# Migration and Metropolitan Decline in Developed Countries: A Comparative Study

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LONGSTANDING POPULATION REDISTRIBUTION PATTERNS have shown marked reversals in the world's developed countries since 1970. One of these reversals, which occurred in most developed countries (Vining, 1982), involves a new distribution out of the "core" industrial regions and into less developed "peripheral" regions that have, in the past, been associated primarily with agriculture, resource development, and lower level tertiary activities. A second reversal, documented in some countries (Champion, 1983; Hugo and Smailes, 1985; Kontuly, Wiard, and Vogelsang, 1986; Frey and Speare, 1988), involves redistribution along the urban hierarchy rather than across broad geographic regions and has been broadly characterized as "counterurbanization" (Berry, 1976; Berry and Dahmann, 1977; Long, 1981; Fuguitt, 1985). With this second reversal, national urbanization patterns that have occurred since the onset of industrialization began to change. Nonmetropolitan growth exceeded metropolitan growth, and net gains that large metropolitan areas had previously won in their exchanges with smaller areas have begun to change as movement down the metropolitan hierarchy has become more pervasive (Long and DeAre, 1988).

Operating together, these two redistribution reversals have imposed unprecedented population losses upon large metropolitan areas within these countries' core industrial regions. These losses have led urban analysts to raise two questions: Will these losses persist and lead to a continued depopulation of large metropolitan areas within industrial core areas? and Will younger large metropolitan areas that are located in the peripheral regions also encounter losses? Two theoretical perspectives—the regional restructuring perspective and the deconcentration perspective—suggest distinctly different long-term scenarios for metropolitan population growth and decline.

This study examines migration processes that are contributing to demographic change in large metropolitan areas of North America, Europe, Japan, and New Zealand. It identifies shifts in these processes since 1970, determines commonalities across countries, and evaluates the extent to which the new processes conform to the regional restructuring or the deconcentration perspective. Original analyses are presented from the newly constructed Michigan Metropolitan Migration Project data base for 13 developed countries (Frey, 1988). This data base defines each country's largest metropolitan areas (those with populations greater than one million in 1970, and national capitals) according to common functional criteria. It has assembled specially tabulated migration stream data from the 1970 and 1980 rounds of censuses (and contemporaneous population registers) that link each metropolitan area to major national subareas. This data base permits a comparative analysis of metropolitan and regional migration processes that were recorded during the most recent national censuses.

The following section discusses the regional restructuring and deconcentration explanations for the new redistribution reversals across regions and metropolitan areas. The section concludes by stating specific hypotheses regarding redistribution patterns across each country's regional and metropolitan areas; patterns of growth and decline for its largest metropolitan areas; and migration streams associated with these tendencies.

The migration processes affecting each country's large core-region metropolitan areas are the central focus of the study. Not only do the two theoretical perspectives foresee different net migration patterns for these metropolitan areas, they also suggest that the structure of migration stream contributions will be different. The hypotheses arising from the regional restructuring and deconcentration perspectives are evaluated on the basis of projections of regional and metropolitan-area population growth and decline that are implied by national migration processes observed around 1980. The concluding section summarizes these results and discusses their implications for the validity of the alternative theoretical perspectives.

## Two perspectives on population redistribution

Both the regional restructuring and the deconcentration perspectives[1] successfully explain population losses and slowdowns affecting large core-region metropolitan areas during the 1970s. Yet the two perspectives attribute these declines to explanations that imply different migration processes across the urban and regional system.

*Regional restructuring explanations* attribute 1970s metropolitan-area decline to economic dislocations of the period. Yet restructuring theorists view

"deindustrialization-related" decline as a short-term episode leading to a new spatial organization of production. This new organization is associated with expanding worldwide markets, improved communication and production technologies, and, most important, the rise of the multilocational corporation (Castells, 1985; Noyelle and Stanback, 1984; Scott and Storper, 1986). According to this scenario, continued agglomeration will occur in those metropolitan areas that function as advanced service centers and as headquarters for multinational corporations, banks, and similar institutions. Growth is also foreseen in areas with knowledge-based industries associated with high-technology research and development. On the other hand, metropolitan areas that cannot successfully make the production-to-services transformation will continue to decline in size. Reduced growth prospects are also anticipated for smaller metropolitan and nonmetropolitan areas that engage in routine production and consumer service activities. Hence, the regional restructuring explanation views the 1970s counterurbanization as a necessary but intermediate step toward a new metropolitan functional hierarchy.

The regional restructuring perspective foresees different short-term growth patterns for core and peripheral metropolitan areas but as part of the same long-term economic restructuring process. Selected large metropolitan areas in both core and peripheral regions are transforming their economic bases to become high-level service centers. However, this transformation is more difficult for core metropolitan areas, which must overcome the decline of old-line manufacturing bases—resulting in fairly dramatic short-term losses in population and employment. Yet once this process has been completed, some of these areas are likely to assume more dominant "command-and-control" positions in the metropolitan hierarchy. Peripheral metropolitan areas do not face this short-term transition but sustain both short- and long-term growth, according to this perspective.

*Deconcentration explanations* view the 1970s counterurbanization patterns as a more fundamental break with the past. Citing as evidence the unprecedented metropolitan declines and the pervasive "down-the-size-hierarchy" migration flows, its proponents are unwilling to attribute these patterns to mere period shocks or to a temporary restructuring in the organization of production (Wardwell, 1980). Rather, they place considerable weight on the increased residential space flexibility that is accorded to the resident-consumer and assert that longstanding preferences for lower density locations are becoming less constrained by institutional and technological barriers. Changes in the industrial structure, a rising standard of living, and technical improvements in communication and production are leading away from a situation where both producer and consumer space is dictated by production constraints (Hawley, 1978; Long, 1981; Wilson, 1988). As a consequence, the post-1970 counterurbanization is seen as the beginning of

a long-term shift away from urban agglomerations in both core and peripheral regions.

The deconcentration perspective, therefore, suggests that a much more fundamental redistribution is under way than was suggested by the regional restructuring perspective. Perhaps the only area of agreement between the two perspectives lies in the short-term decline that both predict for core-region manufacturing centers. Yet, the deconcentration perspective anticipates similar long-term redistribution patterns for large metropolitan areas of all types, in both the core and peripheral regions of developed countries. The sustained depopulation of these large areas is attributed to a general convergence, across all areas of the country, in the availability of employment opportunities and modern urban amenities. In short, the deconcentration perspective toward long-term redistribution patterns implies a greater redistribution toward the periphery, reduced long-term growth in virtually all large metropolitan areas, and increased growth within small urban areas and in territory that lies beyond the boundaries of current metropolitan areas.

## Redistribution and the migration process

Figure 1 presents two sets of redistribution hypotheses associated with the regional restructuring and deconcentration perspectives. The top panel contrasts hypotheses about a country's entire regional, metropolitan, and nonmetropolitan system (involving both the core and peripheral regions, as well as metropolitan and nonmetropolitan territory within each region). According to the regional restructuring perspective, the periphery will grow at the expense of the core. Within the core region, one can anticipate selective metropolitan gains and declines along with general nonmetropolitan declines. Within the peripheral region, long-term metropolitan gains and nonmetropolitan declines are anticipated. The deconcentration perspective also anticipates continued core-to-periphery redistribution. Within each region, however, this perspective anticipates a sustained metropolitan-to-nonmetropolitan redistribution such that small metropolitan areas and nonmetropolitan areas will grow at a greater pace (or decline at a lesser pace) than large metropolitan areas.

The middle panel of Figure 1 contrasts each perspective's hypotheses regarding large metropolitan areas. The regional restructuring perspective suggests different short- and long-term scenarios for core-region metropolitan areas. In the short term, it suggests that selected metropolitan areas with large manufacturing production components will sustain declines, while more diversified metropolitan areas will enjoy modest gains. In the longer term, after the manufacturing-area economies have adapted to their short-term losses, these areas will attain stability in their population growth. More-

**FIGURE 1 Hypotheses regarding regional, metropolitan, and nonmetropolitan population redistribution, for the regional restructuring perspective and the deconcentration perspective**

| Redistribution category | Regional restructuring perspective | Deconcentration perspective |
|---|---|---|
| Regional, metropolitan, and nonmetropolitan system | **Across regions**<br>Core decline–Periphery gain<br>**Within Core**<br>Metropolitan selective gain or decline<br>Nonmetropolitan decline<br>**Within periphery**<br>Metropolitan gain<br>Nonmetropolitan decline | **Across regions**<br>Core decline–Periphery gain<br>**Within core**<br>Metropolitan decline<br>Nonmetropolitan gain<br>**Within periphery**<br>Metropolitan stability or decline<br>Nonmetropolitan gain |
| Large metropolitan areas | **Within core**<br>*Short-term:* Selective gain or decline<br>*Long-term:* Stability or gain<br>**Within periphery**<br>Gain | **Within core**<br>Decline<br>**Within periphery**<br>Stability or decline |
| Dominant migration streams for metropolitan areas | **Core metropolitan areas**<br>*Short-term*<br>Core metropolitan ⇄ Core nonmetropolitan<br>Core metropolitan → Peripheral metropolitan<br>Core metropolitan ⇄ Peripheral nonmetropolitan<br>*Long-term*<br>Core metropolitan → Core nonmetropolitan<br>Core metropolitan ⇄ Peripheral metropolitan<br>Core metropolitan → Peripheral nonmetropolitan<br>**Peripheral metropolitan areas**<br>Peripheral metropolitan → Peripheral nonmetropolitan<br>Peripheral metropolitan ⇄ Core metropolitan<br>Peripheral metropolitan → Core nonmetropolitan | **Core metropolitan areas**<br>Core metropolitan → Core nonmetropolitan<br>Core metropolitan → Peripheral metropolitan<br>Core metropolitan → Peripheral nonmetropolitan<br>**Peripheral metropolitan areas**<br>Peripheral metropolitan → Peripheral nonmetropolitan<br>Peripheral metropolitan → Core metropolitan<br>Peripheral metropolitan → Core nonmetropolitan |

NOTE: Arrows denote direction of dominant migration stream in the migration stream exchanges between the two types of areas. Arrows in both directions indicate that neither stream dominates the other.

over, the more diversified metropolitan areas in the core region are expe to gain significantly in the long term. Because large metropolitan area the periphery are not assumed to possess heavy manufacturing compone the regional restructuring perspective anticipates that they will achieve p ulation gains in both the short and long term. In contrast to these expectati the deconcentration perspective's hypotheses for large metropolitan a are more straightforward. This perspective suggests that large metropol areas in both the core and periphery will continue to decline relativ smaller metropolitan areas and nonmetropolitan areas within the reg Some large peripheral metropolitan areas, however, may be amenabl expansion through annexation and could thus sustain long-term stabilit growth.

