes in the US are paid by a tiny fraction of the population. For example, in 2002, over 15% of personal income taxes were paid by only 0.13% of taxpayers; the top 1.9% of taxpayers paid 40% of all personal income taxes. These are very well-off individuals and households, and they pay, on average, \$135,000 or more per year in taxes; those in the top income category pay more than \$800,000 in personal income taxes annually. The high degree of inequality in income tax burdens reflects of course both the high degree of inequality in the distribution of (taxable) income and the progressivity of the structure of tax rates.

For present purposes, the crucial observation is that the presence or absence of these high-income taxpayers is a matter of great importance for the US tax system. A hypothetical exodus of a mere 170,000 taxpayers (those at the very top) would result in the loss of some 15% of all personal income tax revenues, amounting to about 1.3% of GDP. In present-value terms, the permanent loss of these taxpayers would result (depending on the discount rate used) in the loss of tax revenue equal to 15–50% of one year's GDP.⁴ These taxpayers provide very large amounts of resources with which to finance the public sector.

Benefits for the Poor. There is a growing body of research detailing the extent to which immigrants receive social benefits in cash or in kind. In the US, the findings of MaCurdy *et al.* (1998) among many other studies that immigrants are on balance the beneficiaries of fiscal transfers. It is recognized, of course,

⁴It should be noted that "Adjusted Gross Income" is a tax-accounting concept of income. Much of the true economic income of taxpayers, particularly the rich, is not included in AGI. The rich thus pay a very high share of taxes, even taking into account the fact that they take advantage of many opportunities to shelter their income from taxation.

that this is not necessarily true for all immigrants – a distinction highlighted as well by Wadensjö and Orrje (2002). These authors find that the fiscal impact of “Western” immigrants (roughly, immigrant from OECD countries) on the Danish economy is rather similar to that of native Danes. As they progress through the life cycle, these immigrants tend at various stages to make net contributions to (in mid-life) and to receive net benefits from (when young, and with children, or old) the fiscal system. The experience with “non-Western” immigrants, on the other hand, is very different. These immigrants have quite different labor market experiences, in particular because their employment rates are relatively low.

This basic conclusion appears also in Hansen and Lofstrom (2001, 2003), who note that immigrants in Sweden receive social transfers far out of proportion to their share of the population. As noted above, slightly more than 10% of the Swedish population is foreign-born. But by the mid-1990s, immigrants were the recipients of approximately *half* of Swedish social welfare expenditures (basic social assistance benefits and unemployment benefits). Hansen and Lofstrom (2003) compare the employment and social benefit status of native Swedes, “non-refugee” immigrants, and “refugee” immigrants, and find that non-refugee immigrants do not differ markedly from natives but that refugee immigrants are much more likely to receive welfare benefits, and to do so persistently, and to have lower rates of employment.

Riphahn (1998, forthcoming)) analyzes welfare reciprocity by immigrants in Germany. Here, too, similar findings emerge: as in Sweden, welfare reciprocity has risen substantially over time and welfare spending has increased as well. Whereas foreigners accounted for 8.3% of welfare recipients in 1980, this share had increased to the 25–35% range (depending on the specific year) during the 1990s.

The above remarks have focused on the possible fiscal impacts of international migration. There have, however, been numerous analyses of the linkages between subnational government fiscal policies and internal migration in the US. To cite only one example, Conway and Houtenville (2001) examine the interstate migration by the elderly and find that they are significantly more likely to migrate toward states that provide more generous social-service support for the old. This study is of particular interest in that it focuses on a group that tends, for the most part, to have relatively low migration rates. Borjas (1999) examines the impacts of subnational fiscal policies – the generosity of state-determined welfare and social service benefits – on the location of immigrants from abroad, thus highlighting the importance of international migration for the fiscal policies of *subnational* governments.

Immigration and Intergenerational Transfers. As mentioned earlier, the demographic importance of immigrants in advanced economies, particularly those of Western Europe, is virtually certain to rise over time. Given the importance of public pensions in the fiscal systems of these economies and the rapid aging of their populations, attention is naturally drawn to the possibility of “solving” pension funding problems through immigration. Storesletten (2000), for instance, focuses on the US case and shows how a selective immigration policy –

one that succeeds in attracting high-productivity workers early in their working lifetimes – could result in a sufficiently favorable fiscal impact that the existing public pension system would be sustainable over time. Bonin *et al.* (2000) present a similar analysis for Germany and find also that immigrants are net contributors to the German public pension system, although intergenerational fiscal imbalances are sufficiently large that they are not completely offset even with high levels of immigration.⁵

Waddensjö and Orrje (2002) also emphasize the life-cycle effects of a migrant’s fiscal interaction and, like Storesletten, show how these effects can be assessed in present-value terms – a perspective that is particularly helpful when one recognizes the sometimes lengthy horizons over which migration impacts are felt. Wildasin (1999) presents estimates of the net present-value impact of migration in several EU countries, noting that these impacts – for workers with earnings similar to those of existing residents – can result in positive net fiscal contributions amounting to 15–30% of a migrant’s lifetime wealth.⁶

To take one more illustrative case, research by Collado and Iturbe-Ormaetxe (2004) find that immigrants to Spain – including recent immigrants from relatively poor countries – also make significant positive net fiscal impacts, taking public pension systems into account. Immigrants to Spain have employment rates as high as or higher than those of natives and earnings that are roughly 75% of the native level. Comparing results for the US presented by Auerbach and Oreopolous (2000), who find that immigrants have only a modest fiscal impact, Collado and Iturbe-Ormaetxe note that human capital and earnings differentials between natives and recent immigrants in the US is substantially larger than is the case for Spain, reflecting the characteristics both of native populations and of immigrants.

In summary, the measurement of the fiscal impact of migration is a difficult task, both conceptually and empirically; this is especially true when the life-cycle and intergenerational dimensions of migration are considered. The foregoing remarks are not intended to provide the basis for any summary evaluation of the net impact of immigration for any one country, much less for a group of countries. There can be little doubt, however, that demographic change can have, and have had, quantitatively very important impacts on the fiscal systems of modern economies.

⁵The fundamental demographics of age imbalances in rich countries and the magnitudes of immigration that would be needed to offset them, are thoroughly discussed in United Nations (2000). Age imbalances in the US are modest by comparison with those in a number of West European countries, including Germany.

⁶See Ablett (1999) for a study of the fiscal impact of immigrants, from a generational accounting perspective, in Australia. As Table 1 shows, migrants account for an unusually large share of the population in Australia, making this a particularly important aspect of generational accounting for that country.

3 Assessing the Degree of Factor Market Integration: Toward a Dynamic Perspective

The preceding discussion has provided some indications of recent experience with labor mobility and some of its possible implications for fiscal systems in advanced economies. However, such descriptive information is ultimately of limited value, in itself, in determining whether factor mobility is “really important” for public finance. The present section discusses some of the basic insights to be gleaned from the analysis of fiscal competition and some of the difficulties involved in arriving at a satisfactory assessment of the “degree” of factor mobility.

Competition: A Race to ...?

It is sometimes asserted that competition for mobile resources can lead governments into a “race to the bottom,” which is usually interpreted to mean (vaguely) an outcome in which governments spend (or regulate) “too little,” i.e., less than is socially optimal. Perhaps it is possible to arrive at a more accurate assessment of the implications of fiscal competition by exploiting the analogy to competition among firms in an industry. It is true that competition can sometimes lead firms to reduce their prices, but it is not true that competition leads to prices that approach or are close to zero. In a competitive economy, one can expect to find many different types of goods and services, some of which are low-cost and some of which are high-cost. Competition does not necessarily lead to prices that approach a “bottom,” but rather to prices that approach marginal cost. This contributes to the efficiency of resource allocation in the absence of market failures, and of course may lead to inefficiency when market failures (for example, due to imperfect information, incompleteness of markets, etc.) do occur. Very similar remarks apply, in general terms, to the competition among governments.

To be somewhat more precise, consider a typical “fiscal competition” situation in which a jurisdiction utilizes factors of production, such as labor and capital, which are exchanged on markets both within and without the jurisdiction. Assuming that the jurisdiction is “small” relative to the relevant external markets, any policy changes that it undertakes will have no effect on the external prices of these factors, that is, in the language of international economics, no “terms of trade” effects. If a given policy attracts some additional units of labor or capital to the jurisdiction, there will be some fiscal impact, of the sort described above. Immigrants, or new investment, will participate in the local fiscal system, and will (a) make some fiscal contributions, present and future, through the revenue system, and (b) impose some fiscal burdens, present and future, by utilizing public services and programs and necessitating additional public expenditures. If the latter – the marginal cost of providing public goods and services, including cash and in-kind transfers – exceeds the former, in present-value terms, the incremental units of labor or capital entail a net fiscal burden, a cost that must be absorbed by existing residents or owners of resources located within the jurisdiction. If the fiscal contributions exceed the marginal cost of the fiscal burden, the incremental units of labor and capital produce a net benefit from which ex-

isting residents or owners of resources within the jurisdiction can benefit. In the simplest models of fiscal competition, a jurisdiction adapts its policies so as to attract mobile resources that produce net fiscal benefits and to repel those that impose net fiscal burdens. This can be done by adjusting tax and expenditure policies, specifically by lowering taxes or spending more to provide better public services to attract desired labor or capital and by doing the opposite to repel labor or capital for which the marginal cost of public service provision exceeds fiscal contributions. Once a jurisdiction has chosen its optimal policy, then for every mobile resource, the “marginal net fiscal benefit” to the jurisdiction from attracting additional units of that resource, that is, the difference between fiscal contributions through the revenue system net of the marginal cost of providing public services, will be driven to zero:⁷

$$MNFB = T - MC = 0.$$

Properly interpreted (or, if necessary, modified), this simple expression can allow for many real-world complexities, including dynamic effects and externalities, and satisfaction of this condition requires optimal adjustment of a wide range of policies that simultaneously affect many agents within the economy; in practice, second-best considerations inevitably imply that this condition can only be approximated. Even allowing for such complexities, however, the basic insight still remains: the competition for mobile resources is predicted to reduce the amount of redistribution in the sense that mobile resources must pay in taxes an amount sufficient to cover the cost of the incremental resources expended by the jurisdiction on account of their presence. In reality, this process is unlikely to involve a “race” and it is not necessarily to result in low levels of taxation and spending; it does, however, put downward pressure on redistribution, defined as a mismatch or inequality between fiscal contributions and fiscal benefits. The analogy to competition among firms is more apt, in this context, than the concept of a “race to the bottom.”

