

4. LIBERALIZATION AND THE SPATIAL ALLOCATION OF POPULATION IN DEVELOPING AND TRANSITION COUNTRIES*

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A. INTRODUCTION

In many developing and, especially, transition countries, the process of economic reform is taking place against the backdrop of labor and housing markets that have been tightly regulated, in particular with respect to the *spatial allocation* of population. Improved labor productivity is, of course, one of the critical ingredients to raising living standards and improved economic performance generally. Liberalization of labor markets, and of other markets that influence the spatial allocation of labor, is thus an important and perhaps indispensable component of economic reform. But such liberalization has numerous consequences, not least for public finance. The goal of this chapter is to discuss several of the possible consequences of labor and housing market liberalization, including its implications for local public finance and intergovernmental fiscal relations. This discussion is motivated, in Section 2, by reference to the experience of three countries – Germany, South Africa and China – in which economic and political reforms have been undertaken within the context of significant spatial labor market disequilibrium. In each case, this disequilibrium had been established over a long period of time, and economic and political liberalization confronts policymakers with the challenge of responding to this disequilibrium.

Population movements can have substantial effects on the fiscal systems of local or regional governments, and the fiscal policies of these governments can in turn affect the incentives that households face in deciding where to reside and work. Sections 3 and 4 presents an analytical framework within which the interplay between demographic change and

fiscal policy can be examined, showing conditions under which the fiscal policies of regional government may or may not be compatible with efficient spatial distribution of population.¹ One important implication of this discussion is that demographic change necessitates policy changes on the part of local and regional governments. Section 5 describes the menu of policy options available to sub-national and central governments. Some directions of local fiscal adjustment may contribute to more efficient resource allocation, while others may aggravate spatial distortions. Assistance from higher-level governments can ease the burden of policy adjustment for sub-national authorities, but in doing so they can also affect the efficiency of resource allocation and the distribution of income. Section 6 concludes with some discussion of the recent experience of policy adjustment.

B. EXAMPLES OF SPATIAL DISEQUILIBRIUM

This section begins with a brief sketch of some aspects of spatial allocation of resources in Germany, South Africa and China. Though these are very different countries, they have in common a (recent) history of political and economic experience that has created and enforced a highly distorted spatial allocation of resources. After a brief outline of some of the relevant spatial characteristics of these and other countries, the discussion turns to a description of related issues of fiscal policy which are discussed more analytically in following sections.

1. Impediments to spatial equilibrium

(a) Germany

In the half-century prior to unification in 1991, the two Germanys had developed along quite different economic paths.² At the time of unification, the economies of the East and West differed in many respects, for example in the forms of business organization, patterns of investment, industrial structure and level of technological development. Earnings and productivity levels differed substantially, perhaps by a factor of two, between East and West Germany. Workers in the East, though not necessarily skilled in the same way as workers in the West, could

undoubtedly be employed more productively in the relatively well-functioning labor markets of the capital-rich and technologically advanced West. Fifty years of political separation and divergent economic policy created a disequilibrium in the inter-regional allocation of labor in Germany. This disequilibrium was sustained, of course, by vigorous enforcement of restrictions on cross-border migration, an enforcement mechanism that disappeared with German unification.

(b) China

For many years, the geographic and sectoral allocation of labor in China has been governed by the *hukou* or household registration system. This system, which developed as an integral component of the planned economy, required individuals to work in designated sectors (for example, agriculture) and in designated locations. In particular, it inhibited the free movement of workers to urban locations where they could be employed outside of agriculture, and facilitated the establishment and maintenance of real earnings differentials favoring urban, non-agricultural workers.³ By using state-owned enterprises to deliver housing, health care and other social services, important sources of real income could be tied to the employment relationship and could thus be denied to unregistered workers. Furthermore, household registration documents were required to obtain grain rations. Thus, state participation in and regulation of markets for essential goods – food, housing, health care – gave teeth to the *hukou* system, and helped to enforce geographic and sectoral labor allocations in accordance with planners' directives (Cheng and Selden, 1994; Wu, 1994). Deregulation of these markets, as well as of the labor market itself, undermines the enforcement mechanisms that sustained spatial disequilibrium in labor markets.

It is impossible to predict the future course of the total amount of Chinese internal migration with much accuracy, much less its precise composition and detailed spatial impact. Chan (1994) estimates that the urban population of China may rise from a 1990 level of about 25 percent to around 50 percent of the country's population by 2010. These are very large population changes in percentage terms and, in absolute terms, they are vast indeed. As of the early 1990s, World Bank (1993) estimates indicated that the permanent urban population of China stood at about 300 million, but that on any given day there are approximately 65 million temporary residents in the cities as well. More recent estimates (World

Bank, 1997, p. 54) indicate that ‘the current number of migrants [to urban areas] range[s] from 30 million to 200 million’, a statement that testifies both to the large absolute size of internal migration within China and the extreme difficulty of obtaining reliable data about it. These are rough indications of the magnitude of spatial disequilibrium in China that were created over the decades since the establishment of controls over internal migration.

(c) South Africa

South Africa, under apartheid, mandated spatial separation of the races, largely implemented through restrictions on residential choice. The races were substantially mixed among regions – blacks, whites and others could be found, in substantial proportions, in the major metropolitan areas of Johannesburg, Cape Town, Durban and elsewhere. However, *within* metropolitan areas, people were not free to live wherever they might choose; rather, different racial groups were required to live within specific localities in each metropolitan area. Workers of different races could thus mix in the workplace, though not freely, due to numerous detailed regulations regarding the occupational status and employment relationships of different races.⁴ But *residential* locational choices were highly distorted by apartheid policies. The end of apartheid has meant that the primary legal foundation for these spatial distortions, around which the metropolitan areas of modern South Africa have been erected over the past half-century or more, has been removed.

(d) Other countries

These countries are by no means the only ones in which spatial reallocation of population has occurred or is likely to occur. The economic development of North America has been, in part, a process of geographic and demographic change. The spatial adjustment process in the USA and Canada, however, has been a relatively continuous and gradual one. Korea presents a case where the political division of a country, coupled with divergent economic policies, has created significant economic disparities between regions though there is, as yet, no significant opportunity for spatial reallocation of population. North Korea, like East Germany, is poor in capital and technology and, more fundamentally, lacks legal and economic institutions conducive to productive resource

use. Labor in the North is therefore employed less productively than in the South. It is difficult to foresee exactly when major political change will occur in Korea, but when border controls are eventually eased or disappear, the existing spatial disequilibrium in the labor market will no longer be sustainable, in the absence of other policy interventions.

The Russian Federation is another country currently grappling with the problem of regional economic disparities and the potential spatial reallocation of population to which these may give rise. Like China, the former Soviet Union controlled labor markets and investment patterns using planning and enforcement mechanisms (internal passports, state regulation of employment, forced resettlement) that were far from compatible with the operation of free market forces. Now, there are regions and urban areas with uneconomic industrial capacity and increasing economic inequality across space. As discussed more thoroughly by Martinez-Vasquez and Boex (2001, Table 2.7), per capita GDP varies widely among regions in Russia, with the ratio between the richest and poorest regions rising from about 30 in 1992 to about 40 in 1996 and with the coefficient of variation fluctuating but rising overall (from 0.87 to 1.04) during this same period.

These examples could be multiplied. Other countries, and groups of countries, are undergoing significant population movements or are likely to do so. The Balkan region, central Africa, and central Asia are all areas where civil and international unrest and warfare have disrupted economic life and have created incentives for significant population movements. The industrialized countries as a group are experiencing high rates of immigration from developing and transition economies (see Wildasin, 2000; Coppel et al., 2001, and references therein). The countries of Eastern Europe, like South Africa, seem to exhibit highly distorted spatial structures *within* metropolitan areas, the result of poor investment and land-use decisions under the socialist planning regimes (Buckley and Mini, 2000). Economic and policy adaptation to population shifts is thus a phenomenon of widespread importance and interest.

2. Spatial disequilibrium and the public sector

As discussed more fully in the next sections, spatial variations in the real incomes of workers create incentives for workers to move from low- to high-income locations. This is the fundamental insight of the economic analysis of migration. Direct controls over population movements, such as

those found in Germany, China and South Africa, prevent workers from migrating and allow real income differentials to arise and persist. When these policies are liberalized, so that people can migrate more freely, they will tend to do so unless indirect instruments, such as tax and expenditure policies, induce them not to move. In either case, the liberalization of restrictions on movement will have important implications for public finance.

Although numerous studies have shed light on the fiscal impact of migration in various regions and countries, it is probably fair to say that there has never been a truly comprehensive analysis of this type for any country or region. In the context of East–West migration in Germany at the time of unification, of rural–urban migration in China, or of changes in the distribution of population in metropolitan areas in South Africa, however, there are some stylized facts that provide a reasonable basis for discussion.