The bottom panel of Figure 1 describes the dominant migration stre that are expected to affect large metropolitan areas according to each spective. Once again, the regional restructuring perspective anticipates t a short-term and long-term scenario for large metropolitan areas. In the s term, manufacturing-dominant metropolitan areas are expected to exh zero or negative gains in their migration stream exchanges with nonme politan areas, and significant losses in their exchanges with peripheral-re metropolitan areas. In the long run, these core-region metropolitan a will achieve gains in their migration stream exchanges with nonmetropol areas of all regions, and somewhat lesser gains in their exchanges v peripheral metropolitan areas. Peripheral-region metropolitan areas are pected to gain in both the short and long term from migration stream changes by enjoying positive gains from exchanges with nonmetropol areas in both regions, and some positive gains from exchanges with c region metropolitan areas.

The deconcentration perspective hypothesizes similar dominant gration streams within both regions—but in opposite directions from th suggested by the regional restructuring perspective. Large metropolitan a in the core and periphery are expected to lose population in their exchan with smaller metropolitan areas and nonmetropolitan areas. Still, large m ropolitan areas in the periphery will gain in their exchanges with large metropolitan areas, according to this perspective.

Each set of hypotheses shown in Figure 1 is generally consistent v its perspective's underlying theoretical propositions. Both perspectives' potheses are meant to apply to most of the world's developed count Nevertheless, regional restructuring hypotheses will be most pertinent those industrialized countries that possessed a large manufacturing proc tion component prior to 1970. Similarly, the deconcentration perspecti hypotheses will be most pertinent for countries that possess a large exp of peripheral, nonmetropolitan territory along with a well-integrated tr portation network.

## Use of population projections

The relative validity of each perspective's description of post-1970 redistribution patterns can be evaluated by examining the projected outcomes of internal migration processes observed in each country around 1980 and, in most cases, also around 1970. Migration processes are operationalized as the set of migration streams that connect a country's major regions and metropolitan categories. These projections assume that the observed migration processes will continue to operate over a 50-year period.

In this article, the projection is regarded as a descriptive tool for evaluating aggregate redistribution patterns associated with a set of observed migration streams. The projections presented here can be used for this purpose because they are based on the multiregional cohort component methodology, which takes explicit cognizance of the migration streams connecting each major region (core and periphery) and large metropolitan area of the country. (This methodology is explained in Frey, 1983.)[2] Nevertheless, these projections are not intended to be predictions of future redistribution patterns and should not be regarded as such. Rather, they are intended to demonstrate the aggregate redistribution patterns implied by the observed migration processes.

The projections are used to evaluate each perspective's hypotheses regarding redistribution across a country's regional and metropolitan system, population change for large individual metropolitan areas, and dominant migration streams that affect metropolitan-area change (shown in Figure 1). In some parts of this evaluation, the outcomes of two "alternative" projections are compared to determine whether the redistribution patterns associated with migration processes observed around 1980 differ significantly from those implied by migration processes observed around 1970. For such comparisons one projection assumes that the migration streams observed around 1980 will be perpetuated over the projection period. The second projection assumes that the migration streams observed around 1970 are so perpetuated. The two projections begin at the same starting year (either 1980 or 1981), and they assume identical fertility and mortality rates. Hence, the two alternative projections differ only with respect to the migration processes they incorporate.

### The Michigan Metropolitan Migration Project

The migration data for these projections were prepared by the Michigan Metropolitan Migration Project. This project has assembled migration data from cooperating national statistical offices and university institutes to examine migration stream contributions to large metropolitan areas (with populations greater than one million, and national capitals), defined ac-

cording to consistent functional criteria in 13 developed countries. Eighty-one large metropolitan areas are defined to be consistent with the Functional Urban Regions used by Hall and Hay (1980) in Europe, the Standard Metropolitan Statistical Areas (SMSAs) and Standard Consolidated Statistical Areas (SCSAs) in the United States (Frey and Speare, 1988), the Census Metropolitan Areas (CMAs) in Canada (Ross, 1984), and with national practices in Japan and New Zealand. In most countries these large metropolitan areas are located within a regional system that distinguishes between the country's broad core and peripheral regions, as defined by Vining and Pallone (1982). The remaining territory within each core and peripheral region, but outside the large metropolitan areas, is further decomposed into "other metropolitan" and nonmetropolitan territory for five countries (the United States, Canada, Great Britain, Belgium, and New Zealand) and into urban and rural territory for seven countries (Sweden, Finland, Denmark, the Netherlands, West Germany, Austria, and Italy). The regional system just described identifies a country's core and peripheral region, an urban hierarchy within each region (i.e., large metropolitan–other metropolitan–nonmetropolitan; or large metropolitan–urban–rural), as well as individual large metropolitan areas within each region. This system is appropriate for evaluating the redistribution hypotheses presented in Figure 1.

For each of the 13 countries analyzed below, the Michigan Project assembled age-disaggregated migration stream rates across the regional systems defined above, for one period around 1980 and (except for West Germany and Italy) one period around 1970. These age-disaggregated streams are required for the projection comparisons undertaken here. For most countries, the Michigan staff worked with special migration tabulations prepared by national statistical offices and cooperating university institutes. The "around 1980" and "around 1970" dates (hereafter, simply 1980 and 1970) for the migration data reflect the dates at which censuses are taken (for countries that collect migration data from censuses) and the availability of computerized population register data (for countries that collect migration data from registers). The 1980 data tend to characterize the period 1975–81, although data for three countries (Sweden, Denmark, and the Netherlands) pertain to 1982–83. The 1970 data generally pertain to a period ten years prior to the 1980 observation. (See the Appendix for a further discussion of these data.)

## The United States

Our evaluation of migration processes begins with the United States, which possesses industrial and geographical characteristics relevant to both the regional restructuring perspective and the deconcentration perspective. It also displayed sharp changes in its regional and metropolitan redistribution patterns during the 1970s (Frey and Speare, 1988).

### Metropolitan and regional system

The projections used to evaluate the regional and metropolitan system hypotheses for the United States are shown in Table 1. Here, the Census Bureau's Northeast and Midwest regions are combined into the nation's core region. The South and West census regions are considered to be the periphery. Clearly, the projection associated with the 1980 migration processes leads to an accentuated core-to-periphery redistribution. This projected pattern is consistent with the predicted "across-regions" hypothesis in both the regional restructuring perspective and the deconcentration perspective (see Figure 1, top panel).

Within regions, the competing perspectives hypothesize that different redistribution patterns are occurring. US projections associated with the 1980 migration processes tend to support the deconcentration perspective's hypotheses within each region. Both metropolitan categories of core-region territory (large and other) sustain projected losses, and these losses are greatest for the largest metropolitan areas. Within the peripheral region, all categories of territory display significant projected gains with the 1980 migration processes. Yet, large metropolitan areas show lower projected gains than do small metropolitan areas or nonmetropolitan areas.

The different experiences of the two extreme categories under each projection are dramatic. Under the assumption that the 1970 migration process is perpetuated over the 1980–2030 period, the largest core-region metropolitan areas achieve gains of 17.5 percent over their 1980 populations. When the 1980 migration process is assumed, however, these areas are

**TABLE 1 Alternative projected 50-year (1980–2030) population changes for regions, metropolitan areas, and nonmetropolitan areas of the United States associated with observed migration processes around 1970 and around 1980**

| Region and area | 1980 population (millions) | Projected percent change, 1980–2030 | |
|---|---|---|---|
| | | 1970 migration process | 1980 migration process |
| **Core** | | | |
| Large metropolitan areas | 58.7 | +17.5 | −12.3 |
| Other metropolitan areas | 26.3 | +23.6 | −10.1 |
| Nonmetropolitan areas | 23.5 | + 6.3 | +11.7 |
| **Periphery** | | | |
| Large metropolitan areas | 45.8 | +51.7 | +42.1 |
| Other metropolitan areas | 39.7 | +27.7 | +52.5 |
| Nonmetropolitan areas | 32.6 | + 8.6 | +52.1 |

NOTE: 1970 and 1980 refer to years "around 1970" and "around 1980" as specified in Appendix Table A-1.
SOURCE: For all tables and figures, Michigan Metropolitan Migration Project (Frey, 1988).

projected to lose 12.3 percent of their 1980 population over the same period. At the other extreme, the relatively small 8.6 percent projected growth that peripheral nonmetropolitan areas would achieve under the 1970 migration process increases to 52.1 percent when the 1980 migration process is assumed. Clearly, the migration process has shifted sharply in a direction consistent with the hypotheses of the deconcentration perspective.

### Large metropolitan areas

The alternative projections for large metropolitan areas in the United States also tend to support the deconcentration perspective's hypotheses for these areas. As shown in Table 2, the 1980 migration process for 12 of the 18 large core-region metropolitan areas implies negative population change over the 50-year projection period. Moreover, for each of the 18 areas, projected change associated with the 1980 migration process leads to greater losses or smaller gains than those associated with the 1970 migration process. Large metropolitan areas in the periphery show mixed patterns of growth and decline with their 1980-based projections. Yet, the greatest gaining areas (including Phoenix, Portland, Sacramento, and Tampa–St. Petersburg) are generally not the South's and West's largest advanced service areas—where the regional restructuring perspective anticipated greatest gains.[3] When the 1980-based projections are compared with 1970 projections, most advanced service areas in the peripheral regions (including Los Angeles–Long Beach and San Francisco–Oakland) show lower projected gains using the more recent migration processes. These peripheral-region metropolitan-area projections suggest, at best, uneven support for the regional restructuring perspective.

A more precise evaluation of how the 1980 migration process affects large metropolitan areas involves examining their dominant migration stream exchanges, in accordance with the hypotheses of our two perspectives (Figure 1, lower panel). This can be evaluated from Table 3, which displays the net migration component of each metropolitan area's 50-year projected change and decomposes this figure into projected net migration exchanges (inmigration minus outmigration) with different parts of the regional system.