The End of the Welfare State?

One way to think about redistributive policies is that they transform a gross distribution of income (or, better, utility) into a different, net distribution of income. In order to understand the true economic consequences of these policies, it is necessary to analyze how they affect economic incentives, marketplace behavior, and equilibrium prices. This is true whether the goal of the analysis is normative or positive. For example, the use of income taxes to finance redistributive transfers has been studied from a normative perspective in an important body of literature on optimal income taxation, given great impetus by Mirrlees (1971) (but tracing its roots back to Sidgwick (1907)), and from a political-economy perspective in an equally-impressive body of work of which Meltzer and Richard (1981) provides one example.⁸ In both cases, the ana-

⁷See Wildasin (1998) for further discussion of this and other basic insights from the literature on fiscal competition. A more formal treatment, with many references to previous literature and with discussion of numerous extensions and qualifications, appears in Wildasin (1986, Section 2).

⁸See Persson and Tabellini (2000) for an overview of this and much other related research

lysis of public policy – in this case, tax and transfer policy – begins with a determination of the impact of alternative policies on the economic well-being of individuals, or, if one prefers to characterize it somewhat differently, with a mapping of policies into individual payoffs. This includes an analysis of the effects of policy on economic behavior, classically exemplified by labor/leisure substitution, which affects the efficiency of resource allocation as well as the impact of redistributive policy on the distribution of welfare.⁹ Understanding this mapping is the first step in a recursive analytical structure. The second step, in a political economy framework, is to ascertain how and why different agents may influence the policymaking process, how this depends on the nature of the political institutions, etc. In a normative analysis, the second step is to determine which policy alternatives produce better or worse outcomes according to some normative criteria. The key observation is that both types of analysis require an understanding of how policies affect the welfare of individuals or households – sometimes called utility or real income, and frequently approximated, as a practical matter, by some version of money income. And this requires some determination of who is affected by public policies, and how.

Traditionally, the literature on redistributive policy assumes (often implicitly) that the markets within which redistributive policies are implemented are co-extensive with the boundaries of the jurisdiction that imposes the policies – an assumption, one should note, that also underlies important early contributions to the study of fiscal federalism. Stigler’s (1957) discussion of the limits of local redistribution, for example, very explicitly identifies the high degree of factor mobility facing lower-level governments as a principal reason to shift the responsibility for redistributive policymaking up to higher-level governments. Oates (1972) also emphasizes this point, and notes further the importance of factor mobility for local and regional economic development policies. Brennan and Buchanan (1980) highlight the role that factor mobility may play as a brake on redistributive policies. These analysts thus identify fiscal competition as a force that shapes the organization of the public sector in a federation, sometimes called the “assignment problem” (Breton (1965)). Indeed, generally speaking, the major redistributive functions of modern governments are undertaken by national rather than subnational governments, an outcome that is certainly consistent with the notion that the latter are highly open with respect to factor movements and are thus less able or less inclined to engage in redistribution – but only if the former are not so completely open.

But is it the case that national factor markets are “closed” with respect to external markets, as in traditional public and international economics approaches? If so, it is safe to ignore the incentives that redistributive policies create for the movement of factors of production across national boundaries and to focus on the labor/leisure, saving/investment, and other traditional margins of behavioral adjustment to these policies. On the other hand, if national factor markets are “open,” then factor mobility presents another “behavioral margin” along which economic agents can adjust in response to the incentives offered by

on political economy.

⁹The discussion in Mulligan (2001) well illustrates the close connections between optimal tax analysis and the political economy of redistributive policy.

redistributive policies and that may bring significant competitive pressures to bear on these policies. But the “welfare state” has not (yet) disappeared, if it ever will. The preceding discussion has shown that labor mobility is certainly present within national economies such as those of the US and Canada, but it is certainly not absent at the international level, either. The same is true with respect to capital mobility. Are factor markets within countries “more open” than international factor markets, so that national governments, even if not fully closed, have a “comparative advantage” in undertaking redistributive policies? Are international factor markets now “more” open than in the past, and if so, by how much? Operationally, how does one determine the “degree” of factor market integration? As we have just noted, the answers to these questions may potentially carry far-reaching implications, ranging from the possible erosion of modern welfare states to the reconfiguration of the institutions of the public sector including possibly the emergence of new, larger governmental structures such as an EU that assumes the redistributive role of today’s national governments.

What Is a Factor Market?

As should be clear by now, the concept of a factor market, and especially the determination of the geographic scope of a factor market, is a matter of critical importance for the analysis of the economic effects of public policy, especially redistributive policy. It is far from a simple task, however, to assess the degree of integration of factor markets across space. The following remarks indicate some of pitfalls to be avoided in addressing this issue.

Does Openness Imply Trade? To begin with, evidence of the actual movement of labor or capital across spatial boundaries such as that presented in Section 2 is, by itself, an indication that factors of production are mobile. However, it is also an indication of “disequilibrium” in factor markets or, more correctly, of dynamic adjustment in factor markets, which is not, properly speaking, a measure of the degree of “openness” or “integration” of markets. To take the familiar case of interregional or international trade, it is well known that the economies of two regions can be completely free of any trade barriers or significant transactions costs and yet the volume of trade between these regions can be very small or even zero.¹⁰ A high volume of trade between two regions, in other words, reflects not only the degree of openness but also the extent of differences in the economic fundamentals that make trade valuable. Exactly the same remarks apply to factor markets. The absence of factor movements across space could mean that factors are “non-traded” commodities because of prohibitive costs. But they can also mean that there is little gain to be realized from factor movements, because, for example, factor returns do not diverge much across locations.

¹⁰Students of economics learn early on, in their first exposure to models of trade, that gains from trade arise among households or economies when there are differences in preferences, endowments, and technologies; it is an elementary exercise to use demand and supply or Edgeworth box analysis to illustrate a “no-trade equilibrium,” that is, a situation in which exchange, though possible, does not occur in equilibrium. To say that differences in fundamentals are *sufficient* for trade, of course, is not to say that they are *necessary*. In particular, in the presence of imperfect competition arising from increasing returns, trade in differentiated products can occur even when countries are *ex ante* identical.

Of course, if the equilibrium volume of trade flows or factor movements is low, there is an important sense in which the integration of goods and factor markets is not important: restriction or elimination of exchange in goods or factors, by itself, would have little effect on the efficiency of resource allocation or on factor prices and the distribution of income. Nevertheless, the openness of markets can be very important for public policy purposes, even if the equilibrium volume of cross-boundary resource flows is small.

To illustrate with a simple neoclassical example: suppose that the economy of some jurisdiction has a linear homogeneous production technology that uses a factor of production ℓ , along with some other inputs, to produce output valued at $f(\ell)$, where $f'(\ell) > 0 > f''(\ell)$. This factor of production could be “labor” in general, or specific types of labor (high-skilled, low-skilled, young, old), or capital, in one form or another. Suppose that this factor of production is freely mobile and earns a net rate of return w outside of this jurisdiction. Let ℓ_0 denote the amount of the input ℓ that is supplied within the jurisdiction, so that $\ell - \ell_0$ represents the net inflow of this input. Suppose that the jurisdiction imposes a source-based tax τ_ℓ on the return to this input. The net rate of return to a mobile factor of production must be the same internally as externally, and thus, assuming competitive markets, $(1 - \tau_\ell)f'(\ell) \equiv w$ in equilibrium. This condition can be used to solve for $\ell(\tau_\ell)$, with $\ell'(\tau_\ell) = 1/f''(\ell) < 0$. Note that local taxation of the mobile resource (a) has no effect on the net return to the mobile resource employed within the jurisdiction – the incidence of the tax is completely shifted (in fact, is borne by the owners of other immobile resources within the jurisdiction) and (b) affects the spatial allocation of the mobile resource: the higher the local tax, the less of the mobile resource that will be employed within the jurisdiction. It is just this sort of analysis that leads to the conclusion that fiscal competition takes away the incentive for governments to engage in redistribution: in this setting, redistributive taxes (or transfers) do not actually affect the net return to mobile factors, but they do impose a net cost, in the form of allocative effects, on the taxing jurisdiction.

The key point to note here is that these distributional and allocative effects of the tax are completely independent of the value of $\ell(\tau_\ell) - \ell_0$: the jurisdiction may be a large or small importer or exporter of the mobile resource, or perhaps have absolutely no net trade with the rest of the world. The volume of the observed factor flow is irrelevant to the basic conclusions of the analysis. Thus, although the data on migration flows presented in Section 2 does provide an indication that labor is not completely immobile, it is a mistake to identify the amount of migration with the amount of mobility of labor: migration requires both the *ability* to move and an *incentive* to do so.

Integration of Factor Markets: Total or Marginal? All economists are aware of the distinction between the “marginal” and the “inframarginal” consumer. The inframarginal consumer has settled purchase patterns, always buying the same brand or product type without bothering to do comparison shopping whether because of true brand preference or simple inertia and habit. There are other consumers, however, who are quite prepared to switch their purchasing patterns, perhaps because their purchasing habits are not well-established or because they

find it less costly to gather information about alternatives. As is well known, the demand elasticity for a commodity depends critically, and in some cases exclusively, on the behavior of these marginal consumers.