(a) Germany

Prior to unification, West Germany was a relatively prosperous region with extensive government social insurance and redistributive policies. Unification provided a new opportunity for East German workers to move to the West, where they might earn better wages than in the East but where they would generally have lower earnings than their West German counterparts. The tax system of the West, relying heavily on income, payroll, and consumption taxes, would collect some revenue from East German migrants, but, on average, lower–paid East Germans would contribute less in taxes than West Germans. On the other hand, East Germans living in the West would be able to take advantage of many public goods and social services that are distributed either in favor of lower–income households or that are distributed relatively independently of incomes. ‘Social safety net’ programs would of course benefit the poor disproportionately, while public provision of education, transportation or public safety results in a relatively uniform distribution of benefits. For these reasons, relatively low–income East German workers moving to the West would tend to impose more public service provision costs than their contributions to revenues.

The situation in the East, at the time of unification, was more complex. Many state–supported enterprises in the East were unprofitable, in part because wages were above their competitive levels. The employment

relationship, in such cases, becomes a mechanism for the redistribution of income, and redistributive transfers can be viewed simply as congestible public services – each additional worker imposes a ‘congestion cost’ equal to the excess of earnings above marginal product.⁵ The result is that the net fiscal contributions of workers are negative, that is, the recipients of net transfers are using more, in public sector resources, than they are contributing. The privatization of state-owned enterprises and investment in new private enterprises in the East would undo this redistributive transfer mechanism by aligning wages more closely with worker productivity. Such enterprises would, as a result, become more competitive, and the efficiency of labor and capital allocation and utilization may thereby be increased. From a fiscal viewpoint, such a transformation of the employment relationship also has the effect of reducing transfers to workers.

Note, however, that reductions in the subsidies to uneconomic enterprises in the East would reduce the net incomes of workers there, and would increase the East–West real income differential. A higher rate of movement of workers from less productive and poorly compensated employment in the East to more-productive and better-compensated employment in the West would ensue. As described further below, an increase in the supply of workers in the West would put downward pressure on wages there; it would also increase the demand for housing in the West, and, depending on the degree of labor market flexibility, it could also increase unemployment in the West. Thus, the liberalization of labor markets would have many impacts throughout the German economy. Normatively speaking, there is scope for disagreement about whether East–West migration would on balance be a beneficial development. The alternative, leaving aside the unimaginable option of reinstating direct controls on movement across the East–West border, would be to dampen the economic incentives for East–West population movements by raising the real incomes of workers in the East above free-market levels. The obvious way to do this, and a policy option which has in fact been utilized since unification, is to engage in one form or another of fiscal transfers from West to East, for example by subsidizing employment or by extending social benefits to workers in the East. This experience is discussed further in Section 6 below.

(b) China

China presents an interesting contrast with Germany. Urban workers in China, through their employment relationships with state-owned enterprises, have generally obtained higher real incomes than their rural counterparts. Using state-owned enterprises to deliver housing, health care, and other social services made it possible to implement implicit fiscal transfers to urban workers, and thus to raise their real incomes. Tying these transfers to the employment relationship also helped to provide an enforcement mechanism for the *hukou* system, and thus for state control of the geographic and sectoral allocation of labor. The magnitude of implicit transfers to urban workers is not easy to gauge, but it appears that they may account for half or more of the real incomes of a large fraction of the urban population.

While state participation in and regulation of markets for essential goods – food, housing, health care – helps to enforce the *hukou* system and to sustain relatively high urban incomes, it also imposes large efficiency costs on the economy. As in the case of East Germany, economic reform entails increased reliance on markets for the allocation of labor, food, housing and other goods and services and reduced dependence on state-owned enterprises. Such reforms reduce the implicit fiscal transfers through the employment relationship. Unlike the case in East Germany, however, the liberalization of markets in urban areas in China would tend to undermine implicit fiscal transfers in favor of workers in the relatively *high-income* region. At the same time, liberalization of urban markets undermines the enforcement of restrictions on population movements. To an increasing degree, workers are able simply to go to non-government employers, obtain jobs, receive earnings, and use the earnings to purchase desired goods and services. Economic reforms of this type create new opportunities for rural–urban migration. The Chinese experience is reviewed further in Section 6.

(c) South Africa

The South African case parallels that of Germany and China in important respects, though on a somewhat different geographic scale. In the apartheid era, the races were mixed at the regional level; for example, the former province of Transvaal, with a total 1991 population of approximately 8.4 million, was inhabited by about 2.4 million whites and

5.5 million blacks, in addition to inhabitants of other races (Central Statistical Service, 1991). This province contained the major metropolitan areas of Johannesburg and Pretoria, areas which are now part of the new province of Gauteng, containing approximately the same geographic area, with 7.7 million inhabitants, 96 percent of which live in urban areas (National Treasury, 2000). However, the population was, and to a significant degree remains, sharply divided along racial lines *within* regions. The extent of economic inequality under apartheid was remarkably high, with the per capita income of the white population exceeding that of the black population by about tenfold during the entire period 1960–1987 (Fallon and Pereira da Silva, 1994, table 2.5). These economic inequalities were reflected in the spatial organization of local government. In white local areas, governments provided high-quality public services to high-income residents. Markets for land, housing and other property in these localities were well developed, and local property taxes were a principal revenue instrument for the financing of local public goods. By contrast, in poor areas such as Soweto, markets for land and housing were poorly developed and no effective mechanism of local finance existed. The quality of public service provision in non-white localities was also much lower. Roughly speaking, the local fiscal system under apartheid could be characterized as one in which high-income households, living in high-income localities, paid high taxes for high levels of local public services, while low-income households, living in low-income localities, paid low taxes for low levels of local public services.

The removal of race-based restrictions on location allows low-income households, at least to some extent, to move to localities from which they were previously excluded. In such localities, they consume less housing than existing high-income residents and, in terms of local property taxation, contribute a correspondingly small amount to local revenues. For local public services that are provided uniformly to local residents, low-income residents may thus enjoy services that are more costly than the revenues that they generate, thereby imposing net fiscal burdens on local governments, similarly to the fiscal impact that low-income East German workers might have upon relocating to West Germany. The provision of local public services in existing low-income areas in South Africa (townships like Soweto, for example) is hampered by poor development of local revenue systems, a problem partly attributable to poorly-developed land and housing markets, the emergence of squatter

settlements, and difficulties with the enforcement of payments for public services like electricity. The political reforms embodied in the new constitution have created pressures for the government to expand provision of housing and basic urban services to the poor. Subsidized provision of these goods and services in existing poor areas, rather like subsidies to workers in Eastern Germany, will tend to preserve the initial, distorted allocation of population within metropolitan areas, thus slowing the rate at which efficiency gains can be realized from evolution of urban form away from that inherited from the past. Section 6 discusses some of the initial policy responses to these issues, though the transition from the old regime is still in its early stages.

C. SOME IMPLICATIONS OF SPATIAL DISEQUILIBRIUM

In Germany, South Africa and China, political institutions and economic policies have created spatial distortions in the allocation of significant categories of human resources. These distortions give rise to economic inefficiencies as well as economic disparities. East German workers, nonwhite racial groups in South Africa, and rural households in China were (and still are) relatively poor groups within their respective societies. In each case, these groups have been spatially or locationally restrained, with important implications both for the efficiency of resource allocation and for the distribution of income.

1. Efficiency and distributional impacts on labor markets

Arbitrary spatial separation of markets, including markets involving the location of human resources, imposes efficiency costs. To illustrate the efficiency loss from distortions in the spatial allocation of labor, suppose that real output in each of two regions i , $i = 1, 2$, depends on the amounts l_{it} of various types of labor, $t = 1, \dots, T$, as well as on the amount of private sector capital k_i , the amount of public sector services and infrastructure, g_i , and the amount of land, minerals, water, and other natural resources n_i , as represented by the production function $F_i(l_{i1}, \dots, l_{iT}, k_i, g_i, n_i)$; the region subscript on the production function signifies that the production technology may also vary over space. Assuming for the moment that the

amounts of other inputs are fixed, and that there are fixed stocks of labor of each type,⁶ \bar{l}_i , that can be allocated freely between the two regions,

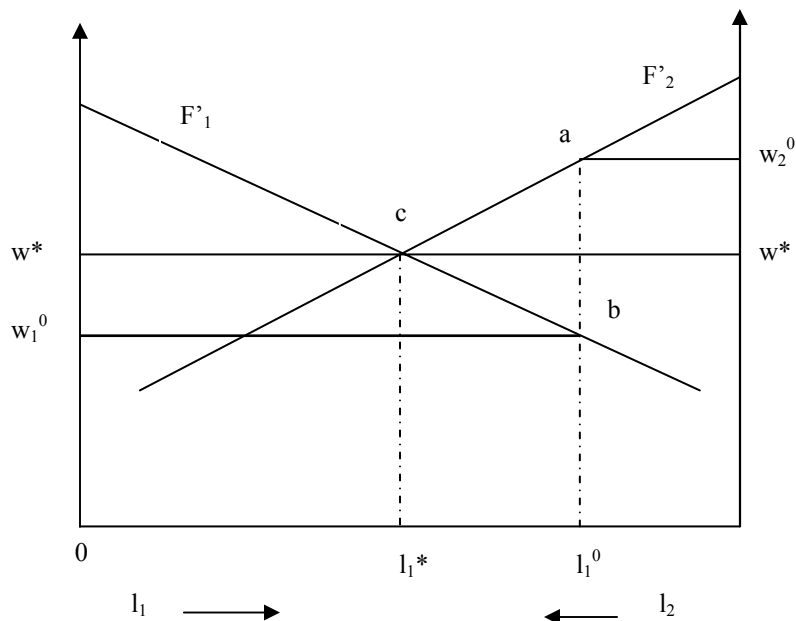


Figure 4.1

maximization of total output $F_1 + F_2$ requires that the amount of labor of each type t be set at levels l_{it}^* in each region such that the marginal product of each type of labor is the same in both regions, i.e., $\partial F_2 / \partial l_{1t} = \partial F_2 / \partial l_{2t}$, for every labor type t . Figure 4.1 illustrates this efficiency condition for labor of a single type, with a familiar diagram: the efficient allocation of labor occurs when there are l_1^* workers in region 1, with the remainder in region 2. If the amount of labor of one or more types t in region 1 is arbitrarily restricted to some amount $l_{1t}^0 \neq l_{1t}^*$, then there is an efficiency loss for the economy. For example, in Figure 4.1, $l_1^0 < l_1^*$, resulting in lost output represented by the area abc .