Migration stream exchanges between the US core metropolitan areas and other parts of the country strongly support the deconcentration perspective. Projected migration stream exchanges for Detroit, based on migration processes observed in 1980, illustrate this (Figure 2). When Detroit's projected 35 percent net migration loss is decomposed into migration stream exchanges with other areas, this metropolitan area sustains a projected net migration loss to small metropolitan areas and nonmetropolitan areas in both core and peripheral regions. The migration stream exchanges shown for Denver–Boulder are illustrative of those for peripheral large metropolitan

**TABLE 2 Alternative projected 50-year (1980–2030) population changes for large metropolitan areas in the United States, assuming observed migration processes around 1970 and around 1980**

| Region and metropolitan area | 1980 population (millions) | Projected percent change, 1980–2030 | |
|---|---|---|---|
| | | 1970 migration process | 1980 migration process |
| **Core** | | | |
| New York | 15.8 | − 2.9 | −31.9 |
| Chicago | 7.9 | +11.2 | −14.2 |
| Philadelphia | 5.6 | +32.5 | − 3.7 |
| Detroit | 4.6 | +28.8 | − 9.2 |
| Boston | 3.7 | +21.1 | − 6.1 |
| Cleveland | 2.8 | +22.6 | −18.6 |
| St. Louis | 2.4 | +26.7 | − 1.8 |
| Pittsburgh | 2.3 | + 2.2 | −11.9 |
| Minneapolis–St. Paul | 2.1 | +42.6 | +18.4 |
| Cincinnati | 1.7 | +25.5 | + 8.1 |
| Milwaukee | 1.6 | +14.4 | − 7.4 |
| Providence | 1.3 | +16.8 | − 1.1 |
| Kansas City | 1.3 | +31.3 | +10.4 |
| Indianapolis | 1.3 | +29.4 | +13.4 |
| Buffalo | 1.2 | + 7.8 | −28.7 |
| Columbus | 1.1 | +33.5 | +11.5 |
| Hartford | 1.1 | +37.9 | + 3.2 |
| Dayton | 1.0 | +42.1 | − 1.1 |
| **Periphery** | | | |
| Los Angeles–Long Beach | 11.5 | +42.4 | +18.9 |
| San Francisco–Oakland | 5.2 | +57.8 | +24.7 |
| Houston | 3.1 | +54.0 | +83.0 |
| Washington, D.C. | 3.1 | +65.1 | + 6.7 |
| Dallas–Ft. Worth | 2.9 | +72.1 | +70.3 |
| Miami | 2.7 | +42.2 | +29.2 |
| Baltimore | 2.2 | +35.0 | +18.0 |
| Seattle–Everett | 2.1 | +91.3 | +74.9 |
| Atlanta | 2.0 | +61.5 | +58.5 |
| San Diego | 1.9 | +51.7 | +62.2 |
| Denver–Boulder | 1.6 | +38.0 | +57.0 |
| Tampa–St. Petersburg | 1.6 | +52.2 | +68.0 |
| Phoenix | 1.5 | +30.1 | +86.2 |
| Portland | 1.2 | +61.1 | +77.7 |
| New Orleans | 1.2 | +15.5 | +26.9 |
| San Antonio | 1.1 | +32.9 | +39.9 |
| Sacramento | 1.0 | +30.5 | +68.3 |

NOTE: 1970 and 1980 refer to years "around 1970" and "around 1980" as specified in Appendix Table A-1.

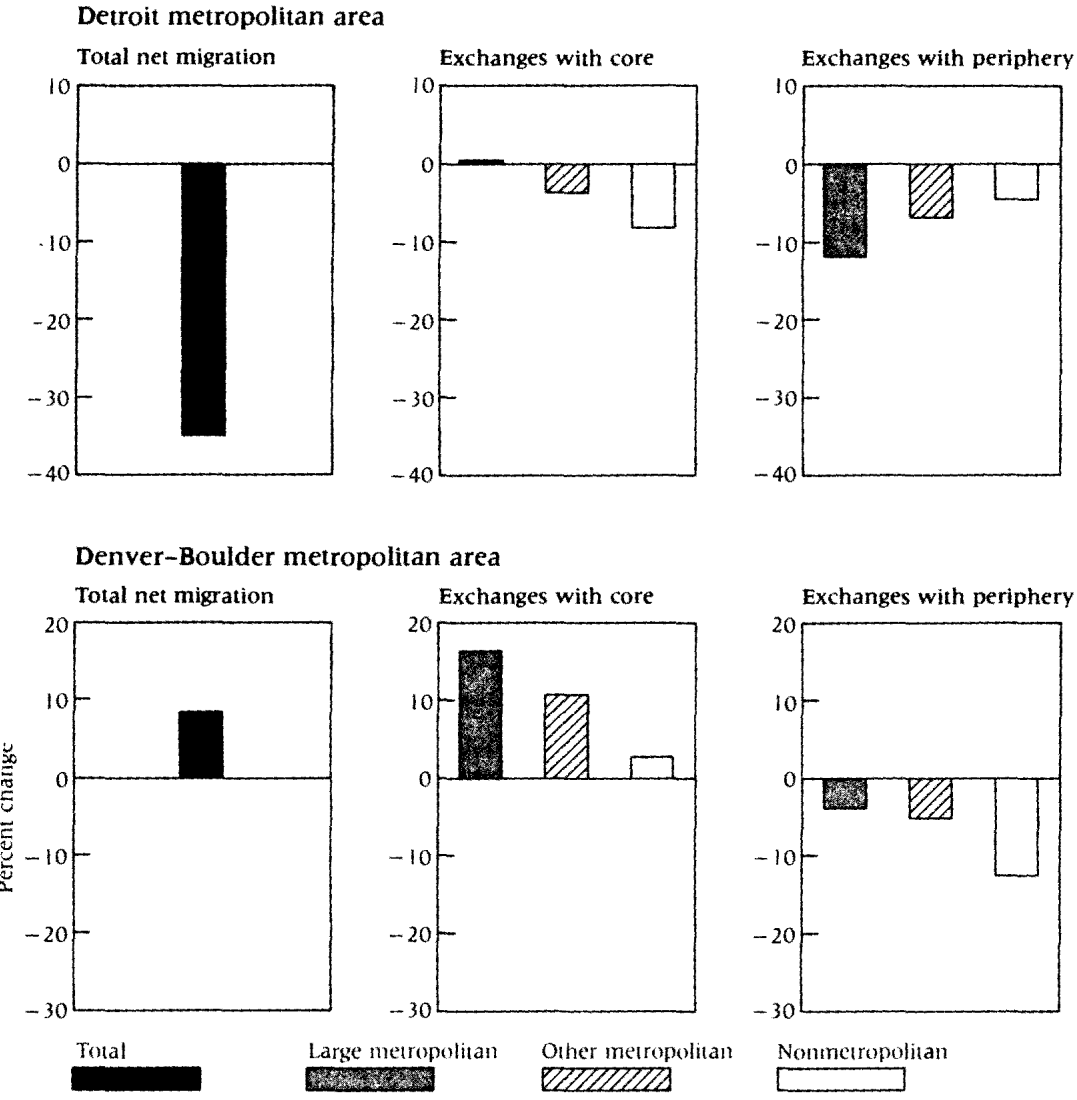
**TABLE 3 Projected 50-year (1980–2030) net migration changes for large metropolitan areas in the United States, decomposed into exchanges with large metropolitan areas, other metropolitan areas, and nonmetropolitan areas in core and peripheral regions, assuming observed migration processes around 1980**

| Region and metropolitan area | Percent change due to net migration, 1980–2030 | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Decomposed into exchanges with | | | | | |
| | | Core region | | | Peripheral region | | |
| | Total | Large metropolitan | Other metropolitan | Non-metropolitan | Large metropolitan | Other metropolitan | Non-metropolitan |
| **Core** | | | | | | | |
| New York | −44.1 | − 2.6 | − 5.3 | − 6.1 | −18.6 | − 8.3 | − 3.2 |
| Chicago | −37.8 | + 0.3 | − 2.4 | − 7.4 | −16.6 | − 6.8 | − 4.9 |
| Philadelphia | −21.6 | + 3.6 | − 3.4 | − 2.3 | − 9.7 | − 5.7 | − 4.1 |
| Detroit | −35.0 | + 0.3 | − 3.7 | − 8.1 | −12.1 | − 6.9 | − 4.5 |
| Boston | −28.1 | + 1.5 | − 6.1 | − 4.4 | −11.8 | − 5.5 | − 1.8 |
| Cleveland | −34.8 | − 4.8 | + 0.4 | − 2.5 | −15.0 | − 8.2 | − 4.7 |
| St. Louis | −19.7 | + 0.8 | − 1.8 | − 9.7 | − 5.3 | − 3.0 | − 0.7 |
| Pittsburgh | −21.3 | − 2.1 | + 0.0 | − 0.7 | −10.4 | − 5.7 | − 2.4 |
| Minneapolis–St. Paul | −16.7 | + 2.7 | + 0.7 | − 5.8 | − 9.7 | − 2.6 | − 2.0 |
| Cincinnati | −18.1 | + 1.0 | + 1.7 | − 1.9 | − 8.9 | − 4.5 | − 5.5 |
| Milwaukee | −30.2 | + 2.3 | − 3.3 | −11.2 | −12.1 | − 5.2 | − 0.7 |
| Providence | −15.6 | + 3.7 | − 0.1 | − 2.4 | − 8.3 | − 6.5 | − 2.0 |
| Kansas City | −13.5 | + 1.9 | + 1.4 | − 5.0 | − 6.9 | − 2.9 | − 2.0 |
| Indianapolis | −14.0 | + 2.7 | + 2.6 | − 2.1 | − 8.8 | − 5.1 | − 3.3 |
| Buffalo | −39.4 | − 3.8 | − 1.1 | − 0.8 | −19.6 | −11.2 | − 2.9 |
| Columbus | −25.9 | + 0.9 | + 2.4 | + 0.1 | −16.4 | − 8.2 | − 4.7 |
| Hartford | −15.1 | + 5.8 | + 5.5 | − 3.8 | −11.5 | − 8.0 | − 3.1 |
| Dayton | −21.5 | − 3.2 | + 2.1 | + 0.8 | −11.0 | − 5.0 | − 5.2 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Periphery** | | | | | | | |
| Los Angeles–Long Beach | − 9.9 | +13.4 | + 3.4 | + 0.2 | − 7.5 | − 8.2 | −11.4 |
| San Francisco–Oakland | − 2.5 | +12.0 | + 4.3 | + 0.8 | + 2.6 | − 8.9 | −13.3 |
| Houston | +22.9 | +17.4 | + 8.4 | + 4.5 | + 5.6 | + 9.0 | −22.0 |
| Washington, D.C. | −27.3 | + 9.5 | + 2.8 | − 0.3 | −15.4 | − 2.7 | −21.2 |
| Dallas–Ft. Worth | +23.5 | +14.0 | + 7.2 | + 4.7 | + 2.5 | + 9.1 | −14.0 |
| Miami | +39.2 | +73.9 | + 9.4 | + 3.7 | − 7.6 | −25.2 | −15.0 |
| Baltimore | − 7.8 | + 1.9 | − 3.5 | − 0.8 | +13.1 | − 8.2 | −10.3 |
| Seattle–Everett | +33.2 | + 7.3 | + 4.7 | + 2.4 | +20.2 | + 3.8 | − 5.2 |
| Atlanta | +14.9 | +13.1 | + 7.1 | + 0.9 | + 1.6 | + 3.0 | −10.8 |
| San Diego | +24.5 | +20.8 | + 7.5 | + 1.4 | +13.0 | − 5.6 | −12.6 |
| Denver–Boulder | + 8.5 | +16.3 | +10.8 | + 2.9 | − 3.8 | − 5.0 | −12.7 |
| Tampa–St. Petersburg | +96.3 | +67.3 | +26.6 | +15.2 | + 5.5 | − 5.5 | −12.8 |
| Phoenix | +61.8 | +48.7 | +23.4 | +12.2 | − 7.2 | − 1.8 | −13.5 |
| Portland | +39.1 | + 5.1 | + 4.4 | + 2.7 | +22.0 | +10.0 | − 5.1 |
| New Orleans | − 8.0 | + 4.8 | + 2.6 | + 1.3 | − 7.1 | + 0.4 | −10.0 |
| San Antonio | + 5.9 | + 5.8 | + 4.0 | + 1.5 | − 8.1 | + 7.9 | − 5.2 |
| Sacramento | +35.8 | + 4.8 | + 1.7 | + 0.1 | +41.5 | + 2.6 | −14.9 |