It is obvious that precisely the same considerations come into play in assessing factor mobility. Consider two small regions in France, Germany, or Ohio. It is quite possible that the older, well-established native residents of these regions have a strong attachment to their home regions, and that fluctuating economic conditions – expansion in one region, contraction in another – would cause very few of them to relocate, as this would entail giving up valued networks of social relations in addition to many other tangible and intangible costs. Even so, younger residents of these regions, just finishing their education and entering the labor force, often unmarried and with no children, might find a move toward more vibrant employment prospects well worth the cost and risk involved. And even if these young natives remain closely attached to their home regions, consider the situation facing immigrant workers freshly arrived from Algeria, Turkey, or Mexico. These workers may well face linguistic, cultural, and other relocation costs that far exceed some of those that confront natives, and perhaps just for that reason are especially likely to be alert to promising employment opportunities, in each instance shunning the declining region while making themselves readily available to employers in the expanding region.¹¹ The presence of such “marginal” migrants implies that the allocation of labor resources among regions is sensitive to demand fluctuations and that the impact of demand fluctuations on equilibrium wages is smaller than would otherwise be the case, thus contributing to the effective integration of labor markets across space.¹² Exactly analogous remarks apply to the movement of capital and to the spatial organization of firms and industries.

These observations can be illustrated formally using the simple model sketched above. If ℓ_0 units of a productive resource are supplied within a jurisdiction, and if some fraction $\alpha \in [0, 1]$ of this resource is absolutely immobile, the critical question is whether the demand for the resource within the jurisdiction ℓ exceeds $\alpha\ell_0$; in particular, this condition will always be satisfied if $\ell > \ell_0$, that is, if the

¹¹It goes without saying that “chain” or “network” migration plays an important role in shaping migration paths both within and among countries. Chain migration is essentially a form of learning-by-doing and can be expected to give rise to path-dependence and other increasing-returns phenomena, making this one of several instances in which there are significant benefits to be gained from explicit consideration of the dynamics of factor mobility. These phenomena do not, however, fundamentally undercut the basic fact that young workers or immigrants contribute substantially to the integration of regional labor markets even when many participants in those markets may be relatively immobile; indeed, network migration means that the effects of policies on the location of workers can be protracted and cumulative, as discussed by Thum (2000).

¹²Immigration in the US is characterized by clustering of immigrants in so-called “gateway cities” like New York, Los Angeles, or Miami, and some have attempted to gauge the impact of immigration on US labor markets by examining whether the presence of large numbers of immigrants in these cities puts downward pressure on wages relative to cities with fewer immigrants. Studies of internal migration in the US invariably find that migrants tend to relocate away from regions with slack demand for labor to regions with high demand, however, which means that heavy flows of immigrants into gateway cities is likely to reduce the flow of native workers into those cities. As a result, any downward wage pressure resulting from immigration is transmitted to other regions in the country and is not confined to metropolitan areas with large concentrations of immigrants.

jurisdiction is a net importer of the mobile resource. Provided that this is the case, the fact that some units of the input are immobile carries no implications at all for the allocation of resources, for the distribution of income, or for policies that do not perturb existing equilibrium allocations too much.

Integration of Factor Markets As a Policy Choice. There are many direct and indirect costs associated with the flow of resources across space. The development of new production facilities, distribution networks, or other non-financial assets (including intangible assets like innovations or recognizable trademarks) in new locations, whether within a given country or in a new country, is a costly and time-consuming process. Households a variety of tangible and intangible costs when they relocate. These include the out-of-pocket costs associated with moving but also the costs of forming new market relationships, the costs of disrupting valuable social relationships (including family, religious, and ethnic ties), and perhaps the cost of learning new languages. It is true that the development of information technology has reduced the costs of many forms of communications and has made it possible to execute financial transactions, such as the buying and selling of financial assets, at much lower costs (including time costs) than was true in the past, and, for some purposes, these costs may be treated as negligible. In general, however, there are real economic costs, tangible and intangible, associated with the movement of factors of production. These costs depend on “technology,” broadly defined; for example, the cost of crossing the world’s oceans are much lower today than was true one or two centuries ago, and young people, in some parts of the world, have better access to linguistic and other forms of education that lower the cost of moving.

These *fundamental* costs of factor mobility should be distinguished sharply from *policy barriers* to factor mobility. These can take many forms and are generally most important and certainly most conspicuous at the international level. Countries frequently impose direct controls over the movement of capital and labor across international boundaries. In the European context, these controls were most dramatically manifested during the period of Soviet dominance over Eastern Europe by controls on *emigration* from Eastern Europe and the Soviet Union, exemplified by the Berlin Wall. The “planned” economies also commonly utilized internal passport controls (such as China’s *hukou* system) which inhibited the movement of people within national boundaries, as did South Africa during the *apartheid* era (Wildasin (2003, b)). Of course, the rich countries of the world have utilized explicit controls on *immigration*, such as immigration quotas, for many decades.¹³

¹³In this as in other aspects of public policy, it is important to distinguish between *de jure* and *de facto* policies. According to the US Immigration and Naturalization Service (INS) (2000), which provides estimates of illegal immigration for the period 1990-2000, there were 3.5 million illegal immigrants in the US in 1990, a number that grew to 7 million by the year 2000, an average annual inflow of about 0.35 million. These figures may be compared to a flow of 4.5 million *legal* immigrants during the decade 1971-1980, 7.3 million during 1981-1990, and 9.1 million during 1991-2000. This high level of illegal immigration is hardly a new phenomenon in the US. Although it is impossible to obtain highly accurate data, it is noteworthy that the number of illegal immigrants in the US was reduced by about 2.7 million people during 1987-1988 as a result of the 1986 Immigration Reform and Control Act which in effect provided an amnesty for some illegal immigrants. Roughly speaking, one could conclude that illegal immigrants constitute about 20-30% of total annual immigrant flow in

In addition to direct controls over labor and capital movements, there are many other policies that can impede factor mobility. Other objectives they may achieve, regulatory policies such as occupational licensure can raise the costs for teachers, health-care workers, lawyers, and other service providers to qualify for employment in jurisdictions other than those where they were trained. Land-use controls, rent controls, and other regulations governing housing markets can constrain the ability of workers to move into jurisdictions where their skills are in demand. Similarly, there are many potential policy impediments to capital mobility, including explicit controls on financial flows, prohibitions on foreign ownership of capital assets, discriminatory tax and regulatory policies, and many others. (For instance, Summers (1988) notes that tariff and other trade policies that limit current account deficits also have the effect of constraining capital inflows.)

For some purposes of policy analysis, the policy barriers to factor mobility should of course be taken as given. For instance, many discussions of European monetary union during the past decade have alluded to Mundell's (1961) theory of optimal currency areas, defining these to be areas within which labor is not very mobile. In this context, attention focuses on the possible use of discretionary macroeconomic policies to manage short-term fluctuations, with little concern for the allocative or distributional consequences of labor mobility.¹⁴ For other purposes, on the other hand, the policy barriers to factor mobility cannot be ignored, even if, or indeed precisely because, they may be very effective in limiting factor movements. By way of analogy, imagine a country that has imposed tariffs that are so high as to reduce trade to zero. The fact that trade is not observed empirically certainly does not mean that trade is not an important policy issue; on the contrary, it might well be the *most* important policy issue facing the country. Similarly, a tax that is levied at a sufficiently high rate can raise almost no revenue and yet cause great economic harm. The division of Korean peninsula today provides an example, not unlike that of pre-unification Germany, of a situation where migration is very close to zero but where (impending) labor mobility is an economic and public policy issue of fundamental importance, precisely because the observed immobility of labor is attributable to a policy (that of North Korea) that can be expected to change (as soon as the North Korean regime collapses).

Gross vs. Net Flows. Many economic analyses of factor flows tend to focus on *net* capital and labor (or population) flows. This emphasis is not surprising, given the common practice in macroeconomic analysis of using simple aggregate

recent decades. Since the presence of large numbers of illegal immigrants has been well-known for such a long period of time, it is difficult to escape the conclusion that US policy, *de facto*, has been to allow much higher levels of immigration than the *de jure* policy would suggest. Similar remarks undoubtedly apply, though perhaps with less force, in Western Europe.

¹⁴There seems to be little or no consensus, operationally speaking, about the degree of labor mobility that is needed to establish an optimal currency area. Perhaps this is partly because there is considerable debate about the desirability of using monetary policy to manage short-term economic fluctuations. The formation of a currency union involves a structural change in the institutions of monetary policymaking, and raises much deeper issues than those that arise in the context of short-run macro policy, notably, whether monetary union strengthens or weakens central bank independence and whether it hardens or softens the constraints under which fiscal policies are made. See, e.g., McKinnon (1997a, 1997b).

production functions of the form $F(K, L)$ to describe input-output relationships and (functional) income distribution. In such a framework, the total stocks of capital and labor – and, thus, total output and the distribution of income – are affected, if at all, only by net flows across boundaries. Any large inflow of labor or capital that is offset by an equally large outflow is predicted, within the context of the model, to have no economic significance. Indeed, within the context of the model, such offsetting flows would have to be regarded as wasteful, to the extent that there is any cost associated with factor flows.

In reality, as noted in Section 2, many jurisdictions exhibit gross factor flows that are often several greater than net factor flows. Within and among countries, labor and capital are observed to flow in opposing directions – and this is a persistent feature of factor markets. Little research has been done to date on the explanations for such factor flows. One possibility is that these offsetting flows are truly wasteful, for instance because there are informational or other inefficiencies that result in “churning” of factor allocations.¹⁵ However, it is also quite likely that gross flows reflect underlying heterogeneity of factors: German manufacturing firms that invest in plants in Italy are identical neither to Italian retailing firms investing in Germany nor to existing manufacturing firms in Italy; doctors relocating from Canada to the US are identical neither to existing doctors in the US nor to US software engineers relocating to Canada. More than 15% of the college graduates trained in 6 of 9 regions in the US leave these regions within 5 years of graduation, and more than 15% of the college graduates within these regions will have arrived within the past 5 years (Kodrycki (2001)). Irish workers migrate abroad for a period of time, returning to jobs in Ireland after a period of work abroad, are not identical to Irish workers who remain in Ireland (Barrett (2002), Barrett and O’Connell (2001)) without venturing abroad. These flows of labor and capital may largely offset each other in aggregate terms. It would be a major error, however, to conclude that only net flows “matter,” just as it would be a major error to infer that a country with balanced trade (imports equal in value to exports) would be unaffected by a complete cessation of trade with the rest of the world. Furthermore, ignoring gross flows can lead to major misunderstanding of the consequences of fiscal policies. A policy that taxes one group of workers or firms to subsidize another group may have no effect at all on the total number of workers or amount of capital in a jurisdiction if all workers or capital are completely immobile; it can also have no effect at all if both groups are mobile, but outflows of one group offset inflows of the other group. The distributional and efficiency effects of this tax/transfer policy will be quite different in these two cases: whereas there may be large distributional impacts and small allocative losses from the policy in the first case, precisely the reverse can happen in the second case.