Needless to say, factor markets in many countries are not characterized by marginal productivity pricing, and the real incomes received by those who work or reside in a given location depend on more than wages alone. The assumption of marginal-productivity factor pricing still provides a

useful reference case precisely because it is indicative of the equilibrium toward which market forces would tend to drive allocations and prices, if not subject to government interventions or intrinsic imperfections. Starting, then, from a situation where labor is misallocated between regions, the equilibrium wage would be higher in one region, for example region 2 in Figure 4.1. If labor is freely mobile between regions, workers would migrate from low- to high-wage regions until real incomes are equalized, and an efficient allocation of resources is achieved. In Figure 4.1, this would occur with l_1^* units of labor in region 1. In this simple model, the efficiency gain would show up in the form of an increase in total output of abc . Output in region 1 would fall, and output in region 2 would rise.

The impact of such a reallocation of resources on equilibrium factor prices, in the general case, is ambiguous. There are many types of labor and many other factors of production used in the production process in each region, and there can be complex combinations of substitutability and complementarity among these factors. As a practical matter, however, the major impacts of a sufficiently severe spatial distortion of location patterns are not difficult to discern. As suggested by Figure 4.1, the flow of population from a low-wage region 1 to a high-wage region 2 would raise the earnings of workers in region 1 from w_1^0 to w^* and depress the earnings of the original workers in region 2. In addition, the prices of complementary factors of production would be affected, falling in region 1 and rising in region 2.

2. Distortion of residential locational choice

The analysis just presented is best used to illustrate the effects of spatial distortions in employment patterns. It does not directly address the closely related issue of distortions in residential location patterns. One simple way to model the implications of spatial distortions in location patterns within a metropolitan area is to employ a standard monocentric city model in which households are all employed at the center of a metropolitan area and reside at varying distances from the center. If the markets for housing operate competitively and without regulatory interventions, housing and land values will adjust to equate the demand and supply of housing at each location, with more central locations commanding a premium because of their greater proximity to the center and with more distant locations

exhibiting lower housing prices because of the greater transportation costs that residents must incur to reach their places of employment. If the metropolitan area is arbitrarily divided into sub-areas and if different population groups are required to reside only in specific areas, as was the typical situation in South African metropolitan areas under apartheid, then population densities, housing consumption, transportation patterns and costs, and housing prices will differ from their equilibrium values. The analysis of residential housing markets in South African metropolitan areas must, of course, recognize that the metropolitan population and spatial structure was divided along racial lines and that this division also corresponded to a division along economic lines. Moreover, the spatial distortions in South African metropolitan areas were complex. In the Johannesburg metropolitan area, the largest urban area in the country, much of the black population resided in Soweto, at a considerable distance from the center of the metropolitan area where employment was concentrated. Other portions of the black population were located more centrally, but still in confined areas.

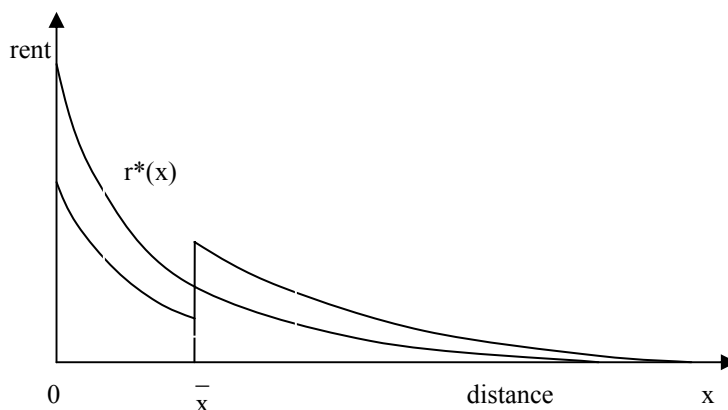


Figure 4.2

The essential effects of government restrictions on residential location can nonetheless be deduced from the simple monocentric city model of urban economics.⁷ Suppose that the total urban population of N is divided into two groups of sizes N_1 and N_2 , and that members of group 2 are not

allowed to live within a distance \bar{x} from the center of the city, where \bar{x} is larger than the size of the area that would accommodate N_1 residents in a free-market equilibrium. As illustrated in Figure 4.2, such a restriction would result in a 'flatter' land-rent gradient – one with a discontinuity at \bar{x} – than the equilibrium gradient $r^*(x)$, with the result that households of type 1 obtain land more cheaply and correspondingly enjoy a higher level of housing consumption than would be true with a free market, while those in group 2 pay a higher price for housing. The entire metropolitan area consumes more land, and households incur higher travel costs, than in a free-market equilibrium. Land is inefficiently utilized because of the restrictions on locational choice. The removal of arbitrary restrictions on residential choice would permit more efficient land-use patterns and would also change the distribution of income, improving welfare for those in group 2 while reducing welfare for those in group 1. Land values would also adjust, raising welfare for those who own land in more central locations while reducing it for those owning land at more remote locations.

D. LOCAL FISCAL SYSTEMS AND MIGRATION

Changes in the spatial distribution of population have important effects not only on the markets for labor, housing, and other goods and services, but on the public sector. The demand for public services in a locality or region, the types of public services needed by a changing population, and the availability of fiscal resources with which to meet public service demands are all affected by changes in population size. Interactions between local fiscal systems and population size and composition change the environment within which local fiscal policies are made and have important allocative and distributional impacts. There is therefore a need for an analytical framework which can be used to study these interactions.

1. Fiscal impacts of migration

Changes in the population of a given locality or region may affect the fiscal systems not only of local governments but of higher-level governments as well. Consider first the situation confronting local government authorities.

(a) Congestion effects

When the size and composition of the population in a region varies, the cost of providing public goods and services to this population may, and normally will, vary. For many public goods and services, there is a trade-off between the number of households served and the quality or level of service enjoyed by each. For example, a given education budget may support relatively high-quality education for a small number of students but only a moderate or low quality of education if the number of students is large. The transportation system within a given city or region may enable rapid access to important points if the population is small, but the performance of a given system will deteriorate as roads become congested and ridership on the public transportation systems nears capacity. Similar remarks apply to water, power, sewage, health care, housing and other goods and services for which public sector provision may play a role. These goods and services, in other words, are not Samuelson-pure public goods. The level of public services g_i enjoyed by residents in region i depends on the amount of public expenditures z_i and on the population within the region. Recognizing that some types of individuals or households (those with children, the elderly, those with higher or lower skill levels) utilize public services in different ways and to different degrees, the level of public service provided in region i may be written as $g_i = G_i(l_{i1}, \dots, l_{iT}, z_i)$, where $\partial G_i / \partial l_{it} < 0$ indicates that serving additional residents or workers of type t with a given budget z_i reduces the level of services enjoyed by the region's residents, to an extent that may vary among households of different types. This relationship can be inverted to show how the cost of providing any given level of service g_i depends on the number of people being served, $z_i = C_i(l_{i1}, \dots, l_{iT}, g_i)$, where $\partial C_i / \partial l_{it} > 0$ indicates the extra cost – sometimes called ‘marginal congestion cost’ – that must be incurred to preserve the quality of public services when one more household of type t is added to the local population.

Since it is often difficult to measure public sector output levels, it is not an easy empirical task, at least in general, to measure the magnitude of these ‘congestion’ effects with precision. But decades of empirical analysis leave no doubt that the cost of public service provision does depend on local demography.⁸ Indeed, in certain important cases, the

degree of congestibility is relatively easily assessed. For instance, suppose that the regional government, or other public sector agencies, provide purely private goods, such as housing or food, to local residents. Then the cost of providing g_i units of these purely private consumption goods is (at least approximately) proportional to the number of consumers, and the average and marginal cost of provision is simply the amount of expenditures per capita. The cost of providing other goods and services like education or transportation is not necessarily strictly proportional to population size, as would be true for purely private goods, but here, too, the assumption of proportionality is often a suitable first approximation. This is of course the assumption that underlies such conventional measures of public service provision as school expenditures per pupil, teacher/student ratios, health expenditures per capita, doctor/patient ratios, and the like.