NOTE: 1980 refers to years "around 1980" as specified in Appendix Table A-1.

**JRE 2 Projected 50-year (1980–2030) net migration changes for the ropolitan areas of Detroit and Denver–Boulder, decomposed into anges with metropolitan and nonmetropolitan areas in core and pheral regions, assuming observed migration processes around 1980**




NOTE: 1980 refers to years "around 1980" as specified in Appendix Table A-1.

areas. While Denver–Boulder shows a projected migration gain of 8.5 percent, this gain is entirely attributable to its exchanges with metropolitan categories in the core region. Within the periphery, the Denver–Boulder metropolitan area loses in its exchanges with large metropolitan areas, other metropolitan areas, and, in particular, nonmetropolitan areas.

This population redistribution down the metropolitan hierarchy is generally consistent with the deconcentration perspective's hypotheses regarding dominant migration streams. The long-term gains projected for many US peripheral-region areas result primarily from gains in exchanges with large core-region metropolitan areas, counterbalanced by losses in their exchanges with smaller metropolitan and nonmetropolitan areas in their own region. These redistribution patterns, projected on the basis of 1980 migration processes, differ sharply from the patterns associated with 1970 migration processes. Projections (not shown) based on the latter indicate that most peripheral-region large metropolitan areas gain from exchanges with core large metropolitan areas and from "up-the-hierarchy" exchanges within their own region.

The foregoing review of US redistribution patterns associated with 1980 migration processes provides general support for the deconcentration perspective. These patterns imply a core-to-periphery redistribution and large metropolitan-to-nonmetropolitan redistribution across the country's regional and metropolitan-area system. The more recent migration processes would imply a projected depopulation of most large metropolitan areas in the Northeast-Midwest core region and uneven growth patterns for large areas in peripheral regions.[4]

## Cross-national comparisons

Migration stream redistribution patterns for the other countries studied in the Michigan Metropolitan Migration Project will now be assessed. Some countries are more conducive to tests for hypotheses of the regional restructuring perspective and others to tests for hypotheses of the deconcentration perspective. The regional restructuring perspective is better tested in countries that have undergone significant manufacturing-to-service sector transformation over the past decade (such as Canada, Great Britain, and West Germany) than in countries where the major transformation was out of agriculture and into service and manufacturing (such as Finland, Italy, and Japan). Likewise, the deconcentration perspective will be less applicable in countries with limited peripheral territory conducive to human settlement (such as Japan) or where strong economies of agglomeration still exist in the largest core areas (such as Finland and New Zealand).

### Metropolitan and regional systems

For purposes of evaluating the hypotheses of the two perspectives, Table 4 summarizes the broad metropolitan and regional redistribution patterns for the 13 countries in the study. This summary is based on projected regional and metropolitan-area changes associated with migration processes observed

**TABLE 4 Summary of regional and metropolitan-area redistribution associated with observed migration processes around 1970 and around 1980, selected developed countries**

| | Core–periphery regional redistribution | | Metropolitan redistribution within core[a] | | Metropolitan redistribution within periphery | |
|---|---|---|---|---|---|---|
| | 1970 migration process | 1980 migration process | 1970 migration process | 1980 migration process | 1970 migration process | 1980 migration process |
| United States | To periphery | To periphery | Deconcentration | Deconcentration | Concentration | Deconcentration |
| Canada | To periphery | To periphery | Concentration | Deconcentration | Concentration | Mixed |
| Great Britain | To core | To periphery | Deconcentration | Deconcentration | Deconcentration | Deconcentration |
| Sweden | To periphery | To core | Deconcentration | Mixed | Deconcentration | Deconcentration |
| Finland | To core | To core | Concentration | Concentration | NA | NA |
| Denmark | To periphery | To core | Deconcentration | Deconcentration | Deconcentration | Deconcentration |
| Netherlands | To periphery | To periphery | Deconcentration | Deconcentration | NA | NA |
| Belgium | To core | To core | Concentration | Concentration | Concentration | Deconcentration |
| West Germany[b] | — | To periphery | — | Mixed | — | Concentration |
| Austria | To core | To periphery | Mixed | Deconcentration | Concentration | Concentration |
| Italy[b] | — | To periphery | — | Deconcentration | — | Mixed |
| Japan | To core | To core | Concentration | Deconcentration | Deconcentration | Concentration |
| New Zealand | To core | To core | Concentration | Concentration | Deconcentration | Deconcentration |

NOTE: 1970 and 1980 refer to years "around 1970" and "around 1980" as specified in Appendix Table A-1.
NA = not applicable; see footnote a.
[a] Summarizes nationwide patterns for Finland and the Netherlands. In these countries the large metropolitan areas comprise the entire core region, and the residual urban and rural territory comprises the periphery.
[b] 1970 migration processes could not be analyzed.

for 1980 and 1970—similar to those shown for the United States in Table 1.

The 1980-based projections for both Canada and Great Britain conform, generally, to the deconcentration perspective. In each case, the 1980 migration process redistributes people from the core to the peripheral regions of the country and leads to deconcentration down the metropolitan hierarchy within the core. For Canada, the latter redistribution pattern represents a departure from the 1970 migration process. Still, both periods' migration processes lead to growth in Canada's large peripheral-region metropolitan area, Vancouver. For Great Britain, deconcentration within both the core and periphery was evident already with the 1970 migration process (although Great Britain's 1970-based projection leads to a periphery-to-core regional redistribution).[5]

The 1980 migration processes for the three Scandinavian countries, Finland, Sweden, and Denmark, show mixed and somewhat surprising redistribution patterns. Finland's 1980 migration process shows continued periphery-to-core redistribution and continued concentration of the population within the periphery. These patterns are less a confirmation of the regional restructuring perspective than a reflection of Finland's less industrialized economy, in which its core region (the Helsinki area) continues to possess economies of agglomeration. Redistribution patterns associated with Sweden's and Denmark's 1980 migration processes are surprising and provide some support for the regional restructuring perspective. Both countries' recent redistribution patterns (based on 1983 observations) favor their core regions—in contrast to earlier peripheral-region redistribution patterns. Moreover, Sweden shows a new intra-regional pattern that has become more mixed. These shifts in redistribution from 1970-based projections suggest that the earlier patterns were a result of period-specific deindustrialization influences—as the regional restructuring perspective would predict.

The five Western European countries (Netherlands, Belgium, West Germany, Austria, and Italy) also display mixed redistribution patterns. The deconcentration perspective is generally supported by the 1980-based projections in the Netherlands, Austria, and Italy. These countries' 1980 migration processes favor a continued core-to-periphery redistribution and a pattern of redistribution down the metropolitan hierarchy within the core regions. A comparison with the 1970-based projection shows the 1980 deconcentration patterns to be new for Austria, while in the Netherlands, deconcentration patterns are associated with the migration processes of both periods.

Belgium's and West Germany's redistribution patterns differ from those of other Western European countries. In Belgium, both 1970 and 1980 migration processes imply continued core-region concentration toward Brussels and Antwerp. In West Germany, redistribution patterns are mixed within

**TABLE 5 Alternative projected 50-year (1981–2031) population changes for large metropolitan areas in selected developed countries, assuming observed migration processes around 1970 and around 1980**

| Country | Metropolitan area | Region | 1980 population (millions) | Projected percent change, 1981–2031[a] | |
|---|---|---|---|---|---|
| | | | | 1970 migration process | 1980 migration process |
| Canada | Montreal | Core | 2.8 | +36.8 | − 2.5 |
| | Toronto | Core | 3.0 | +21.1 | +22.2 |
| | Vancouver | Periphery | 1.3 | +77.3 | +61.2 |
| Great Britain | London | Core | 9.2 | −11.3 | − 9.5 |
| | Birmingham | Periphery | 2.9 | −23.7 | −16.4 |
| | Manchester | Periphery | 2.0 | −25.6 | −18.6 |
| | Glasgow | Periphery | 1.6 | −40.7 | −20.3 |
| | Liverpool | Periphery | 1.4 | −26.7 | −17.2 |
| | Newcastle | Periphery | 1.3 | −27.3 | −20.1 |
| | Leeds | Periphery | 1.3 | −28.6 | −17.8 |
| | Sheffield | Periphery | 0.9 | −31.1 | −17.4 |
| Sweden | Stockholm | Core | 1.5 | −26.2 | − 0.5 |
| Finland | Helsinki | Core | 1.7 | + 8.9 | − 6.0 |
| Denmark | Copenhagen | Core | 1.9 | −37.4 | −29.1 |
| Netherlands | Amsterdam | Core | 2.4 | −19.8 | −20.4 |
| | Rotterdam | Core | 1.8 | −25.6 | −22.3 |
| | The Hague | Core | 1.3 | −32.3 | −27.7 |
| Belgium | Brussels | Core | 2.7 | −17.5 | −15.1 |
| | Antwerp | Core | 1.6 | −17.6 | −11.3 |
| West Germany[b] | Cologne | Core | 2.0 | — | −31.5 |
| | Düsseldorf | Core | 1.8 | — | −34.1 |
| | Dortmund | Core | 1.7 | — | −57.8 |
| | Essen | Core | 1.3 | — | −39.7 |
| | Duisburg | Core | 1.2 | — | −44.8 |
| | Hamburg | Periphery | 2.9 | — | −29.6 |
| | Munich | Periphery | 2.8 | — | −19.3 |
| | Stuttgart | Periphery | 2.4 | — | −24.7 |
| | Frankfurt | Periphery | 2.3 | — | −24.7 |
| | Mannheim | Periphery | 1.8 | — | −24.8 |
| | Nürnberg | Periphery | 1.7 | — | −23.9 |
| | Hannover | Periphery | 1.5 | — | −28.6 |
| | Bremen | Periphery | 1.3 | — | −29.9 |
| | Berlin | Periphery | 1.9 | — | −47.8 |
| Austria | Vienna | Core | 2.5 | +10.6 | + 4.7 |