To illustrate, suppose that output within a region is a linear homogeneous and concave function of some immobile resources (for example, natural resources or capital) together with two potentially mobile factors of production, ℓ_1 and ℓ_2 (for example, high-skilled and low-skilled labor). Suppose that the government imposes a tax $\tau_1 > 0$ on the first of these inputs and uses the proceeds to

¹⁵For one example of a model in which informational asymmetries result in efficient turnover of labor among firms or jurisdictions, see Wildasin and Wilson (1996).

finance a subsidy $\sigma_2 > 0$ to the second. If these inputs are fixed in supply, then this redistributive policy has no effect on the marginal productivity and thus the gross return to each input – i.e., total output and the gross distribution of income is unaffected by this tax/transfer policy. The distribution of *net* income is, however, altered: the net income of the first input falls by τ_1 per unit while the net income of the second rises by σ_2 . The gross and net income of the other, immobile, productive factors are both unaffected by this policy.

Now suppose that both inputs are mobile, at least at the margin, and let w_1 and w_2 denote the prices of these inputs on external markets. Assuming that the production function $f(\ell_1, \ell_2)$ is strictly concave, the equilibrium conditions

$$f_1 - \tau_1 = w_1$$

$$f_2 + \sigma_2 = w_2$$

together with the government budget constraint

$$\tau_1 \ell_1 = \sigma_2 \ell_2$$

can be used to solve for $\ell_i(\tau_1)$. In general, the precise quantitative response of ℓ_i to a (balanced-budget) change in τ_1 depends on the form of the production function and on the initial value of τ_1 , but, given adequate substitutability between these inputs, $\ell'_1(\tau_1) < 0 < \ell'_2(\tau_1)$, that is, an increase in the level of redistributive transfers will reduce the equilibrium quantity of the taxed input and increase the equilibrium quantity of the subsidized input. In simple if somewhat special cases, the “total amount” of these inputs, $\ell_1 + \ell_2$ (say, the sum of the number of high-skilled and low-skilled workers) is unaffected by the choice of τ_1 and σ_2 , that is, the introduction (or expansion) of this redistributive policy may result in “zero net factor flows” – assuming that different factors of production are (inappropriately) added together. Now, however, offsetting gross factor flows mean that (a) the tax/transfer policy has no effect on the distribution of *net* income within the jurisdiction, (b) the before-tax return to the taxed (subsidized) input rises (falls) by the full amount of the tax (subsidy), and (c) the *gross and net* incomes of the other, immobile factors of production in the jurisdiction are reduced.¹⁶ Furthermore, the aggregation of offsetting gross flows into net flows may incorrectly suggest that redistributive fiscal policies have zero or negligible impacts on the movement of labor or capital.

Mobility of Fiscal Flows vs. Mobility of Factors. For public-finance purposes, factor mobility can take forms that do not necessarily correspond to factor flows as normally measured for purposes of demography, national income accounting, or other purposes. For example, the term “migration” is normally used in a demographic sense to refer to a person’s place of residence. A place of residence is also a place where an individual’s income is subject to taxation. It need not, however, correspond to the place where an individual’s income is generated, or where an individual utilizes publicly-provided services.

¹⁶Proof: Using the equilibrium condition and government budget-balance constraint to solve for $\ell_i(\tau_1)$, differentiate $f(\ell_1(\tau_1), \ell_2(\tau_1)) - \sum_i \ell_i(\tau_1) f_i(\ell_1(\tau_1), \ell_2(\tau_1))$ with respect to τ_1 . Details are given in Wildasin (1992).

This concept is very familiar at small geographic scales: a perennial issue in local public finance, for example, concerns the taxation of commuters who (classically) may work in a central city but reside in a suburb. The central city may enjoy some revenue flow from the taxation of employer's payrolls or from taxation of consumption by commuters, while on the other side of the fiscal accounts it may have to incur extra costs to provide public safety, transportation, or other services enjoyed by commuters. In this context, labor mobility can be very important for fiscal purposes even if it does not correspond to "migration" in its classic demographic sense.

Though less often noted, considerable international mobility of labor occurs other than that which is normally called "migration." In the European context, one need only consider the operations of any major European corporation. Invariably, these corporations have plants, distribution networks, customers, and other business relations that span multiple countries. Not only the profitability but the very existence of these forms of business organization depend critically on the ability of the business' employees – especially upper-level employees such as top executives – to travel freely to conduct meetings, oversee operations, develop client relationships, or, in some other of a multitude of ways, to engage in business communications and activities. The productivity of many if not all business managers, industry scientists, or financial officers would be dramatically limited if it were impossible to move freely for purposes of business travel – which is to say that a substantial portion of the income of such workers is dependent on mobility and thus, in economic terms, is earned in those locations to which the worker travels.¹⁷ For tax purposes, however, earnings and income taxation is based on the location where a worker resides. Since the taxation of highly-compensated workers accounts for a very large fraction of tax revenues, the fiscal implications of "non-migration" labor mobility can be very high.

Very similar issues arise with respect to the taxation of firms and the issue of capital mobility. Because of the flexibility with which business structures can be organized, it is a comparatively simple matter for one business to employ workers, utilize fixed capital assets, and produce goods in one location and for most or all of the net income generated by these business activities to accrue to a different business located in an entirely different jurisdiction. The apportionment of corporation income for tax purposes is one possible method by which governments can attempt to grapple with this problem, but this solution, if it can be called that, is highly imperfect. At the international level, tax treaties could conceivably provide a means by which business income could be linked to taxable entities in various jurisdictions. The topic of business organizational structure and business taxation is a complex one that cannot be discussed at length in this paper, but the key point to note is that the location of "capital income" for tax purposes need not bear a particularly obvious relationship to the "capital stock" as measured for many other purposes.

¹⁷To the author's knowledge, no careful analysis has been made of the relationship between business organizational form and the mobility of managers and executives. Business travel can readily be observed, on a daily basis, in the major airports and train stations of any advanced economy. Systematic research on this issue, both theoretical and empirical, would be most worthwhile.

A Dynamic Perspective

Historical studies (see, e.g., Hatton and Williamson (1994) and references therein) attest to the importance of international movements of labor and capital in past eras when the fundamental costs of factor mobility were far higher than today. Capital and labor are drawn to regions where factor returns are high, and these factor movements contribute to the equalization of factor returns. The fact that regions like North America continue to attract labor even after centuries of immigration demonstrates, however, that the adjustment of the world's stocks of labor and capital is far from an instantaneous process. Indeed, the US has witnessed net internal migration flows (for example, toward the Pacific) that have persisted for many decades, contributing, but only gradually, to the equalization of incomes among regions. Decressin and Fatas (1995) show that the speed of adjustment of labor flows in response to regional demand shocks in Europe is slower than in the US – but that this adjustment process is also time-consuming in the US, as well. Similarly, Coulombe (2003) finds that interprovincial migration flows within Canada respond relatively modestly to cyclical fluctuations in labor demand but depend much more heavily on longer-term structural labor market conditions.

These considerations suggest that the “degree” of factor mobility depends on the time horizon allowed for factor movements to occur. In general, one would expect that factor movements that are cheap and easily reversible would occur rapidly while those that are very costly and difficult to reverse would occur more slowly. These costs vary from one factor to another and depend both on economic fundamentals as well as on policy barriers. Just as adjustment costs play a central role in the analysis of the investment behavior of firms, industries, and entire economies, so the adjustment of a region's stocks of capital and labor should be expected to depend on the cost of factor movements across space. The rate of factor movement – as measured by factor movements or investment flows – is determined by economic agents (households and firms) balancing costs and benefits, and can be great or small depending on the payoffs and impediments to such movement. In addition, the speeds of adjustment of different factors of production are presumably interrelated, possibly in complex ways. The degree of labor mobility, for example, presumably depends on the degree of capital mobility. Nineteenth-century migration from the Old World to the New (Hatton and Williamson (1994)) was accompanied by capital flows in the same direction: growing availability of labor created larger inducements for capital investments, and conversely. It is easy to envisage models in which rapidly and slowly adjusting factors exhibit complex dynamics.¹⁸

Viewed from this perspective, idealized theoretical models in which factors of production are assumed, alternatively, to be either completely immobile or freely mobile, are not well-suited to guide empirical research on fiscal competition. As the data described in Section 2 indicate, the glass of factor mobility at any geographic scale is always half full and half empty: factor movements occur, are larger in some contexts than in others, but are never instantaneous and are

¹⁸For discussions that emphasize the role of human capital as a slowly-adjusting factor and the way that this interacts with rapidly-adjusting capital, see Kremer and Thomson (1998) and Ducynski (2000).

always limited in magnitude. These are the data on which empirical research on factor market integration must be based, and it is therefore desirable to develop theoretical models that can fit these basic facts. Adjustment cost models of the type that have become standard in empirical research on investment would seem to offer one convenient analytical framework that can not only guide empirical research, but that can also be utilized to develop theoretical models with which to interpret the findings of empirical research. For instance, in one simple application of this approach (Wildasin, 2000,a, 2003, a), the “degree of mobility” of a productive resource is characterized by the (endogenously-determined, empirically observed) speed with which the stock of a factor of production within a jurisdiction adjusts to changes in rates of return. The competition for this resource leads a small, open jurisdiction to impose a net fiscal burden on it that is inversely proportional to this speed of adjustment; thus, a highly mobile resource is taxed less heavily than one that is more mobile. Of course, the explicit introduction of dynamic adjustment immediately adds a host of complications to theoretical work, including notably the proper treatment of dynamic policy choice. This issue is discussed further below.

4 Factor Mobility and Its Implications

This concluding section explores some of the implications of the preceding discussion for several important policy and research issues.