(b) Revenue effects

When households move from one region to another, they also affect the revenue systems of these regions. For example, if a household of type t earns a wage of w_{it} in region i , and if that region taxes earnings at a proportional rate of τ_i , then total revenue $\tau_i \sum_i w_{it} l_{it}$ rises by (approximately) $\tau_i w_{it}$ when the number of type t households in the region increases by one (that is, the *level* of the tax burden on an individual household is (approximately) the *change* in tax revenue to a regional government that results from the household's entry into the region). Taxes on consumption, such as sales taxes or destination-based VATs, constitute other forms of location-contingent taxes for which collections would rise as population increases. (An origin-based VAT or other production-based taxes could be somewhat less closely tied to local population, although local production levels are generally highly correlated with the size of the local labor force.) The users of local public services, such as public transportation or health care, may be subjected to charges based on their utilization of these services, with households of type t paying a price of p_{it} per unit of public service g_i . Such taxes or charges offset the congestion costs that new residents impose on a region. To the extent that new residents pay more in taxes and charges than the costs that they impose for the provision of congestible public goods, they more than

offset these costs. Property taxes and development fees may also increase as new residents enter a region.

In general, the amount of taxes and charges from all sources that flow to regional government i , directly or indirectly, as the result of an increase in the number of households of type t , may be large or small, depending on the revenue system in the region and depending on the characteristics of the households. Let this total amount be denoted by T_{it} .

(c) Intergovernmental transfers

The magnitudes of central government transfers to regional governments, and of central government expenditures in different regions, typically depend on regional population size. Population is often a major determinant of formula-driven central government fiscal transfers. Furthermore, fiscal transfers, or direct central government expenditures that support health, welfare, transportation, and other regionally-provided goods and services, may also vary with population size. The magnitude of these transfers and other forms of regionally-targeted central government outlays may depend on population characteristics. Let I_{it} denote the change in direct transfers and in other central government expenditures that assist the government of region i when the number of households of type t in that region rises by one.

(d) Net fiscal burdens at the regional level

As we have seen, households impose ‘social costs’ on a region because of the costs of providing them with public services and they contribute to ‘social benefits’ in a region through the increase in own-source and intergovernmental revenues directly or indirectly arising from their presence there. One can thus define the ‘net regional fiscal burden’ imposed by a household of type t residing in region i as

$$NFB_{it} = \frac{\partial C_i}{\partial I_{it}} - (T_{it} + I_{it}).$$

A household’s net fiscal impact on the regional public sector may be zero, or of either sign. If the regional government collects taxes and revenues from a household that exactly match the marginal cost of

providing this household with public services, the first two terms in this expression offset each other. In the absence of any intergovernmental transfers, an additional household would have no net fiscal impact on the region. In general, however, these effects do not cancel, and thus inflows or outflows of population may raise or lower public sector costs relative to local revenues.

(e) Central government fiscal policy

As already indicated, the movement of population from one region to another can also have important effects that operate through *central* government fiscal policy. For example, suppose that the central government provides social benefits to low-income or unemployed households, and that a household's income or employment status changes if it relocates from one region to another. Then a movement of population – for example, from a region of high unemployment to one of low unemployment – would affect central government expenditures on social benefits (such as unemployment insurance compensation). Some types of central government expenditures – those for defense, for example – may be relatively independent of the regional distribution of population and hence would be unaffected by spatial reallocation of population. But other expenditure categories, for example in the areas of health care, education or transportation, may be relatively sensitive to population shifts. On the revenue side, several types of taxes, such as those on earnings, consumption or income, might differ when households move from one region to another insofar as their earnings, income or consumption may change as a result of relocation. Finally, as already discussed, the magnitude of central government transfers to different regions may depend on population size and composition.

To assess the net effect on the central government of population movements among regions, let R_{it} represent the revenues collected by the central government from a household of type t when it locates in region i , net of any outlays that the central government makes to households of type t in this region and net of the congestion costs that a household of type t may impose on public goods and services provided by the central government in region i . Then, accounting separately for the impact of population on intergovernmental transfers to region i , $R_{it} - I_{it}$ represents the net fiscal impact on the central government when one more household of type t is located in region i .

While it is not difficult conceptually to enumerate the fiscal impacts of population movements on local or central governments, it is far from easy to quantify these impacts empirically. As noted above, numerous studies examine the technology and cost of local public good provision. Following early analyses of education finance and fiscal zoning by authors (such as Oates, 1972 and Hamilton, 1975), local public goods are frequently treated as 'quasi-private', that is, as goods for which the cost of provision is strictly proportional to the number of people in the consuming group. The assumption of quasi-privateness is clearly also appropriate for explicit cash or in-kind transfer policies. When public goods are quasi-private, marginal congestion cost is simply equal to per-household expenditures on the public good and can thus be readily determined from basic data on total expenditures and population size. When public goods exhibit significant fixed costs of provision, by contrast, marginal and average congestion costs diverge. Although the assumption of quasi-privateness has empirical support for many publicly-provided goods and services, it is important to note that the costs of service provision may vary systematically among demographic groups. Measuring the impact of population changes on the revenue side of the local public sector is somewhat more straightforward since most revenues are collected in money rather than in kind.

Measurement of the fiscal impacts of migration is made especially complicated because they depend on the duration of the 'migration event' (the length of time that a migrant will be present in a given region) and by the fact that a migrant's attributes – earnings, employment, health, family size, and so on – vary over time, in ways that affect both the expenditure and the revenue sides of local fiscal accounts. Dependents, young and old, are typically major beneficiaries of congestible public services like education and health care, while those in the middle part of the life cycle tend to pay more in taxes than the costs that they impose on public service provision systems. While migrants may initially move from one region to another as single individuals, they may later be joined by family members or start new families. These changes in family status (and age) are unlikely to be very important for transitory migrants (seasonal workers, for example) but can be very important when migration is more permanent in nature. The fiscal impact of migration thus evolves over time, and whether a migrant's net fiscal contribution is positive or negative, at a moment in time or in present value terms, also depends on whether the migrant is temporary or permanent.⁹

2. Fiscal policy and the efficiency and distributional effects of migration

Let us now re-examine the allocative and distributional effects of increased population mobility when the regional fiscal impacts of migration are taken into account.¹⁰ Figure 4.3, like Figure 4.1, illustrates the allocation of labor between two regions.

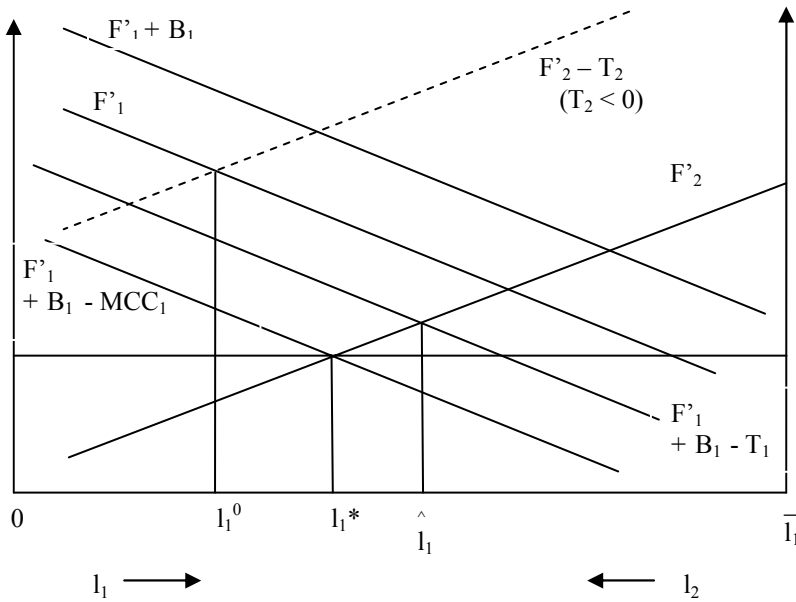


Figure 4.3

As before, the marginal productivity of labor schedules are shown for each region. Suppose that l_1^0 shows the initial amount of labor in region 1 and that this region – like West Germany, coastal China, or white local areas in South Africa – explicitly or implicitly provides its residents with public goods and services that are congestible. The addition of one more worker to region 1 now imposes an extra cost for the provision of these public goods. Suppose that region 2 – perhaps like rural China or black local areas in South Africa – provides only low levels of provision of

public services, which, to simplify, are treated as negligible in magnitude in Figure 4.3. The public goods provided in each region – in the Figure, only region 1 – benefit the residents of the region to an extent that may be greater than, less than, or equal to the marginal cost of providing them. In the simplest case, the congestible public goods provided in region 1 are, like cash transfers, exactly as valuable to the recipient as what they cost to provide. More generally, household valuations of public goods are subjective in nature, and may exceed or fall short of the cost of providing them. For example, if public service provision levels in central areas of South African cities or in coastal cities in China are adapted to the preferences of initial residents with relatively high incomes, then the subjective valuations placed on the locally-provided public goods and services by new, low-income residents would be relatively low. In any case, if B_{it} represents the monetized valuation of the benefits that a household of type t receives in region i , then the *efficient* spatial allocation of labor occurs when the marginal product of a worker, plus the benefit to the worker of local public goods, net of the marginal cost of local public good provision, is equal in both regions, i.e.¹¹

$$\frac{\partial F_1}{\partial l_{1t}} + B_{1t} - \frac{\partial C_1}{\partial l_{1t}} = \frac{\partial F_2}{\partial l_{2t}} + B_{2t} - \frac{\partial C_2}{\partial l_{2t}} \quad (4.1)$$

Figure 4.3 illustrates the situation where the benefits of local public goods in region 2 as well as the cost of providing them are negligible. Under this assumption, the last two terms on the right-hand-side of equation 4.1 disappear and the efficient allocation of population occurs at the point l_1^* in Figure 4.3.