**TABLE 5 (continued)**

| Country | Metropolitan area | Region | 1980 population (millions) | Projected percent change, 1981–2031[a] | |
|---|---|---|---|---|---|
| | | | | 1970 migration process | 1980 migration process |
| Italy[b] | Milan | Core | 4.2 | — | −20.7 |
| | Turin | Core | 2.0 | — | −31.4 |
| | Genoa | Core | 0.9 | — | −31.7 |
| | Rome | Periphery | 3.8 | — | − 8.4 |
| | Naples | Periphery | 3.5 | — | −16.5 |
| | Palermo | Periphery | 1.4 | — | −13.1 |
| Japan | Tokyo | Core | 28.6 | +35.7 | +19.4 |
| | Osaka | Core | 17.3 | +22.5 | − 4.7 |
| | Nagoya | Core | 9.9 | +13.0 | − 2.8 |
| | Kitakyushu | Periphery | 4.5 | −45.5 | − 6.5 |
| New Zealand | Auckland | Core | 0.8 | +70.4 | +80.2 |

NOTE: 1970 and 1980 refer to years "around 1970" and "around 1980" as specified in Appendix Table A-1.
[a] 1980–2030 for West Germany, Italy, and Japan.
[b] 1970 migration processes could not be analyzed.

the core industrial regions and generally favor an up-the-hierarchy shift within the periphery. These intra-regional patterns are noteworthy because they differ from those shown in other large industrialized countries with sufficient room for peripheral expansion (such as the United States, Canada, and Great Britain). West Germany's patterns, in particular, provide counter-evidence to the claims of the deconcentration perspective's theorists.

Neither Japan nor New Zealand was expected to serve as a crucial test case for evaluating the regional restructuring and the deconcentration perspectives. Japan has been increasing its industrial capacity (rather than reducing it) and has less available peripheral territory suitable for settlement than most other industrialized nations. As a consequence, both its 1970- and 1980-based projections favor a continued periphery-to-core redistribution. However, Japan's 1980 projections do show a new pattern of metropolitan-to-nonmetropolitan redistribution—suggesting, perhaps, the beginning of a pattern of deconcentration. New Zealand's projections, too, imply a periphery-to-core shift—along with concentrated redistribution patterns within the core region. These patterns, like those of Finland, simply reflect continued agglomeration economies offered by New Zealand's core area (Auckland) as that country continues to urbanize.

The broad patterns for the countries just reviewed lend partial support

to the deconcentration perspective. Of those countries that represent the most significant test cases, Canada's and Great Britain's redistribution patterns conform closely to the hypotheses of the deconcentration perspective. West Germany's redistribution patterns do not. Furthermore, 1980-based projections in Denmark and Sweden (based on 1983 observations) suggest that the down-the-hierarchy shifts associated with the 1970 migration processes may be moderating over time. Nevertheless, most countries' 1980-based projections more closely favor the hypotheses of the deconcentration perspective regarding regional and metropolitan redistribution than they support those of the regional restructuring perspective.

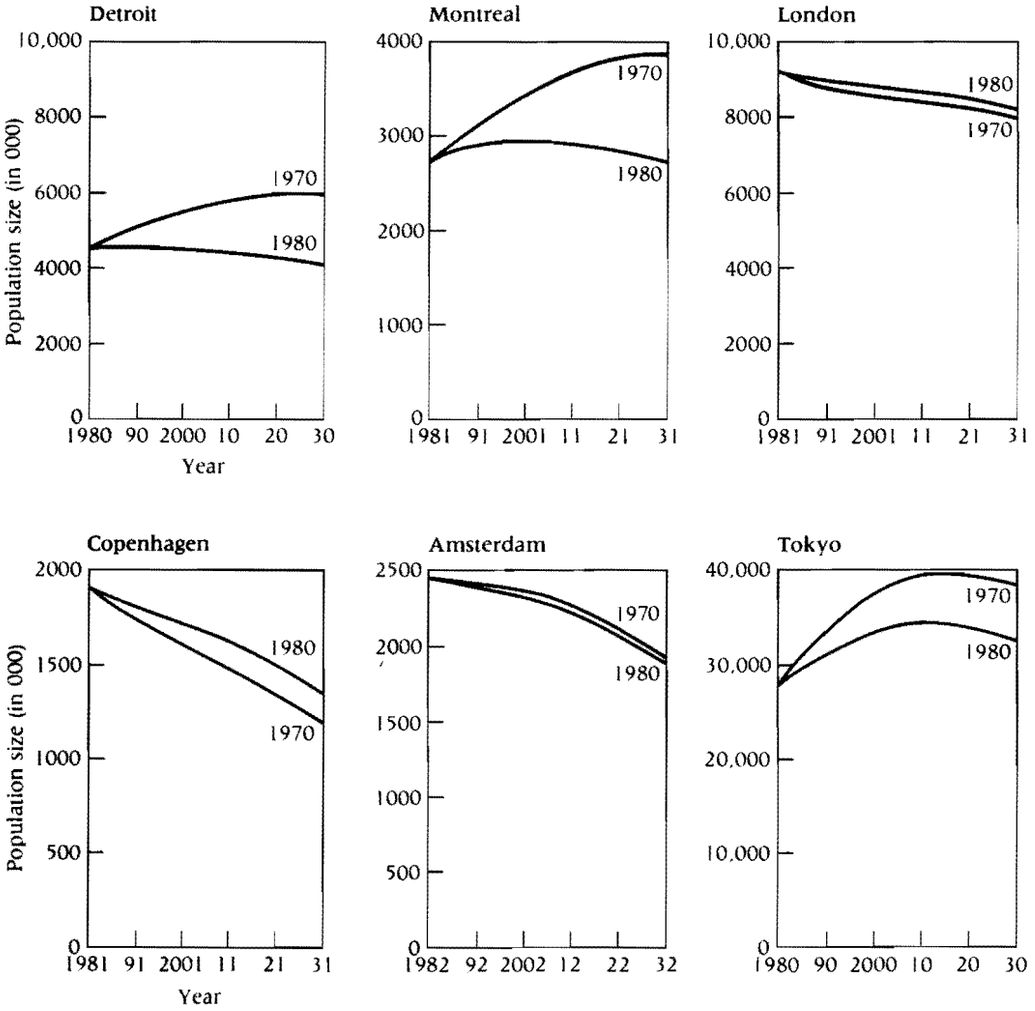
### Large metropolitan areas

The hypotheses of the two perspectives with regard to large metropolitan areas will now be evaluated. Table 5 presents projected 50-year population changes for each country's largest metropolitan areas, based on 1970 and 1980 migration processes. Figure 3 graphs these changes over 50 years for six large metropolitan areas, including Detroit. The data in Table 6 show each area's projected net migration and decomposes this figure into exchanges with other national areas based on the 1980 migration processes. As a result of high rates of projected natural population decrease in some countries, the projected total population changes (Table 5, last column) are often more negative (or less positive) than the corresponding projected net migration changes (Table 6, first column).

The projections and net migration exchanges shown for the three Canadian metropolitan areas provide general support for the deconcentration perspective. This is most evident for Montreal, where the projected population gain of 36.8 percent, based on the 1970 migration process, shifts to a projected loss of 2.5 percent with the 1980 migration process (Table 5). Moreover, Montreal's projected net loss with the latter projection results from negative exchanges with all other core and peripheral areas (Table 6). While displaying a projected population gain with the 1980 migration process, Toronto's net migration component is negative, also, as a result of negative exchanges with most other areas of Canada. Only Vancouver, Canada's large peripheral metropolitan area, shows a projected net migration gain when the 1980 migration process is assumed. The redistribution patterns in Canada's peripheral region appear to lend some support to the hypotheses of the regional restructuring perspective.

Great Britain's large metropolitan areas conform to the deconcentration perspective's hypotheses more than do Canada's. All eight metropolitan areas register projected total population declines and projected net migration declines on the basis of the 1980 migration process (Tables 5 and 6). In each case, a large share of the decline is attributable to exchanges with smaller

**FIGURE 3 Projected 50-year (circa 1980–2030) population changes for selected core-region metropolitan areas, assuming observed migration processes around 1970 and around 1980**




NOTE: 1970 and 1980 refer to "around 1970" and "around 1980" as specified in Appendix Table A-1.

metropolitan areas and nonmetropolitan areas. A comparison of 1970- and 1980-based projections for London (Figure 4) shows greater projected net losses associated with the earlier migration process. Yet, the migration stream exchanges associated with the 1970 process were less deconcentrated vis-à-vis the peripheral region.