The Efficiency and Distributional Effects of Factor Mobility

What are the efficiency gains from factor mobility? This question has rarely been addressed quantitatively. A CGE analysis by Hamilton and Whalley (1984) estimated that the world economy would reap large efficiency gains if labor could move freely to wherever it could be most productively employed. But the opportunities for empirical research on this question appear to be very substantial and so far largely unexploited.¹⁹ For example, as noted in Section 2, the US economy exhibits substantial ongoing internal migration. Is this migration productive? By how much would US GDP be diminished if, hypothetically, the country were divided into, say, 15 isolated regions? What would be the efficiency losses from a partial or total blockage of migration by workers if the conditions for capital mobility were left unchanged, and conversely? The answers to these questions would be of interest not only because they would shed light on the economic development of the US, but because they would provide some guidance in assessing the potential gains from liberalization of factor flows elsewhere in the world – for instance, within the EU.

Of course, factor movements affect factor prices: inflows of workers, for example, put downward pressure on the wages of other, highly-substitutable workers, and raise the returns to complementary inputs. These distributional effects may work in the same direction as public-sector redistributive policies or in opposing directions. These effects – like the efficiency gains from factor mobility – are

¹⁹However, see Heijdra *et al.* (2002) for discussion of the some of the efficiency gains from EU enlargement.

likely to vary over time and thus should be analyzed in a dynamic setting. For example, although “refugee” or “non-Western” immigrants may arrive in EU countries with very low skills and thus weaken labor market conditions for native low-skill workers, they (or their offspring) may compete with higher-skill workers as time passes and they become better educated, more language-proficient, or otherwise better-assimilated.

Factor market integration can also affect income risk. For example, the constant migration flows of highly-educated workers in the labor markets of North America suggests that demand conditions for these workers change unpredictably over time. From the viewpoint of the individual worker, the ability to relocate in order to take advantage of better labor market opportunities means that the lifetime path of earnings is higher than it would otherwise be, but for workers as a group, it also means that earnings are more uniform across regions and thus less risky, when seen from an *ex ante* perspective. Capital flows likewise reduce the riskiness of returns to capital. More stable factor prices reduce the cost of income risk, reduce the value of public policies that offset fluctuating incomes, can encourage greater investment in human or non-human capital by risk-averse factor owners (Wildasin, 2000, b), and may alter the demand for private-market institutions (especially through financial and insurance markets) for risk-sharing. On the other hand, reduced income risk for mobile factors of production may mean that immobile factors end up absorbing more risk (Wildasin, 1995); for example, if young workers leave Eastern Europe or Eastern Germany for better jobs in the West, they may reduce the already low rate of return on *existing* capital in their native regions and thus exacerbate a loss of income already suffered by owners of “old” capital in these regions. The implications of factor market integration for the distribution of income risk are thus complex, especially when one recognizes that the prices of different factors of production – capital and labor of many different types – are simultaneously determined through a general-equilibrium mechanism.

These and other economic effects of factor-market integration have been examined in previous theoretical analyses but are not yet well-understood in practice. This is an important area for further investigation since the analysis of fiscal competition depends first and foremost on a clear understanding of the workings of factor markets.

Factor Mobility and Political Economy

A memorable phrase in Samuelson’s (1947) *Foundations of Economic Analysis* identifies theoretical results that are potentially empirically refutable as “meaningful theorems”. The specific context of Samuelson’s remark was the derivation of comparative statics results for the theory of the consumer. In essence, Samuelson’s remark emphasizes that the purpose of utility theory, from the viewpoint of empirical testing, is merely to form a bridge between changes in one observable, the household’s budget constraint, and another observable, the household’s consumption choice. The inner workings of the consumer’s subjective preferences are not themselves observable and therefore, from an operational viewpoint, are “meaningless.” The integration of factor markets – if it can be defined operationally – may provide the opportunity to formulate “meaningful theorems”

about public sector decisionmaking. Models of fiscal competition are ultimately predictive models of government policymaking. What are some of the testable implications that emerge from the analysis of fiscal competition?

Exit vs. Voice. As mentioned above, the study of the political economy of redistributive policy requires, first, an understanding of how different policies affect the interests of different potential participants in the policymaking process. In the simplest models of fiscal competition, the net incomes of the owners of freely-mobile resources are unaffected by changes in the fiscal treatment of these resources, in contrast to the situation facing immobile resources. Freely-mobile resources enjoy the ultimate in “exit” options, and thus their owners have no reason to exercise “voice” (Hirschman 1970).

This simple observation leads to some potentially interesting predictions. For example: participation in the political process through voting, lobbying, or by other means yields no benefit to the owners of mobile resources; since these activities are costly, they would be predicted not to engage in them (see Wildasin, forthcoming, for more discussion). To a rough first approximation, this simple observation could help to explain low voter participation rates by young people or renters who are relatively mobile compared to older people or homeowners. Conversely, the owners of immobile resources do have an incentive to participate in the political process. The interests of those who participate in this process – for example, older workers or owners of sector-specific fixed capital investments – may come into conflict, and each may attempt to influence tax and expenditure policy in their own self-interest. In doing so, one group may succeed in extracting net transfers from the other, normally at some net cost in terms of efficiency losses from the distortion of economic incentives. While it is true that some of those who exercise “voice” may gain, others will lose. The observed “rate of return” on participation in the political process will thus be negative for some – while those who rationally do not participate (the owners of mobile resources) are not harmed by their lack of voice.

Marceau and Smart (2003) explore lobbying for favorably fiscal treatment by industries in a non-spatial context, and show that industries for which the cost of adjustment of the capital stock is high are likely to engage more intensively in costly lobbying activities, and in doing so are likely to secure more favorable fiscal treatment. Net of lobbying costs, however, they can end up with lower returns than industries that have lower adjustment costs and therefore rationally engage in less lobbying. If one observes that the cost of capital relocation is a form of adjustment cost, then the Marceau-Smart analysis can be interpreted roughly as confirming the foregoing remarks: owners of more mobile resources lobby less, while those who own less mobile resources may lobby more but still end up worse off. Although the Marceau-Smart analysis does not involve explicit dynamics, empirical analysis of the dynamics of the adjustment of factor stocks would provide a basis for assessing the degree of factor mobility for different factors of production and thus form a basis for predictions about the extent of lobbying effort by different groups.

An issue that warrants mention in this context is that of “fiscal discrimination” between native and non-native residents or factor owners generally. The nature

of competition for mobile resources can change quite substantially if there are ways – direct or indirect – through which the fiscal treatment of “marginal” factor owners is decoupled from that of “incumbent” factor owners. (Section 3’s of “total” and “marginal” integration of factor markets can be seen as one way to distinguish between “incumbent” and “marginal” factor owners.) For instance, governments may facilitate or impede the delivery of social services, education, or other benefits to recent immigrants or offer special relocation incentives to firms, workers in “high demand” skill categories, or immigrant entrepreneurs. Fiscal incentives to compete for mobile resources could make it difficult to sustain effective political coalitions among incumbent and marginal owners of a given type of resource, whenever it is feasible to apply differentiated policies to them.

Comparative Public Finance

The simplest models of fiscal competition treat individual jurisdictions as though they serve the interests of a single representative household. Other analyses model the political process much more explicitly, distinguishing, for example, between direct democracy and representative government or between “presidential” and “parliamentary” systems of government (see, e.g., Janeba and Schelderup (2002)). Analyses of this type permit potentially testable implications that could be assessed by comparing policymaking in different countries.

EU Enlargement, Factor Market Integration, and Fiscal Competition

The planned enlargement of the EU can be expected to affect many aspects of policymaking in EU countries. In particular, it will liberalize trade in goods and services which might have the effect of reducing migration pressure from Eastern Europe (Mundell (1957)). Increased trade liberalization might then increase the demand for national governments to protect declining sectors and sector-specific factors of production, resulting in higher levels of redistribution (Rodrik (1998)).

On the other hand, EU enlargement also liberalizes border controls, allowing citizens from new member states to travel freely to the West and to seek employment there. And the experience of the internal labor markets of Canada and the US suggests that liberalized trade in goods and services among regions within a country does not remove the incentives for movements of productive resources; indeed, it is quite possible, empirically, that “trade and migration are complements.”

The extent to which East-West migration is affected by EU enlargement remains to be seen. A recent survey of public opinion about EU membership among residents of 13 candidate member states (European Commission, 2002; Fig. 4.1.3 and Table 4.1c) led to some rather striking findings about the perceived benefits of EU membership, however. When asked to identify the meaning of “being a citizen of Europe,” 72% of respondents cited the “right to work in any country in the EU,” 69% cited “being able to study in any EU country,” and 68% cited the right to move permanently to any country in the EU” as the top three (obviously non-exclusive) choices. “Access to health care and social welfare benefits anywhere in the EU” came fourth at 58%, while political rights

(the right to vote in European parliament, local, or national elections) all were cited by fewer than one-third of respondents. These opinions are found across all candidate countries: 75% of Turkish respondents cite “Right to Move” as most important, for instance, but this figure was very high elsewhere, too: it exceeds 50% for all countries and exceeds two-thirds for all but Malta and Slovenia; it exceeds 80% in Cyprus, Estonia, and Hungary.²⁰

If EU enlargement leads to greater factor mobility and to more competition for mobile resources among EU countries, then, far from increasing the pressures on national governments to provide greater protection from trade shocks, enlargement may instead put added constraints on some of the redistributive policies of these governments. If existing institutions – i.e., national governments operating with a high degree of fiscal autonomy – cannot meet demands for redistributive policies, then EU enlargement may give rise to further demands for new institutional structures that either reduce national fiscal autonomy (e.g., through binding agreements to coordinate fiscal policies) or to endow the EU itself with the power and autonomy to undertake redistributive policies itself – perhaps ultimately supplanting the role of national governments in this sphere of policymaking. In view of the great diversity of existing national policies and of the varied political interests that they reflect, either of these paths of institutional development will have to confront serious obstacles.