When workers are free to locate in either region, their locational choices will be determined by a comparison of the real incomes that they can obtain, that is, their earnings, net of tax payments and inclusive of the public services (or rather their valuation of the public services) that they receive in each region. They will be indifferent between residing in region 1 or region 2 if

$$w_{1t} + B_{1t} - T_{1t} = w_{2t} + B_{2t} - T_{2t}, \quad (4.2)$$

where w_{it} represents the *gross* wage of workers of type t in region i . Suppose that residents in low-income region 2 pay low levels of taxes (zero, for the sake of illustration), consistent with the assumption that they enjoy low levels of public service provision. Suppose further that migrants from low-income region 2 to region 1 pay taxes that are low relative to the marginal cost of providing congestible public goods to these households in region 1, so that $T_1 < \partial C_1 / \partial l_1$. Finally, assume that the *gross* wage in each region is equal to the marginal product of labor. Then, as illustrated in Figure 4.3, the *equilibrium* allocation of population occurs when \hat{l}_1 households reside in region 1. As the Figure is drawn, there is *excessive migration* from the poor to the rich region.¹² Because migrants pay less in taxes in region 1 than the costs that they impose, and where no similar asymmetry exists in region 2, $\hat{l}_1 > l_1^*$.

Qualitatively speaking, the effects of population movements on the distribution of income are not fundamentally altered when fiscal impacts are taken into account. This is evident from a comparison of Figures 4.1 and 4.3: in both instances, the real incomes of households in the destination region fall and those of households in the source region rise. The owners of resources like land, capital or other potentially complementary inputs to the production process in each region experience an increase in income; in contrast, substitute inputs would suffer losses in income. However, if new residents contribute less in local taxes than the costs of providing public services to them, then other existing residents must either pay higher taxes to maintain the level of public service provision or else the level of public service provision must fall; on either score, one or several groups of existing residents must be adversely affected.

While the relationship between congestion costs and local tax contributions in local fiscal systems may create incentives for inefficient population movements, such effects need not always work in the same direction and, at least theoretically, they need not distort efficient locational choices at all. In post-unification Germany, large amounts of public sector resources have been expended in the East, raising the net incomes of workers there and discouraging migration to the West. Thus, as illustrated in Figure 4.3, suppose that workers in region 2 are paid subsidies, or negative taxes ($T_2 < 0$). If these subsidies are set at just the right level, it would be possible to achieve the efficient spatial allocation

of labor between the two regions. If the subsidies are set at a sufficiently high level, as shown by the dashed line in the Figure, it would be possible to forestall any movement at all from region 2 to region 1. This would of course preserve the initial inefficient spatial allocation of population and would protect workers in region 1 from a reduction in earnings. Similarly, it would also insulate region 1 from the adverse fiscal effects of migration, though it means that region 2 must somehow finance the cost of providing subsidies to workers there. In the case of East Germany, these costs have largely been absorbed by the central government, as discussed further below.

E. POTENTIAL POLICY RESPONSES TO MIGRATION

As we have seen, spatial reallocations of population can have significant impacts on markets and on local fiscal systems. These effects will be beneficial to some and harmful to others, even if, overall, the efficiency of resource allocation is improved. And, because of fiscal and other distortions, there is no guarantee that fully efficient spatial allocations of resources will emerge. Looking at the issue normatively, how can population shifts be managed or accommodated to achieve efficiency gains as well as desirable distributional effects? Looking at the issue from a political economy perspective, how might policymakers be likely to react to actual or prospective migration, and what are the efficiency and distributional effects of any such responses?

One way that an efficient allocation of resources across space might be achieved is for each household to pay taxes equal to the marginal cost of providing public services to it. In this case, the net fiscal impact on a region from a change in population is zero. An inflow of population brings with it the tax revenue necessary to finance additional public services, while the loss of tax revenue resulting from a population outflow is offset by a reduction in the amount of public services needed to serve the remaining population. To see this in a somewhat more formal way, a comparison of (4.1) and (4.2) above shows that these two conditions coincide when $T_{it} = \partial C_i / \partial l_{it}$, and when $w_{it} = \partial F_i / \partial l_{it}$, in other words, when factors of production are paid their marginal products. These observations call for several comments, however.

First, setting taxes equal to marginal congestion costs is *sufficient* to bring about efficient spatial allocations of resources, but not *necessary*. Suppose, for example, that poor households pay taxes less than the cost of providing public services to them in *both* (or, in reality, *all*) regions, and that the difference between taxes and marginal congestion costs is the same everywhere. Then, in this case, there is no *differential* incentive for households to move from one region to another.

Second, the assumption that households are paid wages equal to their marginal products can be highly inappropriate in economies where labor markets are highly distorted. For example, as described in more detail in Section 6 below, urban workers in coastal cities in China may be paid wages in excess of their marginal products because of implicit subsidies that they receive in the provision of housing and other goods and services. Workers in state-owned enterprises in Eastern Germany may similarly receive earnings in excess of their marginal products. Note, however, that such deviations from marginal productivity factor pricing come at a cost to employers – that is, to state-owned enterprises. Commonly, such enterprises are kept afloat, financially, by subsidies, for example from the central government, and in this respect the deviations from marginal productivity factor prices may be seen simply as part of fiscal policy: the public sector, in such cases, uses the employment relationship, and associated labor market regulations, to provide transfers to certain categories of workers. Indeed, one can regard such transfers as congestible public goods that are provided to beneficiaries who do not pay taxes equal to the cost that is incurred in providing them. Viewed in this way, deviations from marginal productivity factor pricing are already present in the analysis, precisely in the form of deviations between taxes and the costs of providing congestible public services.

Third, while it may be theoretically possible to impose taxes on workers equal to the cost of providing them with congestible public services, it may be difficult or impossible to do so in practice. For example, the ‘floating’ population in Chinese cities congests urban infrastructure. The informal status of such individuals may make it quite unrealistic to consider the imposition of local taxes on earnings that reflect the cost of providing urban services to them. Similarly, in South African urban areas, squatters and other residents with informal status are not easily taxed. The practical attainment of efficient spatial allocations of population thus depends importantly on the range of feasible tax or pricing instruments.

It is of course rather naive to suppose that local government policymakers, or perhaps policymakers at any level of government, are concerned with the attainment of efficient spatial allocations of resources. They do, however, function within constraints, and population changes interact with the constraints that they face. For example, local governments cannot provide public goods and services without real resources at their disposal. State-owned enterprises similarly cannot compensate workers without real resources. Starting, then, from a situation of spatial disequilibrium, suppose that workers relocate and, in particular, move into a region in which public services are provided at relatively high levels. If these workers contribute less to the fiscal system than the taxes (or other charges) that they pay, the public sector must either reduce the level of public service provision or obtain fiscal resources from some other source. In general, it would not be surprising to see some degree of adjustment in both of these dimensions.

(a) Expenditure responses

For publicly provided goods that are highly congestible, maintaining the level of service provision in the face of rising population requires an increase in public expenditures. In the absence of additional spending, the level of service provision must fall for some or all residents of the locality or region. The degradation of public service provision need not always be distributed equally across the population, as administrative and other mechanisms may make it possible to limit the services provided to some groups. For example, if proof of residence is required to obtain access to health clinics, a transient or informal work-force may be effectively excluded, thus allowing existing health care resources to be focused on existing or established residents. In other cases, unequal distribution of public services may be intrinsic to the public good or service in question: electricity provision presupposes the existence of a structure to which electricity can be provided, effectively excluding, for example, sidewalk vendors. An increase in population by 10 percent does not result in an immediate 10 percent reduction in the number of telephone connections for existing residents so as to insure equal access to telephone service for all; rather, the lines of existing residents may be preserved, while incremental resources are used to increase service for new residents, perhaps gradually degrading the service for existing customers through

limited maintenance or perhaps rationing access to new residents through delays in the installation or activation of new connections.

Reduced local public service provision has both efficiency and distributional implications. The efficient level of public expenditures in a region depends on both the size and the socio-economic attributes of the local population. In general, if public services are normal goods, an inflow of relatively low-income households implies a reduction in the efficient level of public good provision; some degradation of public services may therefore be necessary from an efficiency viewpoint. From a distributional perspective, the erosion of public service provision for existing residents is obviously disadvantageous.