Some regional restructuring appears to be occurring with the more recent migration processes in two Scandinavian core metropolitan areas,

**TABLE 6 Projected 50-year (1981–2031) net migration changes for large metropolitan areas in selected developed countries, decomposed into exchanges with large metropolitan areas, other metropolitan areas, and nonmetropolitan areas in core and peripheral regions, assuming observed migration processes around 1980**

| Country and metropolitan area | Region | Percent change due to net migration, 1981–2031[a] | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Decomposed into exchanges with | | | | | |
| | | | Core region | | | Peripheral region | | |
| | | Total | Large metropolitan | Other metropolitan[b] | Non-metropolitan[b] | Large metropolitan | Other metropolitan[b] | Non-metropolitan[b] |
| **Canada** | | | | | | | | |
| Montreal | Core | −33.6 | −13.5 | −0.5 | −1.0 | −2.9 | − 9.1 | − 6.5 |
| Toronto | Core | −11.4 | +12.7 | 0.0 | −0.9 | −2.4 | − 7.2 | −13.6 |
| Vancouver | Periphery | +23.6 | +12.3 | +1.2 | +1.0 | — | +24.5 | −15.4 |
| **Great Britain** | | | | | | | | |
| London | Core | − 6.9 | — | −5.9 | −0.4 | +1.1 | − 1.4 | − 0.3 |
| Birmingham | Periphery | −13.5 | − 1.5 | −0.7 | −0.3 | −3.6 | − 6.6 | − 0.8 |
| Manchester | Periphery | −10.5 | − 1.2 | +0.2 | −0.2 | +1.7 | − 9.4 | − 1.5 |
| Glasgow | Periphery | −13.8 | − 1.7 | −0.5 | −0.1 | −1.4 | − 8.2 | − 1.9 |
| Liverpool | Periphery | −11.9 | − 1.9 | −1.0 | −0.1 | +1.6 | − 9.2 | − 1.2 |
| Newcastle | Periphery | − 5.1 | − 2.0 | +0.6 | 0.0 | +0.9 | − 4.2 | − 0.4 |
| Leeds | Periphery | − 7.9 | − 1.4 | +0.8 | +0.1 | −1.8 | − 5.2 | − 0.4 |
| Sheffield | Periphery | − 4.7 | − 0.2 | +1.6 | −0.1 | −0.7 | − 5.1 | − 0.1 |
| **Sweden** | | | | | | | | |
| Stockholm | Core | + 2.7 | — | +1.6 | −2.0 | +1.5 | + 3.3 | − 1.8 |
| **Finland** | | | | | | | | |
| Helsinki | Core | + 4.4 | — | — | — | — | + 2.9 | + 1.5 |
| **Denmark** | | | | | | | | |
| Copenhagen | Core | − 1.5 | — | −1.1 | −1.2 | — | + 1.8 | − 1.0 |

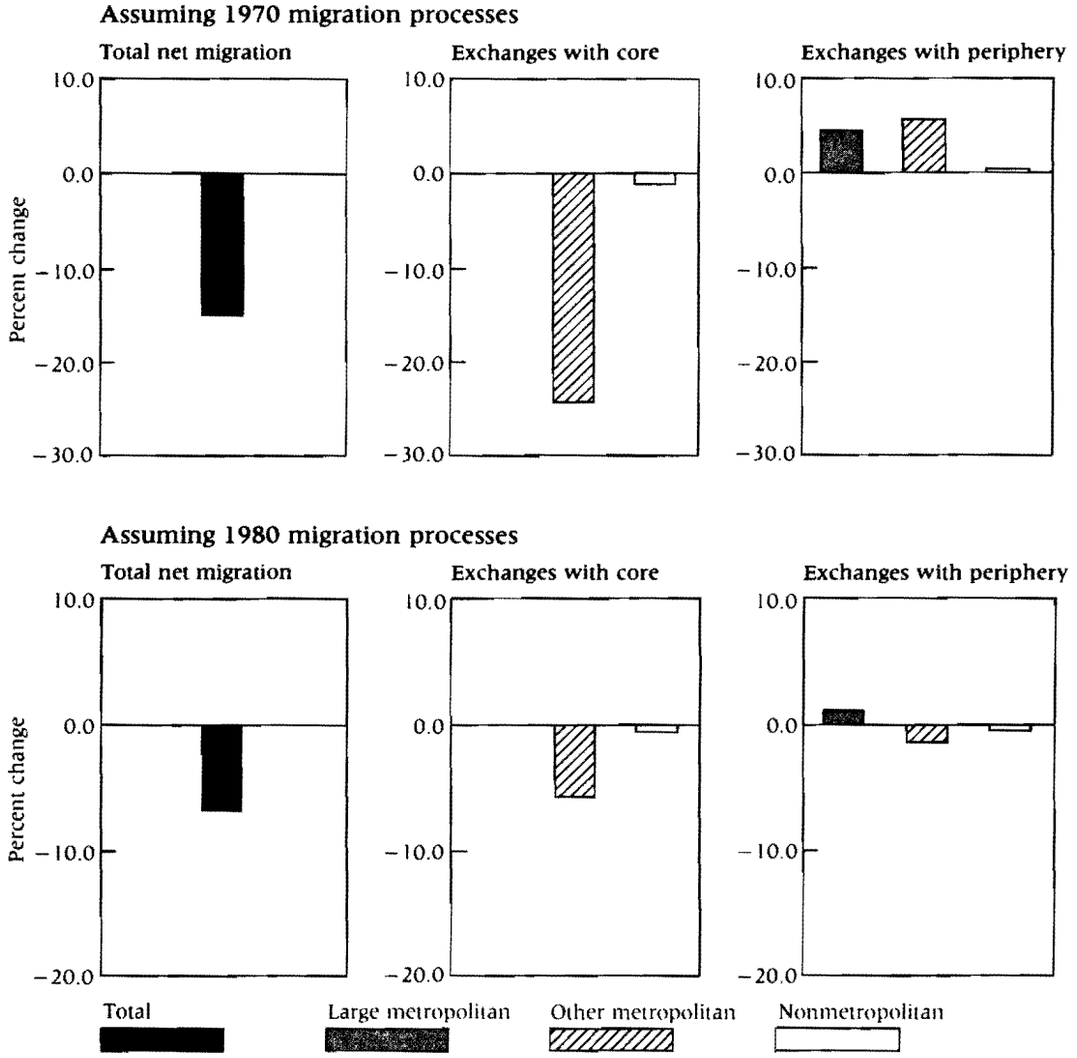
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Netherlands** | | | | | | | | |
| Amsterdam | Core | − 6.4 | + 0.5 | — | — | — | − 1.8 | − 5.1 |
| Rotterdam | Core | − 7.2 | + 1.2 | — | — | — | − 3.2 | − 5.3 |
| The Hague | Core | −12.4 | − 2.6 | — | — | — | − 3.5 | − 6.3 |
| **Belgium** | | | | | | | | |
| Brussels | Core | + 1.9 | − 1.7 | +2.2 | — | — | + 1.6 | − 0.2 |
| Antwerp | Core | + 5.3 | + 3.0 | +1.3 | — | — | + 0.8 | + 0.2 |
| **West Germany** | | | | | | | | |
| Cologne | Core | − 2.0 | − 3.0 | +0.1 | +0.6 | −2.6 | + 0.8 | + 2.1 |
| Düsseldorf | Core | + 0.5 | + 0.4 | +0.3 | +1.4 | −1.1 | − 0.1 | − 0.4 |
| Dortmund | Core | −21.8 | −10.7 | −6.1 | −3.5 | −2.8 | + 0.8 | + 0.5 |
| Essen | Core | − 1.3 | + 6.2 | −1.7 | −1.8 | −2.1 | + 0.9 | − 2.8 |
| Duisburg | Core | −15.8 | + 3.1 | −4.5 | −5.2 | −4.1 | − 1.2 | − 3.9 |
| Hamburg | Periphery | + 6.3 | + 1.1 | +2.0 | +0.4 | −1.6 | + 2.4 | + 1.9 |
| Munich | Periphery | +15.2 | + 2.6 | +2.5 | +2.8 | −6.4 | + 3.2 | +10.5 |
| Stuttgart | Periphery | + 8.1 | + 0.9 | +1.1 | +0.4 | +0.6 | + 2.4 | + 2.8 |
| Frankfurt | Periphery | +13.0 | + 2.5 | +3.1 | +0.7 | +4.9 | − 2.0 | + 3.9 |
| Mannheim | Periphery | + 9.3 | − 0.5 | +1.1 | +0.5 | +6.3 | − 0.9 | + 2.9 |
| Nürnberg | Periphery | +11.7 | − 1.0 | +0.4 | +2.5 | −2.9 | − 0.8 | +13.5 |
| Hannover | Periphery | + 6.6 | − 0.7 | +0.8 | +1.0 | −1.2 | + 2.1 | + 4.7 |
| Bremen | Periphery | + 4.2 | + 1.0 | +2.4 | +1.0 | +0.2 | − 0.1 | − 0.3 |
| Berlin | Periphery | − 7.9 | − 0.3 | +0.7 | +0.1 | −4.9 | − 0.6 | − 2.8 |
| **Austria** | | | | | | | | |
| Vienna | Core | + 0.1 | — | −0.1 | −1.4 | — | + 1.0 | + 0.6 |
| **Italy** | | | | | | | | |
| Milan | Core | − 7.2 | − 2.0 | −2.9 | −3.3 | +1.2 | − 0.1 | − 0.2 |
| Turin | Core | −14.6 | + 2.3 | −3.5 | −4.8 | −1.0 | − 5.5 | − 2.0 |
| Genoa | Core | + 1.3 | + 2.4 | −0.1 | −1.9 | +1.1 | − 0.2 | − 0.1 |
| Rome | Periphery | + 4.3 | + 0.9 | −0.2 | 0.0 | +2.3 | + 1.4 | − 0.2 |
| Naples | Periphery | −16.6 | − 2.2 | −1.6 | −0.6 | −2.4 | − 8.2 | − 1.7 |
| Palermo | Periphery | − 1.9 | + 0.2 | −0.6 | −0.4 | −0.4 | − 0.3 | − 0.4 |

**TABLE 6 (continued)**

| Country and metropolitan area | Region | Percent change due to net migration, 1981–2031[a] | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Decomposed into exchanges with | | | | | |
| | | | Core region | | | Peripheral region | | |
| | | Total | Large metropolitan | Other metropolitan[b] | Non-metropolitan[b] | Large metropolitan | Other metropolitan[b] | Non-metropolitan[b] |
| **Japan** | | | | | | | | |
| Tokyo | Core | + 5.8 | + 2.7 | −2.2 | — | +0.3 | + 5.0 | — |
| Osaka | Core | − 5.0 | − 4.0 | −1.8 | — | 0.0 | + 0.9 | — |
| Nagoya | Core | + 1.8 | − 0.8 | −0.4 | — | +0.3 | + 2.7 | — |
| Kitakyushu | Periphery | − 1.4 | − 2.9 | −1.2 | — | 0.0 | + 2.7 | — |
| **New Zealand** | | | | | | | | |
| Auckland | Core | +17.9 | — | — | +3.5 | — | +14.0 | + 0.3 |

NOTE: 1980 refers to years "around 1980" as specified in Appendix Table A-1.
— = not applicable for the country's metropolitan and regional system. Specifically, London, Stockholm, Helsinki, Copenhagen, Vienna, and Auckland are the only large metropolitan areas located in their countries' core regions; Vancouver and Kitakyushu are the only large metropolitan areas located in their countries' peripheral regions. Other categories marked "—" denote territory classifications that do not apply to the country's metropolitan and regional system.
[a] 1980–2030 for West Germany, Italy, and Japan.
[b] For the following countries the "urban–rural" distinction is used rather than the "other metropolitan–nonmetropolitan" distinction: Sweden, Finland, Denmark, Netherlands, West Germany, Austria, and Italy.