5 Conclusion

Migration is an age-old phenomenon and its economic consequences have always been important. Capital mobility has likewise played an important role in economic growth and development. As demonstrated by O’Rourke and Williamson (1999) (and references therein), transatlantic capital and labor flows had major impacts on wages, returns to capital, and land rents – on both sides of the Atlantic – throughout the nineteenth century. Indeed, the economic development of the entire western hemisphere over a period of several centuries has depended critically not only upon international movements of capital and labor but upon internal factor movements as well. The story is no different in Europe, where the growth of now-advanced economies has depended crucially on the intertwined processes of industrialization and rural-urban reallocations of labor and capital. Whether assessed in terms of overall macroeconomic growth or in terms of the distribution of income, the gradual integration of internal and international factor markets has had profound economic implications.

There is, however, “something new under the sun.” The economic effects and the economic determinants of migration and capital mobility during the last half-century differ from that of previous periods because of the growth of the public sector and particularly because of the expansion of the redistributive activities of government. Historically, and with notable exceptions (e.g., enslavement and the escape from slavery), the principal benefits and costs of migration and of capital movements have accrued to migrants themselves and to capital own-

²⁰I am grateful to M. Gabel for bringing this study to my attention.

ers. By moving themselves or by relocating the capital that they own, workers and capital owners have achieved different (normally higher) levels of income, and have enjoyed different (normally higher) levels of consumption, than would otherwise have been attainable.

By contrast, modern welfare states collect one-third to one-half of national income through a variety of revenue instruments, depending primarily on the taxation of household income and consumption, and they spend most of this revenue on cash and in-kind transfers to households. For individual households, these taxes and transfers seldom net out to zero; instead, most households, at particular periods of time and throughout their lifetimes, are (or would be) net contributors to or net beneficiaries of the fiscal systems in the national and subnational jurisdictions in which they do (or could) reside. For this reason, a substantial portion of the economic impact of factor movements accrues not to factor owners themselves but to others in the jurisdictions to and from which these productive resources flow. The efficiency and distributional implications of factor market integration are thus very different in modern economies, presenting new and far-reaching challenges for public policy and, indeed, for the structure and organization of the public sector itself. Recent controversies regarding EU enlargement and the EU constitution exemplify these challenges.

Appendix

A Note on the Development of Modeling Traditions in Public and International Economics

Eli Heckscher's name is most familiar to modern economists because of his contributions to international trade theory. Heckscher's *Mercantilism* (1934) is much less well known, though it is still considered to be an important reference on the subject. There is an interesting connection between Heckscher's historical studies, the Heckscher-Ohlin model of international trade, and modern public economics. In brief, Heckscher views the mercantilist period as one in which national governments grew in importance as loci of economic policymaking, in significant part by asserting dominance over older policymaking institutions that operated on smaller geographical scales. He notes that local guilds and municipal authorities had traditionally exerted great influence over "external" commerce, including restrictions on trade among regions and also, significantly, on the movement of labor among regions.

As Heckscher shows, the liberalization of national internal markets was not a smooth or rapid process, nor was it brought about by deliberate design. It was the consequence of the evolution of institutions and structures of governance. By the 1920s, the process of urbanization associated with the development of modern industry had revealed the power of relatively free internal markets for labor and capital to draw resources away from rural areas into cities. It is thus natural for authors such as Ohlin (1924) to emphasize the integration of factor markets within nations, laying the groundwork for the stylized textbook Heckscher-Ohlin model which reduces countries, spatially speaking, to dimensionless points within which factors of production flow freely among sectors, and among which factors of production cannot move at all. This would not have been the model that Heckscher would have applied to mercantilist Europe: the economies of England, France, and Germany at that time were highly fragmented and there were many impediments – specifically, *policy* impediments – to the free movement of productive resources within these countries.

It has often been remarked that international economics and public finance share many of the same analytical tools and traditions. In particular, both have made extensive use of general equilibrium theory, including the two-sector general equilibrium model (see, e.g., Jones (1965), Johnson (1971), Harberger (1962)), to understand the allocative and distributional effects of public policies. In international economics, the classic problem of public policy is to analyze the efficiency and distributional consequences of changes in tariffs; customarily, this problem is investigated under the assumption that "domestic" economic policy consists of little more than a mechanism for lump-sum distribution of tariff revenues to residents. In public finance, classic problems include the analysis of the efficiency and distributional consequences of taxes on some or all factors of production employed in some or all sectors of the economy; customarily, these problems are investigated under the assumption that the economy is entirely isolated from the rest of the world, both with respect to trade in goods and

services and with respect to movement of factors of production.

For much of the postwar period, this arrangement has facilitated a productive intellectual division of labor – one, however, which deprecates the analysis of the issues discussed here. However justified these modeling traditions may have been in the past, it is highly appropriate to reexamine their underlying assumptions during periods of significant institutional change, such as the increased impetus toward economic integration in the EU and the economic and political changes that have occurred in Eastern Europe and the former Soviet Union, including German unification, since the collapse of the Soviet regime.

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TABLE 1

**International Migration Rates, Selected OECD Countries
Selected Years, 1988--2000**

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Australia | | | | | | | | | | | | | |
| Inflow | | | | | 0.61% | 0.96% | 1.03% | 1.17% | 1.25% | 1.25% | 1.33% | 1.47% | 1.65% |
| Outflow | | | | | 0.28% | 0.25% | 0.24% | 0.24% | 0.25% | 0.25% | 0.26% | 0.25% | 0.27% |
| Gross/Net | | | | | 2.66 | 1.72 | 1.61 | 1.53 | 1.49 | 1.50 | 1.49 | 1.41 | 1.38 |
| Gross | | | | | 0.89% | 1.21% | 1.28% | 1.41% | 1.50% | 1.51% | 1.60% | 1.72% | 1.92% |
| Austria | | | | | | | | | | | | | |
| Inflow | | | | | | | | | | | 0.73% | 0.89% | 0.81% |
| Outflow | | | | | | | | | | | 0.55% | 0.58% | 0.55% |
| Gross/Net | | | | | | | | | | | 7.28 | 4.77 | 5.11 |
| Gross | | | | | | | | | | | 1.29% | 1.48% | 1.36% |
| Belgium | | | | | | | | | | | | | |
| Inflow | 0.39% | 0.44% | 0.51% | 0.54% | 0.55% | 0.53% | 0.55% | 0.52% | 0.51% | 0.48% | 0.50% | 0.67% | 0.67% |
| Outflow | 0.33% | 0.28% | 0.27% | 0.35% | 0.28% | 0.31% | 0.34% | 0.33% | 0.32% | 0.34% | 0.36% | 0.36% | 0.35% |
| Gross/Net | 11.9 | 4.4 | 3.3 | 4.8 | 3.1 | 3.9 | 4.1 | 4.3 | 4.3 | 5.7 | 6.0 | 3.3 | 3.2 |
| Gross | 0.71% | 0.71% | 0.78% | 0.89% | 0.83% | 0.83% | 0.89% | 0.85% | 0.83% | 0.82% | 0.85% | 1.03% | 1.02% |
| Denmark | | | | | | | | | | | | | |
| Inflow | 0.27% | 0.29% | 0.29% | 0.34% | 0.33% | 0.30% | 0.25% | 0.25% | 0.24% | 0.23% | 0.23% | 0.28% | |
| Outflow | 0.10% | 0.09% | 0.09% | 0.10% | 0.09% | 0.09% | 0.10% | 0.10% | 0.11% | 0.13% | 0.15% | 0.15% | |
| Gross/Net | 2.2 | 1.9 | 1.9 | 1.8 | 1.8 | 1.9 | 2.3 | 2.3 | 2.8 | 3.4 | 4.3 | 3.4 | |
| Gross | 0.37% | 0.39% | 0.38% | 0.44% | 0.42% | 0.39% | 0.34% | 0.35% | 0.36% | 0.36% | 0.38% | 0.44% | |
| Finland | | | | | | | | | | | | | |
| Inflow | | 0.08% | 0.13% | 0.25% | 0.21% | 0.22% | 0.15% | 0.14% | 0.15% | 0.16% | 0.16% | 0.15% | 0.18% |
| Outflow | | 0.02% | 0.02% | 0.02% | 0.03% | 0.03% | 0.03% | 0.03% | 0.06% | 0.03% | 0.03% | 0.04% | 0.08% |
| Gross/Net | | 1.6 | 1.3 | 1.2 | 1.3 | 1.3 | 1.5 | 1.5 | 2.3 | 1.5 | 1.5 | 1.7 | 2.6 |
| Gross | | 0.10% | 0.15% | 0.27% | 0.24% | 0.24% | 0.18% | 0.17% | 0.21% | 0.19% | 0.19% | 0.19% | 0.26% |
| Germany | | | | | | | | | | | | | |
| Inflow | 0.83% | 0.98% | 1.06% | 1.15% | 1.50% | 1.22% | 0.95% | 0.97% | 0.86% | 0.75% | 0.74% | 0.82% | 0.79% |
| Outflow | 0.46% | 0.56% | 0.59% | 0.62% | 0.76% | 0.88% | 0.76% | 0.69% | 0.68% | 0.78% | 0.78% | 0.68% | 0.68% |
| Gross/Net | 3.5 | 3.6 | 3.5 | 3.4 | 3.1 | 6.1 | 9.2 | 5.9 | 8.5 | -57.4 | -37.1 | 10.4 | 14.0 |
| Gross | 1.29% | 1.54% | 1.65% | 1.77% | 2.26% | 2.09% | 1.71% | 1.65% | 1.55% | 1.53% | 1.52% | 1.50% | 1.47% |
| Hungary | | | | | | | | | | | | | |
| Inflow | | | | 0.22% | 0.15% | 0.16% | 0.12% | 0.13% | 0.12% | 0.12% | 0.12% | 0.15% | |
| Outflow | | | | 0.06% | 0.06% | 0.05% | 0.05% | 0.04% | 0.06% | 0.06% | 0.06% | 0.06% | |
| Gross/Net | | | | 1.7 | 2.2 | 1.9 | 2.3 | 2.0 | 2.6 | 3.0 | 3.0 | 2.4 | |
| Gross | | | | 0.28% | 0.20% | 0.21% | 0.17% | 0.17% | 0.18% | 0.18% | 0.18% | 0.21% | |

TABLE 1 (Cont.)