(b) Local revenue responses

Local governments may respond to population shocks by altering the local tax structure. Existing rates of taxation and charges may be altered, or new taxes and fees may be introduced. For example, if the residents of a region obtain health care, housing, transportation, or food at subsidized rates, one possible policy response to an increase in the size of the beneficiary population is to raise the prices charged for these services, thus reducing the magnitude of the subsidy enjoyed by each consumer. If the subsidy is reduced to zero, or, to be more precise, if charges are equated to marginal congestion costs, then it becomes possible to maintain existing levels of public service provision as the population increases. At the same time, whatever pattern of redistribution was embedded in the initial subsidy structure is nullified by such a revision of the pricing structure. Indeed, for some goods and services, the elimination of subsidized prices may obviate the rationale for public provision altogether. The upshot may be complete privatization of productive activities previously undertaken in the public sector.

Explicit user fees for public services, as they are usually conceived in developed countries, are often not utilized effectively in developing and transition countries. The prices of water, electricity and urban public transportation services often do not reflect real costs, especially when one takes into account not merely the 'list' prices of these services but the prices actually paid when one takes into account the difficulties of enforcing the collection of charges for services. In effect, as a matter of explicit policy choice or because of administrative difficulties, consumers are subsidized. The removal of explicit subsidies to publicly provided

services is often a politically difficult undertaking since it is opposed by those groups that benefit from these subsidies. However, reductions in subsidies for the consumption of quasi-private public goods, when achievable, bring about the same types of allocative consequences as user charges. Furthermore, privatization of provision stimulates the collection of charges for congestible services. Privatization may be achieved explicitly and discretely by selling off public transportation, power, water and communication systems, or implicitly and more gradually as a result of the deterioration of underpriced and underfinanced public services and their replacement by private providers of the same or substitute services, assuming of course that private providers are not excluded by regulatory constraints. As an example, if it proves impossible to charge appropriately for the use of urban public rail and bus systems, their reliability, frequency and availability of service can be expected to diminish, and private taxi services, if not prohibited, may expand to meet transportation demand, in effect shifting the financing of urban transportation in the direction of more reliance on user charges.

Of course, quite aside from political constraints and administrative and enforcement difficulties, it is not feasible to implement marginal-cost pricing for all publicly provided services because of the impossibility of exclusion. Some revenue instruments, however, may function somewhat like marginal-cost prices. For example, sales taxes, VATs, payroll, or income taxes all impose burdens on the households that reside or work within a given jurisdiction but not on those outside. If such taxes are feasible and if their amounts can be brought into line with the marginal cost of public service provision, they provide a means by which local governments can respond to changes in population while preserving the level of public service provision.¹³

The local property tax is another potential instrument through which tax revenues may be made to respond to changes in population. In the context of local public finance in the USA, authors such as Hamilton (1975) have argued that the local property tax, combined with land-use controls, actually does function as a congestion charge, enabling localities to enforce payment for public services from all residents and leading to efficient sorting and efficient local public good provision, in the spirit of the Tiebout (1956) model. As noted by Fischel (2001) and others, there are many regulatory instruments that localities can use to help in achieving such outcomes, for example, requiring the developers of new residential or commercial areas to provide the necessary 'public' infrastructure such as

roads or power systems. Of course, developers recover these costs in the prices that they charge for developed properties, so that regulatory constraints become a means by which congestible public services are financed by users. Mieszkowski (1972) and Zodrow (2001), by contrast, emphasize that local governments have a limited ability to combine regulatory and property tax policies to achieve effective marginal cost pricing, and regard the property tax as a tax on investment in a locality rather than as an implicit user fee for the provision of local public goods. Of course, in practice, the local property tax will never serve as a perfect user fee, and zoning and other constraints on land use may not function very effectively in developing and transition economies. However, in countries where it is administratively feasible to implement a property tax at all, it will almost certainly be the case that the property tax base will be larger in localities with larger populations, simply because the number of units of taxable residential, commercial and industrial property generally increases with population size. Even if the local property tax does distort the allocation of capital, as argued by Mieszkowski and Zodrow, it will still function partly as a congestion charge as argued by Hamilton and Fischel, provided that total property tax revenues depend positively on local population size.

Bringing the fiscal contributions of households into closer alignment with the costs that they impose on the fiscal system contributes to efficient spatial allocation of population, as indicated above. Some possible revenue responses, however, would not work in the direction of enhanced efficiency. For example, one response to an inflow of poor residents would be to increase the rate of taxation on higher-income initial residents or perhaps to tax businesses and commercial activity in ways that are not related to their employment of (or sales to) low-income residents. Such a response would amount to cross-subsidization from other local groups to low-income residents, which would not 'internalize' the costs that the latter impose on the local fiscal system. It might also create fiscal incentives for higher-income residents to leave the region, perhaps interfering further with the efficiency of resource allocation.

(c) Local debt policy and intergovernmental responses

Rather than reducing *current* local public service provision levels or increasing *current* local taxes, a region experiencing an increase in population may issue debt, or it may be subsidized by a higher-level

government. Borrowing by sub-national governments shifts the burden of reduced public services or higher taxes to future residents of a jurisdiction. Subsidies from a higher-level government shift some of the burden of the fiscal impact of changes in local population to those outside of the region.

Capital is an important input in the production of urban water supplies, sewerage, road, electricity distribution, hospital, education and other urban services. The expansion of these services in response to local population growth requires capital investment which cannot easily be financed from current local government own-source revenues, and borrowing by local governments might facilitate such investments without creating large intertemporal fluctuations in tax rates (Barro, 1979) or in the level of other expenditures. Of course, sub-national governments might borrow not only to finance capital outlays, but simply to defer payments for current public services or to defer the collection of tax revenue, even in the absence of high levels of capital expenditures.

Alternatively (or additionally), transfers from higher-level governments can assist regional governments in managing the fiscal impacts of changes in population. For example, population-based intergovernmental transfers increase the revenues of growing regions. Other intergovernmental transfer mechanisms may have similar effects, even if they operate less transparently. Assessments of 'need' for project-based grants or transfers are likely to favor expenditures in rapidly-growing urban areas with low-quality public services, in effect limiting the extent to which services are degraded by expenditure growth that falls short of the costs imposed by population growth. Note that central government expenditures need not be classified as 'intergovernmental transfers' to operate in this fashion. Often, certain categories of congestible public services such as some aspects of education, transportation, or health care, fall within the expenditure responsibilities of the central government. Central authorities must allocate their resources for such congestible public services among regions, and they can direct large or small amounts of resources to different regions, effectively relieving some regional authorities of public service provision responsibilities to a greater or lesser extent than others.

If central governments direct additional fiscal resources toward the governments of regions experiencing increases in population, the latter are relieved of some of the onus of fiscal adjustment to population change. From an efficiency viewpoint, such a response by the central authorities may reduce the pressures on local authorities to adapt their expenditures

and revenue systems in ways that tend to bring tax burdens more nearly into equality with the costs of public service provision. In this way, central government assistance to regional governments may contribute to inefficiently high levels of migration from relatively poor regions with more limited levels of public services and taxation, to better-developed regions with more extensive public services.¹⁴ Support for growing regions may, however, cushion some groups within these regions from erosion of real incomes resulting not only from adverse local fiscal adjustments but from changing prices for factors of production and for locationally-fixed resources such as housing.

As an alternative, central authorities can direct additional resources toward regions with *declining* populations. In doing so, they may stimulate or help to maintain fiscal policies that subsidize the households in those regions, thus reducing the incentives for households to move to other regions. This may improve the efficiency of resource allocation by offsetting incentives that would otherwise result in excessive migration.

In practice, the borrowing of sub-national governments may be closely intertwined with intergovernmental fiscal transfers. The borrowing authority of sub-national governments may be regulated by the central authorities; in some cases, sub-national governments may only be allowed to borrow *from* the central government. Furthermore, whether borrowing from the central fiscal authorities or not, sub-national governments may become unable to meet their debt obligations without severe reductions in public expenditures or drastic increases in taxes (that is, the opposite of tax and expenditure 'smoothing'). Financially distressed sub-national governments that are at risk of failing to meet their debt obligations may elicit aid from central authorities, an occurrence which may be anticipated both by creditors and by sub-national governments. When such aid is forthcoming, what appears to be independent borrowing by localities may in fact constitute an implicit mixture of local borrowing and transfers from central governments.

F. CONCLUSIONS

As we have seen, changes in the distribution of population among jurisdictions can potentially elicit a variety of policy responses from different levels of government. Though a complete analysis of policy

adjustment in countries dealing with major population changes goes well beyond the scope of the present chapter, a brief sketch of some recent experience can at least highlight a few interesting developments, perhaps suggesting avenues for additional research.