**FIGURE 4 Projected 50-year (1981–2031) net migration changes for London, decomposed into exchanges with metropolitan and nonmetropolitan areas in core and peripheral regions, assuming observed migration processes around 1970 and around 1980**




NOTES: 1970 and 1980 refer to "around 1970" and "around 1980" as specified in Appendix Table A-1. London constitutes the only large metropolitan area within Great Britain's core region as defined in the Michigan Project.

Stockholm and Copenhagen. Stockholm's 1970-based projected population change of −26.2 percent turns to a barely negative −0.5 percent when the 1980 migration process is assumed. Stockholm's recent concentration patterns are fueled by positive net migration exchanges with most other parts of Sweden (except for small negative exchanges with Sweden's rural terri-

tory). This stands in contrast to the more deconcentrated migration stream patterns associated with the 1970s projections (not shown).

Copenhagen's 1970-based negative projected change is slightly reduced with the 1980-based projection (from −37.4 to −29.1 percent). In contrast to its 1970-based migration process, however, the 1980 process reflects a positive net migration exchange with peripheral urban areas (Figure 5). Copenhagen's population is still deconcentrating but at a less rapid pace than that implied by the 1970 migration process. This can be attributed, in part, to the replacement of lost manufacturing jobs by higher level service sector employment (Matthiessen, 1986).

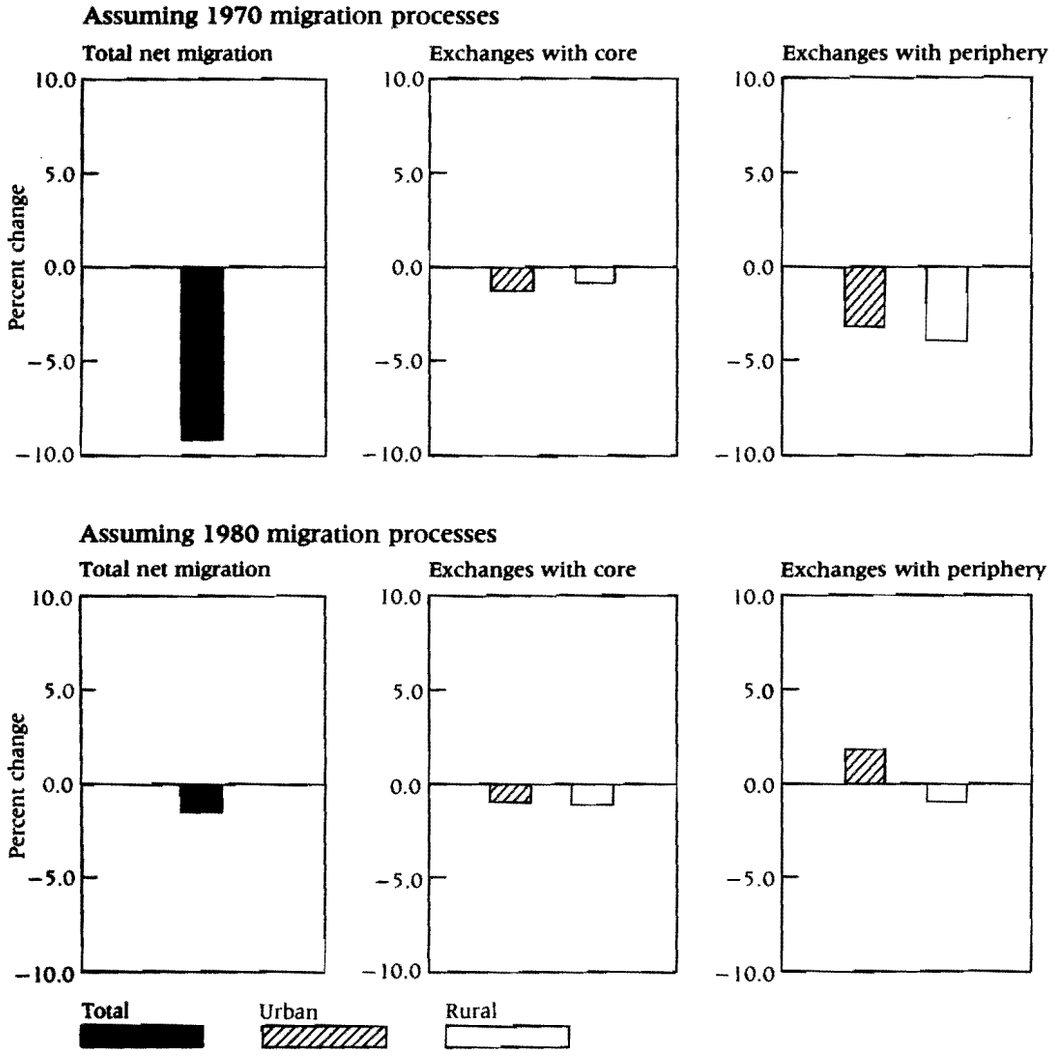
The hypotheses of the deconcentration perspective are generally supported by reference to the Netherlands' three large metropolitan areas (Amsterdam, Rotterdam, and The Hague); to Austria's capital, Vienna; and to five of the six Italian large metropolitan areas. The three Netherlands metropolitan areas show 1980-based projected net migration declines along with negative exchanges for peripheral urban and rural areas (Table 6). Vienna's 1980-based projected 50-year population change (+4.7 percent) is smaller than that associated with its 1970-based migration process (+10.6 percent). In contrast to its 1970-based migration process (not shown), the recent process involves negative net migration exchanges with Austrian core-region rural and urban areas.

All six Italian metropolitan areas are projected to lose population on the basis of the 1980 migration process. Moreover, the three core metropolitan areas (Milan, Turin, and Genoa), as well as two of the three peripheral areas (Naples and Palermo), show projected net migration losses (or only negligible gains) on the basis of the 1980 process. In each case, the projections are associated with negative net migration stream exchanges with smaller urban and rural areas in both the core and the periphery. Rome, the country's capital, constitutes the exception. Its 1980-based migration process implies a projected 50-year net migration gain of 4.3 percent that draws primarily on large and smaller areas in the periphery.

The redistribution patterns shown for Belgium's and West Germany's large metropolitan areas, again, do not conform closely to the deconcentration perspective. Brussels and Antwerp, Belgium's large core metropolitan areas, display net migration gains from smaller and peripheral areas on the basis of the most recent migration process. The five metropolitan areas located in West Germany's core industrial region are distinguished by their large projected population losses and negative or negligible net migration changes.

Yet these German areas' projected declines represent different combinations of migration stream exchanges. The three highly specialized industrial centers (Dortmund, Essen, and Duisburg) display negative migration stream exchanges with most regional and metropolitan-area categories. Cologne, a more diversified area, sustains its losses primarily in exchanges with other

**FIGURE 5 Projected 50-year (1981–2031) net migration changes for Copenhagen, decomposed into exchanges with urban and rural areas in core and peripheral regions, assuming observed migration processes around 1970 and around 1980**




NOTE: 1970 and 1980 refer to "around 1970" and "around 1980" as specified in Appendix Table A-1.

large metropolitan areas in the core and periphery and (as the regional restructuring perspective would predict) gains in its exchanges with smaller metropolitan and rural areas. Düsseldorf, another more diversified area, gains in its exchanges with all categories of core-region territory and loses in its exchanges with peripheral territory.

Projections for Germany's large peripheral metropolitan areas provide even stronger support for the regional restructuring perspective. Each of these areas shows projected net migration gains, and, in most cases, the projected gains are primarily attributable to exchanges with small urban and rural territories. (In this regard they differ markedly from large metropolitan areas in other test case countries.) The final West German area, West Berlin, displays a projected negative net migration change that is largely dominated by its exchanges with peripheral territories. Because of West Berlin's unique political and geographic situation, however, its distribution patterns are not relevant for evaluating the two perspectives discussed here.

The remaining metropolitan areas, Helsinki, Auckland, and the four Japanese areas, are also not appropriate test cases because they are located in national contexts that do not lend themselves to either theoretical perspective. Yet, some of these areas show some tendency toward population deconcentration. This is the case for the three core-region Japanese metropolitan areas, Tokyo, Osaka, and Nagoya. While the 1970 migration process implies projected population gains for each area, the 1980-based projections imply a far smaller gain for Tokyo and declines for Osaka and Nagoya. A similar situation exists for Helsinki. Its 1970-based projected gain of 8.9 percent is reversed to a decline of 6.0 percent when projections are based on the 1980 migration process. The two remaining metropolitan areas are Kitakyushu in Japan, and Auckland in New Zealand. In each case, the 1980 migration process accounts for an even greater projected metropolitan gain (or reduced loss) than the 1970 process.

This evaluation of individual metropolitan areas and their migration stream exchanges reinforces the earlier conclusions regarding these countries' nationwide redistribution patterns. Put another way, the hypotheses of the deconcentration perspective are given general, though not unqualified, support. Migration processes affecting most large metropolitan areas in Canada, Great Britain, the Netherlands, Austria, and Italy are leading to negative or reduced long-term growth facilitated by dominant down-the-metropolitan-hierarchy population redistribution. This is not the case for Belgium or West Germany, however, where migration processes are leading to a greater concentration in all large metropolitan areas except for the most specialized industrial core areas, and for West Berlin. These patterns, as well as those recently observed for Stockholm and Copenhagen, coincide more closely with the hypotheses of the regional restructuring perspective.

## Conclusion

Regional and metropolitan redistribution in most developed countries has changed dramatically in the 1970s and early 1980s. This article has examined

recent migration processes in 13 developed countries in order to evaluate two competing perspectives regarding future redistribution changes. The scenario of the regional restructuring perspective is one of short-term losses for selected manufacturing areas in the core region, to be followed by long-term gains for large diversified metropolitan areas that will serve as command-and-control centers. The scenario of the deconcentration perspective suggests a steady diffusion of residential settlement leading to a long-term depopulation of large metropolitan areas. From each perspective, a series of hypotheses was developed regarding redistribution patterns across countries' regional areas, redistribution patterns for large metropolitan areas, and dominant migration stream exchanges. These hypotheses were evaluated by examining projected population redistribution patterns derived from migration stream processes that were observed around 1980 and around 1970, based on data collected by the Michigan Metropolitan Migration Project.