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Luxembourg | | | | | | | | | | | | | |
| Inflow | 2.19% | 2.23% | 2.44% | 2.59% | 2.50% | 2.32% | 2.28% | 2.34% | 2.21% | 2.23% | 2.49% | 2.73% | 2.47% |
| Outflow | 1.41% | 1.46% | 1.44% | 1.53% | 1.43% | 1.26% | 1.31% | 1.20% | 1.35% | 1.38% | 1.57% | 1.60% | 1.62% |
| Gross/Net | 4.7 | 4.8 | 3.9 | 3.9 | 3.7 | 3.4 | 3.7 | 3.1 | 4.1 | 4.2 | 4.4 | 3.8 | 4.8 |
| Gross | 3.60% | 3.69% | 3.88% | 4.12% | 3.94% | 3.57% | 3.59% | 3.54% | 3.56% | 3.61% | 4.06% | 4.33% | 4.09% |
| Netherlands | | | | | | | | | | | | | |
| Inflow | 0.39% | 0.44% | 0.54% | 0.56% | 0.55% | 0.57% | 0.44% | 0.43% | 0.50% | 0.49% | 0.52% | 0.50% | 0.58% |
| Outflow | 0.14% | 0.14% | 0.14% | 0.14% | 0.15% | 0.15% | 0.15% | 0.14% | 0.14% | 0.14% | 0.14% | 0.13% | 0.13% |
| Gross/Net | 2.2 | 2.0 | 1.7 | 1.7 | 1.8 | 1.7 | 2.0 | 2.0 | 1.8 | 1.8 | 1.7 | 1.7 | 1.6 |
| Gross | 0.54% | 0.59% | 0.68% | 0.70% | 0.70% | 0.72% | 0.59% | 0.57% | 0.64% | 0.63% | 0.66% | 0.63% | 0.71% |
| Norway | | | | | | | | | | | | | |
| Inflow | 0.55% | 0.44% | 0.37% | 0.38% | 0.40% | 0.52% | 0.41% | 0.38% | 0.39% | 0.50% | 0.60% | 0.72% | 0.62% |
| Outflow | 0.22% | 0.25% | 0.23% | 0.20% | 0.19% | 0.24% | 0.22% | 0.21% | 0.23% | 0.23% | 0.27% | 0.28% | 0.33% |
| Gross/Net | 2.3 | 3.7 | 4.3 | 3.2 | 2.8 | 2.8 | 3.3 | 3.4 | 3.8 | 2.7 | 2.6 | 2.3 | 3.3 |
| Gross | 0.77% | 0.69% | 0.60% | 0.57% | 0.59% | 0.76% | 0.63% | 0.58% | 0.62% | 0.73% | 0.87% | 1.01% | 0.95% |
| Sweden | | | | | | | | | | | | | |
| Inflow | 0.53% | 0.69% | 0.62% | 0.51% | 0.46% | 0.63% | 0.85% | 0.41% | 0.33% | 0.38% | 0.40% | 0.39% | 0.38% |
| Outflow | 0.14% | 0.15% | 0.19% | 0.17% | 0.15% | 0.17% | 0.18% | 0.17% | 0.16% | 0.17% | 0.16% | 0.15% | 0.14% |
| Gross/Net | 1.7 | 1.6 | 1.9 | 2.0 | 2.0 | 1.7 | 1.5 | 2.5 | 3.0 | 2.7 | 2.3 | 2.3 | 2.1 |
| Gross | 0.67% | 0.85% | 0.81% | 0.68% | 0.61% | 0.80% | 1.03% | 0.58% | 0.49% | 0.55% | 0.56% | 0.54% | 0.52% |
| Switzerland | | | | | | | | | | | | | |
| Inflow | 1.13% | 1.19% | 1.48% | 1.59% | 1.60% | 1.47% | 1.29% | 1.23% | 1.03% | 1.01% | 1.04% | 1.18% | 1.20% |
| Outflow | 0.83% | 0.85% | 0.87% | 0.96% | 1.15% | 1.01% | 0.90% | 0.94% | 0.94% | 0.88% | 0.82% | 0.80% | 0.77% |
| Gross/Net | 6.5 | 6.0 | 3.9 | 4.1 | 6.1 | 5.3 | 5.7 | 7.6 | 21.5 | 14.5 | 8.4 | 5.2 | 4.5 |
| Gross | 1.97% | 2.04% | 2.35% | 2.55% | 2.75% | 2.48% | 2.19% | 2.17% | 1.97% | 1.89% | 1.85% | 1.99% | 1.97% |

Source: Inflows and outflows: OECD (1999a), Table A.1.1 (for 1988-1990 data); OECD(2003), Tables A.1.1, A.1.2. Population: US Bureau of the Census, International Data Base
Note: Data shown only for years in which both inflows and outflows are available.

TABLE 2**Stocks of Foreign-Born Population, Selected OECD Countries
As Percentage of Total**

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Australia | | 22.9 | 23.0 | 22.9 | 22.9 | 23.0 | 23.3 | 23.3 | 23.3 | 23.3 | 23.6 |
| Austria | | | | | | | | | 11.1 | 10.8 | 10.4 |
| Canada | | 16.1 | | | | | 17.4 | | | | |
| Denmark | | | 4.0 | 4.1 | 4.3 | 4.7 | 4.9 | 5.2 | 5.4 | 5.6 | 5.8 |
| Finland | | | | | | 2.0 | 2.1 | 2.3 | 2.4 | 2.5 | 2.6 |
| France | | | | | | | | | | 10.0 | |
| Hungary | | | | | | 2.8 | 2.8 | 2.8 | 2.8 | 2.9 | 2.9 |
| Mexico | | | | | | | | | | | 0.5 |
| Netherlands | 8.1 | | | 9.0 | 9.0 | 9.1 | 9.2 | 9.4 | 9.6 | 9.8 | 10.1 |
| New Zealand | | | | | | | | | | | 19.5 |
| Norway | | 4.6 | | 5.0 | 5.4 | 5.5 | 5.6 | 5.8 | 6.1 | 6.5 | 6.8 |
| Sweden | | | 9.6 | 9.9 | 10.5 | 10.5 | 11.0 | 11.0 | 10.8 | 11.8 | 11.3 |
| US | 7.9 | | | | 8.7 | 8.8 | 9.4 | 9.7 | 9.8 | 10.3 | 10.4 |

Source: OECD (1999a), Table A.1.5 (1990 data); OECD (2003), Table A.1.4.

TABLE 3**Stocks of Foreign Population, Selected OECD Countries,
As Percentage of Total**

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Austria | 4.5 | 5.1 | 5.9 | 6.8 | 7.9 | 8.6 | 8.9 | 9.0 | 9.0 | 9.1 | 9.1 | 9.2 | 9.3 |
| Belgium | 8.8 | 8.9 | 9.1 | 9.2 | 9.0 | 9.1 | 9.1 | 9.0 | 9.0 | 8.9 | 8.7 | 8.8 | 8.4 |
| Czech Republic | | | | | 0.4 | 0.8 | 1.0 | 1.5 | 1.9 | 2.0 | 2.1 | 2.2 | 2.0 |
| Denmark | 2.8 | 2.9 | 3.1 | 3.3 | 3.5 | 3.6 | 3.8 | 4.2 | 4.7 | 4.7 | 4.8 | 4.9 | 4.8 |
| Finland | 0.4 | 0.4 | 0.5 | 0.8 | 0.9 | 1.1 | 1.2 | 1.3 | 1.4 | 1.6 | 1.6 | 1.7 | 1.8 |
| France | | | 6.3 | | | | | | | | | 5.6 | |
| Germany | 7.3 | 7.7 | 8.4 | 7.3 | 8.0 | 8.5 | 8.6 | 8.8 | 8.9 | 9.0 | 8.9 | 8.9 | 8.9 |
| Hungary | | | | | | | 1.3 | 1.4 | 1.4 | 1.4 | | 1.3 | |
| Ireland | 2.4 | 2.3 | 2.3 | 2.5 | 2.7 | 2.7 | 2.7 | 2.7 | 3.2 | 3.1 | 3.0 | 3.2 | 3.3 |
| Italy | 1.1 | 0.9 | 1.4 | 1.5 | 1.6 | 1.7 | 1.6 | 1.7 | 2.0 | 2.1 | 2.1 | 2.2 | 2.4 |
| Luxembourg | 27.4 | 27.9 | 29.4 | 30.2 | 31.0 | 31.8 | 32.6 | 33.4 | 34.1 | 34.9 | 35.6 | 36.0 | 37.3 |
| Netherlands | 4.2 | 4.3 | 4.6 | 4.8 | 5.0 | 5.1 | 5.0 | 4.7 | 4.4 | 4.3 | 4.2 | 4.1 | 4.2 |
| Norway | 3.2 | 3.3 | 3.4 | 3.5 | 3.6 | 3.8 | 3.8 | 3.7 | 3.6 | 3.6 | 3.7 | 4.0 | 4.1 |
| Portugal | 1.0 | 1.0 | 1.1 | 1.2 | 1.3 | 1.3 | 1.6 | 1.7 | 1.7 | 1.8 | 1.8 | 1.9 | 2.1 |
| Spain | 0.9 | 0.6 | 0.7 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.6 | 1.8 | 2.0 | 2.2 |
| Sweden | 5.0 | 5.3 | 5.6 | 5.7 | 5.7 | 5.8 | 6.1 | 5.2 | 6.0 | 6.0 | 5.6 | 5.5 | 5.4 |
| Switzerland | 15.2 | 15.6 | 16.3 | 17.1 | 17.6 | 18.1 | 18.6 | 18.9 | 18.9 | 19.0 | 19.0 | 19.2 | 19.3 |
| UK | 3.2 | 3.2 | 3.2 | 3.1 | 3.5 | 3.5 | 3.6 | 3.4 | 3.4 | 3.6 | 3.8 | 3.8 | 4.0 |

Source: OECD (1999a), Table A.1.6 (1990 data); OECD (2003), Table A.1.5.