As discussed in Section 5, the policy responses of different levels of government are likely to be highly interrelated. To the extent that central governments absorb the fiscal burdens of regional governments experiencing population growth, there is less pressure on the latter to adjust local public service provision levels and revenue policies. The experience of Germany since unification has been characterized by extensive central government assistance directed toward the former East Germany. This has taken a variety of forms, including intergovernmental transfers, subsidies to business enterprises, and transfers to households through social-insurance programs. As described in further detail in Table 4.1, this transfer flow has consistently amounted to more than 4 percent of West German GDP in the years since unification. In 1994, public and private consumption and investment in the new states exceeded regional GDP by more than 50 percent; in 1999, net public transfers from the old states accounted for about one-third of their GDP (OECD 2001, p. 93). Residents in the East were made eligible for the same high levels of social benefits that prevailed in the West; public transfers now account for 32 percent of household incomes in the East, as compared with 22 percent in the West (OECD 2001, p. 93). Labor market regulations facilitated the extension of West German wage structures and working conditions to the East, a policy that would tend to raise unemployment in the East. According to the OECD (2001, p. 88), gross compensation per employee in the new states has risen from 49 percent of the level in the West in 1991 to 77 percent in 2000. Unemployment in the East has indeed been high, with the official rate running at about 18 percent, approximately twice the level in the old states, in recent years. (OECD 2001, p. 27). High levels of central-government expenditures on economic development in the East, including infrastructure spending, coupled with 'investment' subsidies to otherwise unprofitable enterprises, conditional on their continued employment of existing workers, has also transferred substantial resources to the public sector in the East and absorbed much of the burden of public service provision there.¹⁵

What has all of this meant for the spatial allocation of labor? At the time of unification, there was a rapid and massive flow of population from the new to the old *länder*, with some 800 000 individuals – about 5

percent of the population of the new states – migrating in 1989 and 1990. Since that time, net population movements between regions have fallen sharply, no doubt in large part because of the large transfers described above. These policies have to some degree insulated real earnings in the West from competitive pressures, and they have eased the pressure on regional governments in both the East and the West to restructure their fiscal policies. There has no doubt been a significant loss in real output as well, since labor has not been redeployed to more productive uses as rapidly as would otherwise have been the case. The resources expended by the central government in these efforts have necessitated some combination of higher borrowing, higher taxes, and lower expenditures on other public sector goods and services, distributing the costs of these policies more or less broadly among the population, including future generations. Broadly speaking, then, one can see that the German policy response to spatial disequilibrium has been to use indirect fiscal means – many different types of taxes and transfers – to limit the equilibrium adjustment in regional labor markets.

In China, the policy response has been rather different. Germany of course is a highly prosperous country, and the total population size of the new *länder*, at the time of unification, amounted to only about one third of the total population. At the outset of the recent reform period in China, on the other hand, the urban population in China only amounted to 15 percent of the national population, and the real resources available to finance fiscal transfers are much more limited than in Germany. Perhaps not surprisingly, then, the extent of internal migration in China associated with economic liberalization appears to be quite substantial, though difficult to quantify with any accuracy. As noted above, estimates of the numbers of migrants in China range widely but appear to amount to the tens of millions and perhaps hundreds of millions.

As noted above, urban Chinese have for some decades been the recipients of explicit or implicit subsidies, in the form of above-market wages and in-kind transfers that subsidize consumption of food, housing, health care, education and other goods and services. A recent study by the World Bank (1997, pp. 15–16), devoted to the analysis of inequality in China, highlights the role of spatial factors: ‘rural–urban disparities accounted for more than 50 percent of inequality in 1995 and explain 75 percent of the increase between 1984 and 1995’. These disparities are attributable partly to the play of market forces, but, to some degree, they are also the result of government policies. Of total urban per capita

income of 7916 yuan for *registered* households in 1995, 42 percent came from in-kind subsidies, notably for housing (about 60 percent of all subsidies). For urban households in the bottom three deciles of the income distribution, these subsidies accounted for more than half of all income, according to surveys undertaken both in 1990 and in 1995. (World Bank, 1997, Table 2.2). Even in the top decile of the urban income distribution, more than a quarter of total income was derived from in-kind subsidies. Very importantly, however, these data, based on Chinese government household surveys, refer to *registered* households, not the large but uncertain number of migrants that have moved into urban areas without formal documentation.

Comprehensive direct measurement of cash and in-kind income for unregistered urban workers is virtually impossible. There is evidence, however, that rural-urban migration has contributed to an increase in rural incomes. Partly, this has taken the form of remittances from urban workers; for example, in the provinces of Sichuan and Anhui, 'migrant incomes account for an average 20 percent of household income and 50 percent of household cash income' (World Bank, 1997, p. 57). Evidently, rural workers, predominantly males, have gone to urban areas for work, perhaps of a temporary or seasonal nature or perhaps for longer-duration employment, and remit a portion of their earnings to family members. Another impact of rural-urban movement may also be a reduction in the demand for infrastructure and other services in rural areas. In proportionate terms, of course, rural-urban migration has a larger impact on urban areas; a movement of, say, 100 million people from rural to urban areas would only reduce rural population by 10-15 percent, whereas it would constitute an increase in urban population of perhaps one-third.

The very 'irregularity' of the internal migration that makes it so difficult to quantify provides a useful indicator of some dimensions of policy response. In effect, by permitting informal migration, the government is able to maintain the provision of subsidies and public services for existing urban dwellers without having to extend those benefits to incoming migrants. This lessens the fiscal impact of migration, and helps to insure that migration that does occur is driven by real earnings differentials rather than by fiscal benefits. Of course, while it may be relatively easy to exclude migrants from subsidies for the consumption of some goods and services (especially those like housing that, in more market-oriented economies, are mainly privately provided), there are many urban services for which exclusion of informal migrants is

more difficult, and which therefore are more likely to experience increases in congestion.

Data on the financing of explicit and implicit transfers to households and to the providers of public services in urban China are not easy to obtain. The system of intergovernmental fiscal transfers, which constitute only one of several facets of the policy response of the central authorities, have changed frequently and in a somewhat *ad hoc* or even chaotic fashion.¹⁶ Prior to reforms undertaken in the mid-1990s, local governments were heavily involved in the administration and collection of taxes, passing revenue upward to the center according to specified sharing rules. The rules for sharing revenue between local and central authorities could be viewed as implicit mechanisms of intergovernmental transfers. (Actually, these 'rules' were subject to considerable renegotiation and revision (Bahl and Wallich, 1992), contributing to a lack of transparency and order in the structure of government finances.) In addition to sharing in the major taxes imposed by the center, local authorities relied on various 'extrabudgetary' sources of revenue, consisting of a diverse array of charges and fees not readily observed by or shared with the central authorities.¹⁷

Finally, as in the German case, central government financing of investment in state-owned enterprises constitutes a form of central regional transfers. This financing has sometimes taken the form of 'policy lending' by the central bank, the People's Bank of China, that is of opening up credit lines for local enterprises.¹⁸ Such directed credit policies enable the central authorities to finance transfers without relying directly on their own current revenue flow. In effect, these policies can be viewed as deficit-financed transfers from the central to the local authorities, with immediate monetization of incremental central government borrowing.

To summarize, the Chinese experience with spatial disequilibrium shares some points of similarity with that of Germany. In both countries, for example, explicit and implicit transfers are helping to protect the incomes of workers in (currently or formerly) state-owned enterprises. In Germany, however, the transfers have been directed toward the relatively poor region of the country, and have worked to limit the extent of migration from the less productive to the more productive region. In China, by contrast, significant amounts of transfers have been aimed at workers in the relatively high-income areas of the country. However, whether by design or otherwise, many of the benefits of these transfers

accrue to existing urban residents rather than to recent migrants. This pattern of redistribution may leave much to be desired on equity grounds, at least if one believes that transfers should be directed principally toward the poor. On the other hand, from the viewpoint of political economy, protection of the incomes of established urban workers may ease resistance to rural–urban migration. Limits on the availability of transfers to informal migrants in urban areas imply that such migration as does occur is driven by market–determined earnings rather than by fiscal incentives, presumably contributing to more productive deployment of labor in the economy as a whole, while remittances to rural areas mean that some of the efficiency gains from rural–urban migration accrue to those who remain in rural areas.

In South Africa, the end of apartheid with the establishment of a new constitution in 1996 has drastically changed the legal constraints that had previously governed housing and labor markets. However, the spatial structure of urban areas in South Africa, built up during the apartheid period, cannot change instantaneously. Housing, transportation, local government structures and many other parts of the public and private stock of physical, human and institutional capital are durable goods, and the adjustment of these stocks is still in its early stages.

A fundamental problem facing South African policymakers is to manage economic inequalities inherited from the past while maintaining a high level of overall economic performance.¹⁹ The unequal availability of public services such as roads, water services and other goods and services whose provision is related to residential location, not to mention housing itself, reflects underlying inequalities in the distribution of income. Efficiency requires that markets, user fees and similar market–like incentives play a large role in governing the provision and distribution of these goods and services. However, reliance on such pricing and allocative mechanisms results in a distribution of goods and services that reflects the underlying distribution of income. Furthermore, the basic institutions of the public sector, including functioning local governments and protection of property rights and public safety, are ‘distributed’ unequally in South Africa; in particular, the governance structures inherited from the past were potentially unworkable. Revision of the constitution, and ongoing further evolution of the structure of local government as called for, for example, by a 1998 White Paper on Local Government (Department of Provincial and Local Government, 1998),

aim to create a workable system of municipalities that have the financial and administrative capacity to meet pressing urban public service needs.