Evaluation of these hypotheses gave some credence to the deconcentration perspective. This perspective was given strongest support in the United States, where 1980 migration processes implied a continued redistribution from core to peripheral regions and migration stream exchanges that run down the metropolitan-area hierarchy. Relatively strong support was also found in the migration processes of Canada, Great Britain, the Netherlands, Austria, and Italy. On the other hand, evaluation of redistribution patterns for Belgium and West Germany supports the regional restructuring perspective's hypotheses of continued metropolitan concentration, with migration flowing from smaller urban and rural territory toward the largest metropolitan areas. The analyses for Sweden and Denmark suggest that the 1970 metropolitan deconcentration patterns in these countries had begun to reverse themselves in the early 1980s. Concentration patterns were evident for Japan, Finland, and New Zealand. However, these countries' geographic and industrial characteristics made them less significant test cases for evaluating the two perspectives.

On the whole, this evaluation provided more wide-ranging support for the deconcentration perspective than for the regional restructuring perspective. It is clear that the longstanding historical relationship between industrial development and urban population concentration has begun to erode in many of the world's developed countries. Yet, as this analysis has also shown, the deconcentration trend is not universal across all developed nations. Certainly, the decline of heavy manufacturing during the 1970s was accompanied by an accentuated period-specific regional restructuring that exaggerated metropolitan population decline in many developed countries. It will be the challenge of future studies to separate these short-term regional restructuring effects from the longer term deconcentration influences that can lead to a continued depopulation of large metropolitan areas within developed, market economy countries.

# Appendix: The Michigan Metropolitan Migration Project

The Michigan Metropolitan Migration Project, with funding from the Center for Population Research of the National Institute of Child Health and Human Development, assembled age- and sex-disaggregated migration stream data for 81 comparably defined metropolitan areas in 13 developed, market economy countries for a period around 1980, and, in most cases, another period around 1970. Unique aspects of the Michigan data base are: (a) that a common metropolitan unit definition is used for each area and country; and (b) that detailed migration stream data are assembled precisely in accordance with these metropolitan-area definitions. As a result of the fairly recent capability of most countries' census bureaus and central statistical offices to compile computer-generated migration tabulations according to user-requested boundaries, it became feasible to assemble a data set that would permit a comparative analysis of migration streams contributing to population change in large metropolitan areas.

## Regional and metropolitan definitions

The metropolitan-area units employed for the 81 large metropolitan areas identified in this study are based on: Functional Urban Region definitions developed by Hall and Hay in Europe; Census Metropolitan Area (CMA) definitions used by Statistics Canada; Standard Metropolitan Statistical Area (SMSA) and Standard Consolidated Statistical Area (SCSA) definitions used in the 1980 US census; and metropolitan-counterpart definitions that could be identified from statistical publications of Japan and New Zealand. The Hall–Hay Functional Urban Region definitions are critical for this study because: (1) they are designed to be consistent with the British Metropolitan Economic Labour Area (defined on the basis of a core area with at least 20,000 jobs and a ring of politically independent subdivisions with commuting ties to the core) and are intended to be comparable to the US SMSA; and (2) they are generally defined on the basis of administrative divisions for which governments routinely collect statistics (including migration statistics).

The identification of broad geographic divisions within each country draws on the work of Vining and Pallone (1982). Broad divisions designated in this article represent aggregations of major administrative subdivisions in each country. One or more of these regions in each country were identified as the industrial "core" region(s); the remaining regions were designated as the "periphery."

Within each region the residual territory was differentiated, where possible, according to a metropolitan–nonmetropolitan distinction or an urban–rural distinction. Although this was possible with our migration data for all countries except Japan, these distinctions represent the one part that is not strictly comparable across countries. The decision whether to use the metropolitan–nonmetropolitan breakdown or the urban–rural breakdown depended, in large part, on the cost and ease with which such migration data could be obtained. Hence, the metropolitan–nonmetropolitan distinction is made for the United States, Canada, Great Britain, Belgium, and New Zealand; and the rural–urban distinction is made for the remaining European countries (Table A-1, column 2).

As a consequence of these classification procedures, it was possible to form the following six categories for most countries: (1) core region—large metropolitan areas; (2) core region—other metropolitan areas (or urban areas); (3) core region—nonmetropolitan areas (or rural areas); (4) peripheral region—large metropolitan areas; (5) peripheral region—other metropolitan areas (or urban areas); and (6) peripheral region—nonmetropolitan areas (or rural areas). These summary regional categories are useful for evaluating the two explanatory perspectives that form the basis of this study's theoretical framework.

**TABLE A-1 Migration data from the Michigan Metropolitan Migration Project**

| Country | Number of large metropolitan areas[a] | Residual territory[b] | Migration data type | Migration period | | Cooperating government agency or institution |
|---|---|---|---|---|---|---|
| | | | | Around 1970 | Around 1980 | |
| Canada | 3 | MN | Census | 1966–71 | 1976–81 | Statistics Canada |
| United States | 35 | MN | Census | 1965–70 | 1975–80 | US Bureau of the Census |
| Great Britain | 8 | MN | Census | 1970–71 | 1980–81 | Office of Population Census and Surveys |
| Sweden | 1 | UR | Register | 1973 | 1983 | Statistics Sweden |
| Finland | 1 | UR | Register | 1967 | 1977 | Central Statistical Office |
| Denmark | 1 | UR | Register | 1973 | 1983 | Central Statistical Office |
| Netherlands | 3 | UR | Register | 1972 | 1982 | Central Bureau of Statistics |
| Belgium | 2 | MN | Census | 1970 | 1981 | Central Statistical Bureau and Catholic University, Louvain |
| West Germany[c] | 14 | UR | Register | — | 1977 | Technical University, Berlin, and Federal Research Institute for States and Regions |
| Austria | 1 | UR | Census | 1966–71 | 1976–81 | Central Statistical Office |
| Italy[c] | 6 | UR | Register | — | 1981 | University of Pisa, and Social Science Data Archive Program, Milan |
| Japan | 4 | — | Census | 1969–70 | 1979–80 | Utsunomiya University |
| New Zealand | 2 | MN | Census | 1966–71 | 1976–81 | Department of Statistics |

NOTE: Standard tabulations include internal migration flows between large metropolitan areas, core and peripheral regions, and residual metropolitan–nonmetropolitan (or urban–rural) territories, disaggregated by sex and five-year age groups.

[a] Metropolitan areas with populations greater than one million in 1970, and national capitals.

[b] Residual territory outside large metropolitan areas. MN denotes further breakdown into metropolitan–nonmetropolitan territory; UR denotes further breakdown into urban–rural territory.

[c] 1970 migration processes could not be analyzed.

## Migration data

The migration data collected in this study involve, for each country, a matrix of migration streams across the detailed regional system outlined above; and cross-classification of each of these streams by sex and by five-year age groups. Because the internal migration streams are expressed as rates, it was also necessary to collect appropriate age- and sex-specific populations-at-risk for each area in the regional system.

The objective was to obtain the above migration data for each country for one period around 1980 and another period around 1970. Irrespective of the specific year, it was desirable that the migration periods be separated by ten-year intervals. For those countries where migration stream data were drawn from decennial censuses, it was possible to collect migration data in periods that ended in 1980 (or 1981) and 1970 (or 1971). Although population registers collect annual migration data, many European countries had not computerized their migration data until the early 1970s. For this reason, data for registration countries were collected as late as 1973 and 1983 for the "around 1970" and "around 1980" time points. For two countries, Italy and West Germany, it was not possible to obtain a complete migration flow matrix for the 1970 period. A listing of the type and year of migration data for each country is presented in Table A-1 (columns 3, 4, and 5).

Because the metropolitan areas and regional systems defined for this study differed markedly from those used in each country's national publications, almost all of the migration stream matrixes had to be produced as special computer tabulations by contract with national central statistical offices or cooperating research institutions (listed in Table A-1, column 6). Although the migration stream data almost always required a special computer tabulation, computation of population-at-risk data could often be pieced together from detailed census or population register populations. In these instances, publications were brought to the University of Michigan through inter-library loan, and the appropriate statistics were key-entered and aggregated into areas consistent with our metropolitan-area and regional system. Michigan Project staff were also involved in adjusting migration data for different periods to take account of the reorganization of administrative districts that occurred in several European countries. It was the goal, as far as possible, to compile the "around 1980" migration data according to the same area boundaries as used in compiling the "around 1970" migration data.

## Notes

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1 See Frey (1987) for a more detailed discussion of these perspectives. Also, Clark (1987) discusses the regional restructuring

perspective in the context of intra-metropolitan redistribution.

2 The use of population projections to describe redistribution patterns associated with a given set of migration streams is dictated by two considerations. First, it represents a more intuitive and concise approach than the more tedious alternative of comparing migration stream rates on a country-by-country basis. Second, it overcomes the problem of directly comparing relatively incomparable period migration rates drawn from different countries' migration data-collection procedures (i.e., fixed-interval census migration measures versus move statistics from population registers; five-year census intervals versus one-year census intervals). Long-term projections derived from these different types of rates have been shown to be a more effective means of comparing, across countries, how observed migration processes affect internal population redistribution (Rogers and Willekens, 1986).

Despite the strengths of the projection approach, the reader should not treat these projections as predictions. Projections based on "around 1980" migration processes do not reflect changes in migration dynamics that may have occurred since 1980. Rather, the projections should be interpreted as an elaborate standardization of migration stream rates for a given period that reflect the redistributive patterns associated with that period's migration processes.

3 According to the functional classification system developed by Noyelle and Stanback (1984), only Los Angeles and San Francisco-Oakland, of the peripheral-region cities, constitute national-level diversified service centers, and these areas display relatively low growth patterns on the basis of the 1980 migration process.

4 Post-1980 population estimates, taken since the 1980 US census, suggest that some of these deconcentration patterns may be moderating in ways that give somewhat stronger support to the regional restructuring perspective. In particular, several core-region diversified service centers (such as New York and Boston) show estimated population gains, and peripheral nonmetropolitan areas exhibit lower estimated growth rates than those that occurred during the 1970s (see Frey, forthcoming; Frey and Speare, 1988). However, these shifts do not appear to signal a return to the strong concentration patterns associated with the 1965–70 ("around 1970") migration period. In any event, it will not be possible to examine the migration processes underlying the post-1980 population changes in the manner undertaken here until the migration data collected by the 1990 US census have been made available.

5 This periphery-to-core redistribution pattern occurs when the core-region definition adopted by Vining and Pallone (1982) is assumed (i.e., comprising Great Britain's South East, East Anglia, and South West administrative regions). Champion (1983: 198–199) contends that a core region defined by the South East, West Midlands, and North West administrative regions more appropriately comprises the nation's industrial spine. Under this core-region definition, Great Britain's 1970 and 1980 migration processes would imply core-to-periphery redistribution patterns.

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