Table 4

Fertility Rates, Selected OECD Countries

| | 2000 |
|--------------------|-------------|
| Australia | 1.72 |
| Austria | 1.31 |
| Belgium | 1.54 |
| Canada | 1.62 |
| Czech Republic | 1.14 |
| Denmark | 1.77 |
| Finland | 1.73 |
| France | 1.73 |
| Germany | 1.40 |
| Hungary | 1.30 |
| Italy | 1.22 |
| Netherlands | 1.71 |
| Norway | 1.80 |
| Portugal | 1.53 |
| Spain | 1.19 |
| Sweden | 1.50 |
| UK | 1.72 |
| US | 2.05 |
| Unweighted Average | 1.55 |

Source: Dang et al. (2001).

TABLE 5**Migration Rates in the United States, 1980--2000
Selected Years**

| Mobility period and type | Northeast | Midwest | South | West |
|--|------------------|----------------|--------------|---------------|
| 1999-2000 | | | | |
| Inmigrants..... | 0.68% | 1.12% | 1.26% | 1.21% |
| Outmigrants..... | 1.15% | 0.99% | 1.03% | 1.30% |
| Net internal migration..... | -0.47% | 0.13% | 0.23% | -0.09% |
| Movers from abroad..... | 0.54% | 0.37% | 0.61% | 0.96% |
| Net migration (including abroad)... | 0.07% | 0.50% | 0.84% | 0.87% |
| Gross Internal Migration Rate | 1.82% | 2.12% | 2.28% | 2.50% |
| Gross/Net Internal Migration Rate | -3.88 | 16.61 | 10.08 | -27.77 |
| 1989-90 | | | | |
| Inmigrants..... | 0.91% | 1.52% | 1.67% | 1.83% |
| Outmigrants..... | 1.49% | 1.72% | 1.40% | 1.48% |
| Net internal migration..... | -0.58% | -0.19% | 0.27% | 0.35% |
| Movers from abroad..... | 0.65% | 0.28% | 0.59% | 1.06% |
| Net migration (including abroad)... | 0.06% | 0.09% | 0.85% | 1.41% |
| Gross Internal Migration Rate | 2.40% | 3.24% | 3.07% | 3.31% |
| Gross/Net Internal Migration Rate | -4.10 | -16.66 | 11.42 | 9.54 |
| 1980-81 | | | | |
| Inmigrants..... | 0.94% | 1.10% | 1.83% | 2.02% |
| Outmigrants..... | 1.44% | 1.79% | 1.18% | 1.64% |
| Net internal migration..... | -0.49% | -0.69% | 0.65% | 0.37% |
| Movers from abroad..... | 0.42% | 0.31% | 0.55% | 1.19% |
| Net migration (including abroad)... | -0.07% | -0.38% | 1.19% | 1.56% |
| Gross Internal Migration Rate | 2.38% | 2.90% | 3.01% | 3.66% |
| Gross/Net Internal Migration Rate | -4.83 | -4.20 | 4.66 | 9.82 |

Source: Wildasin (2003); derived from US Bureau of the Census. All figures in thousands.

TABLE 6

Mobility Status of Canadian Population, 1996
(Percentage, by Place of Residence 1 Year Ago)
For Canada, Provinces, and Territories

| | Canada | Newfdld. PEI | Nova Scotia | New Brunswick | Quebec | Ontario |
|---------------------------------|--------|--------------|-------------|---------------|--------|---------|
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| External migrants | 0.8% | 0.2% | 0.2% | 0.3% | 0.2% | 1.0% |
| Interprovincial migrants | 1.0% | 1.3% | 2.6% | 1.9% | 1.8% | 0.6% |
| Intraprovincial migrants | 4.6% | 3.4% | 2.9% | 3.2% | 5.1% | 4.6% |
| Non-migrants | 9.0% | 6.0% | 8.8% | 7.7% | 7.7% | 8.5% |
| Non-movers | 84.5% | 89.1% | 87.5% | 85.8% | 86.9% | 85.3% |

| | Manitoba | Sask. | Alberta | British Columbia | Yukon | NW Terr. |
|---------------------------------|----------|--------|---------|------------------|--------|----------|
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| External migrants | 0.5% | 0.4% | 0.7% | 1.5% | 0.6% | 0.2% |
| Interprovincial migrants | 1.4% | 1.9% | 2.1% | 1.8% | 7.8% | 5.0% |
| Intraprovincial migrants | 2.8% | 4.2% | 4.3% | 5.4% | 2.5% | 4.3% |
| Non-migrants | 10.0% | 9.4% | 11.8% | 11.2% | 13.6% | 17.2% |
| Non-movers | 85.2% | 84.2% | 81.2% | 80.2% | 75.6% | 73.3% |

Source: Wildasin (2003), derived from Statistics Canada data.

TABLE 6 (Cont.)

**Population 1 Year and Over, Showing Mobility Status,
(Percentage, by Place of Residence 1 Year Ago)
For Canada, Provinces, and Territories**

| Ontario | | Sask. | Alberta | British Columbia | Yukon |
|----------------|---------------------------------|--------------|----------------|-----------------------------|--------------|
| 100.0% | Total | 100.0% | 100.0% | 100.0% | 100.0% |
| 1.0% | External migrants | 0.4% | 0.7% | 1.5% | 0.6% |
| 0.6% | Interprovincial migrants | 1.9% | 2.1% | 1.8% | 7.8% |
| 4.6% | Intraprovincial migrants | 4.2% | 4.3% | 5.4% | 2.5% |
| 8.5% | Non-migrants | 9.4% | 11.8% | 11.2% | 13.6% |
| 85.3% | Non-movers | 84.2% | 81.2% | 80.2% | 75.6% |

TABLE 7**Tax Structures, OECD Countries, 1965—2002**

Percentage Shares, Selected Years

| | 1965 | 1975 | 1985 | 1995 | 1997 | 2002 |
|-------------------------------|------|------|------|------|------|------|
| Personal Income Tax | 26 | 30 | 30 | 27 | 27 | 26 |
| Corporation Income Tax | 9 | 8 | 8 | 8 | 8 | 9 |
| Social Security Contributions | 18 | 22 | 22 | 25 | 25 | 25 |
| Property Taxes | 8 | 6 | 5 | 5 | 5 | 6 |
| General Consumption Taxes | 12 | 13 | 16 | 18 | 18 | 19 |
| Specific Consumption Taxes | 24 | 18 | 16 | 13 | 13 | 11 |
| Other | 3 | 3 | 3 | 4 | 4 | 3 |

Source: OECD (2004a), Table C (1999 ed. For 1997 data).

TABLE 8**Social Expenditures as Share of GDP, Selected OECD Countries
Selected Years, 1980—2001**

| | 1980 | 1985 | 1990 | 1995 | 2000 | 2001 |
|---------------------------|------|------|------|------|------|------|
| Australia | 11.3 | 13.5 | 14.2 | 17.8 | 18.6 | 18.0 |
| Austria | 22.5 | 24.1 | 24.1 | 26.6 | 26.0 | 26.0 |
| Belgium | 24.1 | 26.9 | 26.9 | 28.1 | 26.7 | 27.2 |
| Denmark | 29.1 | 27.9 | 29.3 | 32.4 | 28.9 | 29.2 |
| Finland | 18.5 | 23.0 | 24.8 | 31.1 | 24.5 | 24.8 |
| France | 21.1 | 26.6 | 26.6 | 29.2 | 28.3 | 28.5 |
| Germany | 23.0 | 23.6 | 22.8 | 27.5 | 27.2 | 27.4 |
| Greece | 11.5 | 17.9 | 20.9 | 21.4 | 23.6 | 24.3 |
| Ireland | 17.0 | 22.2 | 18.6 | 19.4 | 13.6 | 13.8 |
| Italy | 18.4 | 21.3 | 23.3 | 23.0 | 24.1 | 24.4 |
| Luxembourg | 23.5 | 23.0 | 21.9 | 23.8 | 20.0 | 20.8 |
| The Netherlands | 26.9 | 27.3 | 27.6 | 25.6 | 21.8 | 21.8 |
| Norway | 17.9 | 19.1 | 24.7 | 26.0 | 23.0 | 23.9 |
| Portugal | 10.9 | 11.1 | 13.9 | 18.0 | 20.5 | 21.1 |
| Spain | 15.9 | 18.2 | 19.5 | 21.4 | 19.9 | 19.6 |
| Sweden | 28.8 | 30.0 | 30.8 | 33.0 | 28.6 | 28.9 |
| Switzerland | 14.2 | 15.1 | 17.9 | 23.9 | 25.4 | 26.4 |
| United Kingdom | 17.9 | 21.1 | 19.5 | 23.0 | 21.7 | 21.8 |
| United States | 13.3 | 13.0 | 13.4 | 15.5 | 14.2 | 14.8 |
| Unweighted Average | 19.3 | 21.3 | 22.1 | 24.6 | 23.0 | 23.3 |

Source: OECD (2004b).

TABLE 9**Personal Income Taxation, US, 2002****High-Income Taxpayers**

| Adjusted gross income class | Number of Tax Returns (% of | Adjusted Gross Income (% of | Total Tax (% of Total) | Average Tax (\$ per Tax | Tax as % of Adjusted |
|---------------------------------|-----------------------------|-----------------------------|-------------------------|-------------------------|----------------------|
| All Tax Returns | 130,076,443 | \$6,033,585,532 | \$834,915,128 | \$6,419 | 13.84% |
| \$200,000 under \$500,000 | 1,908,466 1.47% | \$548,814,753 9.10% | \$129,600,389 15.52% | \$67,908 | 23.61% |
| \$500,000 -- \$1,000,000 | 336,684 0.26% | \$227,044,247 3.76% | \$64,681,440 7.75% | \$192,113 | 28.49% |
| \$1,000,000 or more | 168,977 0.13% | \$475,832,545 7.89% | \$137,257,697 16.44% | \$812,286 | 28.85% |
| All taxpayers \$200,000 or more | 1.86% | 20.75% | 39.71% | \$137,333 | |

Source: US Department of the Treasury (2004). Aggregate dollar amounts in thousands.

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