To date, local governments have relied principally on own-source revenues to finance their expenditures, a continuation of past practice. For example, in 1998/99, utility fees accounted for over 40 percent of local government revenues and local property taxes provided 15 percent of local revenue, while transfers from higher-level governments amounted to less than 10 percent of local funding (National Treasury, 2000, p. 101). To the extent that localities remain highly fragmented, those serving poor populations (the black townships and, even more so, informal settlement areas) are unlikely to be able to finance and deliver basic urban services. In order to alleviate this problem, municipal boundaries are being redrawn, with the current 843 municipalities to be consolidated into just 284.²⁰ 'Defragmentation' of municipal structures will presumably create pressures to achieve more uniform provision of public services within metropolitan areas, a likely consequence of which is an increase in the quality of services enjoyed by the poor, financed at least in part by taxes collected from higher-income households. However, the redistributive component of local policy is likely to be modest, to the degree that consumption-based charges (for water, electricity and so on) continue to finance urban services.

In the provision of urban services, policymakers face, in more acute form than usual, a common difficulty in dealing with local economic development policy: should incremental public sector resources be devoted to upgrading services in places where the population is presently employed and housed, or should they instead be directed, in a more forward-looking fashion, to evolving new patterns? No simple answer to this question is possible, but the effects of apartheid-era restrictions on household location continue to be felt. At this early date, statistically reliable information about the movement of people within South African metropolitan areas is unavailable.²¹ According to one early (but limited) survey of the Cape Town metropolitan area (Cross et al., 2000), the past several years have seen high rates of movement of the black population within the metropolitan area, with significant expansion of 'informal' settlements (such as squatter camps), movement into the metropolitan area from outside, and relocation within the pre-existing black townships. In addition to access to employment opportunities (and thus to transportation nodes), it appears that housing availability is another important factor influencing the locational choices of the black population. Crowding in the

traditional black townships seems to account for some of the movement of the black population, including the growth of informal settlements. Similar patterns seem to characterize Johannesburg (Emdon, 1998). Overall, rapid adjustment in location and employment patterns is creating difficulties for the planning of urban service delivery systems.

The ultimate effects of the recent far-reaching reforms of South Africa's fiscal system are still to be determined. The tensions between efficient resource allocation and redistributive objectives described in Sections 3 and 4 are reflected in the evolution of the institutions of sub-national government.

The preceding remarks on some aspects of the evolution of policy in selected countries illustrate the highly varied responses that can emerge from the policymaking process. Though comparisons across countries are difficult, the work of Richard Bird (see, for example, Bird 1994; Bird et al. 1995) has demonstrated the value of comparative analyses in public economics, perhaps especially so in the area of intergovernmental fiscal relations.

The experiences of countries dealing with unusual stress are of particular interest. The policy responses of Germany, South Africa and China are worth studying not only to see what policies are successful or unsuccessful in a normative sense but to shed light on the processes of institutional and policy change. The political economy of policymaking in societies with multiple levels of government is not well understood, whether these societies use democratic or more authoritarian systems of governance. Policymakers at different levels of government are subject to many political and economic influences and constraints, and the policies chosen at one level influence the policies chosen at other levels. Understanding the simultaneous determination of fiscal policies at several different levels of government presents a most formidable scientific challenge. Major changes in the demographic environment within which policies are made elicit a 'revealed response' of policymakers at each level of government, and of the entire structure of intergovernmental fiscal relations. Analysis of these revealed responses – difficult though they are to describe and quantify – offers the prospect of deeper understanding not only of policy adjustment to migration and other sources of demographic change but of the behavior and evolution of the institutions of government finance.

NOTES

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1. Migration, especially internal migration within countries, is the focus of most of the discussion, and ‘demographic change’ should be understood, first and foremost, in this sense. However, the movement of migrants normally results in a change in the location of subsequent demographic events, such as births and deaths. A flow of migrants from country to city during one decade is likely to have demographic repercussions in the form of more births in urban areas and fewer births in rural areas in the next decade and in decades thereafter. For important issues of public finance, including (among many possible examples) the design, construction, operation and financing of transportation networks, water and sewerage systems, hospital, schools, and the training of health and educational personnel, these demographic repercussions of migration are extremely important and extend over substantial periods of time. These longer–run consequences of migration should be understood to be incorporated implicitly in the following discussion.
 2. See Sinn and Sinn (1992) for comparison of the economic conditions in East and West Germany. More recent developments are described in Sinn (1995).
 3. Khan et al. (1992) and the World Bank (1997) emphasize the importance of rural/urban income differentials in contributing to overall economic inequality in China. Perkins (1990) estimates that labor productivity in urban areas has been as much as three times that in rural areas in past decades. Although the differential has eroded gradually over time, it appears that labor was still 50 percent more productive in urban than rural employment in 1985.
 4. Williams (1989) provides numerous illustrations of the complex and costly labor market regulations of the apartheid regime.
 5. As a matter of terminology, ‘congestion cost’ here and throughout the discussion refers to an absence of pure ‘publicness’ or ‘non–rivalness’ in goods or services provided by the public sector. ‘Congestion’, in this context, includes but goes well beyond urban phenomena such as crowded highways. It refers generally to any instance in which adding consumers/users of a public service requires additional services to maintain the service level. So, for example, a redistributive program that provides \$100 in cash or \$100 worth of food, health care or housing per poor person would be a congestible public good; in fact, it would be an example of a ‘quasi–private’ public good, which is to say, a public good for which expenditures must rise in proportion to population in order to preserve a given level of service. Cash or in–kind benefits provided to the aged, to schoolchildren or to the sick are all classic examples of congestible public goods. Water and power supplies, bus systems and other urban infrastructure are also congestible public goods. ‘Congestibility’ is a property of a public service, not of changes in population, and congestibility does not disappear when population size is stable. When people enter (or leave) a region, however, they increase (or decrease)

congestion of public services there, and these effects are especially noticeable when population changes are large and sudden.

6. To simplify the discussion, labor/leisure trade-offs are ignored here and in the following. None of the important results depend on this simplification.
7. For a more complete analysis, see Brueckner (1996) and Selod and Zenou (2001).
8. See the review of early literature on this subject in Hirsch (1970) and the classic studies by Borchering and Deacon (1972) and Bergstrom and Goodman (1973). For more recent references, see Bahl and Linn (1992), McMillan (1989), McGreer and McMillan (1993), Reiter and Weichenrieder (1997), and studies cited therein.
9. The importance of a life cycle perspective is evident when considering fiscal policies such as public pension systems. Young workers obviously contribute to such systems, but retired workers impose costs on them. Whether a permanent migrant is a net contributor or net beneficiary can only be assessed by taking the entire life cycle impact into account (Wildasin, 1999).
10. For simplicity, the effects of migration on central government expenditures and taxes are ignored in this section.
11. For more formal treatments of the efficient allocation of labor among regions, see Wildasin (1986) and references therein.
12. It should be noted that this conclusion is unaffected if one allows for the fact that migration is not costless, provided that relocation costs are borne by migrants. Taking migration costs into account, the efficient level of migration is reduced, but the equilibrium level of migration is also reduced. The critical insight remains: if migrants pay less in taxes in region 1 than the congestion costs that they impose there, whereas these two magnitudes are equated in region 2, then the amount of migration from region 2 to region 1 will be inefficiently high.
13. When it is possible (that is, not too costly) to monitor the level of usage of public services, such as electricity or water, a tax on households that is independent of the level of service utilization is an imperfect substitute for per-unit prices. The efficiency implications of per-household and per-unit charges for congestible services are discussed in the literature on club goods, for example Berglas and Pines (1981) and Helsley and Strange (1991).
14. Ades and Glaeser (1995) discuss the phenomenon of so-called 'urban giants' in developing countries. Why such 'giants' should emerge is a complex question, but one possibility suggested by Ades and Glaeser is that large metropolitan areas may be more effective in attracting fiscal resources than smaller jurisdictions.
15. According to one set of calculations (Sinn, 1995), labor's share of value-added in production in the East has risen to well over 100 percent thanks to 'investment' subsidies – that is, subsidies to unprofitable firms.
16. For discussion of the rapidly changing structure of intergovernmental fiscal relations in China, see Bahl and Wallich (1992), Bahl (1995), and Qian (1999).
17. Such extrabudgetary revenues cannot easily be measured, but according to one estimate (Bahl, 1995) they amounted to about 90 percent of budgetary collections in 1992.
18. According to World Bank estimates (World Bank, 1995, p. 35), state enterprise fixed investment grew from 16.7 percent to 22.9 percent of GDP between 1991 and 1993. Policy loans from the People's Bank of China accounted for about one-third of this investment (6.8 percent of GDP) in 1993.
19. See Ahmad (1997) and references therein for discussion of policy issues in South Africa with particular reference to local government finance and intergovernmental fiscal relations.

20. The existing system includes 6 'Transitional Metropolitan Councils' containing 24 'Transitional Metropolitan Substructures', a system that represents a step away from the 'pre-interim' municipal structures created in the initial steps toward democratic government (Sutcliffe, 1998).
21. A population census is to be undertaken in 2001, and the previous census, performed in 1996, took place prior to the change in the constitution.

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