To the Graduate Council:

I am submitting herewith a dissertation written by Charles A. Campbell entitled "Migration Decisions and the Rural-Urban Turnaround." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Economics.

Henry W. Herzog Jr., Major Professor

We have read this dissertation and recommend its acceptance:

Accepted for the Council:

Vice Provost
and Dean of the Graduate School

MIGRATION DECISIONS

AND THE RURAL-URBAN TURNAROUND

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Charles A. Campbell

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This dissertation is dedicated to Carol, Garth, and Zeke. Words are simply not enough.

ABSTRACT

The rural-urban turnaround which took place in the 1970s was a change in migration patterns. Prior to the turnaround, migration patterns were dominated by movement away from rural areas to urban areas and away from the South to northern manufacturing areas. The turnaround resulted in migration patterns characterized by increased growth rates of migration into nonmetropolitan areas and decreased growth rates for large metropolitan areas, particularly those in the Northeast and North Central areas.

Several hypotheses which have been offered in economic and demographic literature as explanations for the turnaround are investigated in this study. The investigation uses tabular presentations, ordinary least squares regression models, and logit models in conjunction with 1980 census microdata. The results indicate that the turnaround was not a short-lived phenomenon, rather it continued throughout the 1970s. Nonmetropolitan suburbanization and manufacturing deconcentration are factors in the turnaround, but economic factors which affect the migration decision process are also shown to be important. Migrants do not sacrifice income in order to participate in the turnaround but they do experience less of an increase in income than migrants to urban areas. The importance of specific personal, household, and area characteristics in migration decisions are shown to differ between migrants from nonmetropolitan origins and those from metropolitan origins.

The general consensus in economic literature, which maintains that migration decisions are functions of both economic and noneconomic factors is supported by the results.

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CHAPTER I

INTRODUCTION

The Rural-Urban Turnaround

This dissertation examines a phenomenon which has been described in economic and demographic literature as the "rural-urban turnaround." The phenomenon, first noticed in the early 1970s, essentially describes a change in migration patterns. Previous to the change, the pattern was dominated by movement away from rural areas and into urban areas. The pattern appears to have shifted to one characterized by reduced growth in many urban areas and increased growth in rural areas. When these changes were first noticed they were generally viewed as counter to conventional migration theory. Because we now know that such a shift in patterns has occurred, it is important to consider the nature of the turnaround. An examination of factors which have led to the turnaround not only illuminates the important factors, but also helps to suggest the consequences of the turnaround and the prospects for the future.[1]

Background

Prior to 1970, nonmetropolitan areas were primarily exporters of people to metropolitan areas. The established pattern of migration was out of small towns and rural areas and into, for the most part, metropolitan areas. It was also a pattern of movement from the South

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[1] As of 1983, however, the turnaround appears to have stopped (at least temporarily), with no net inmigration evident for nonmetropolitan areas between 1982 and 1983. Further elaboration on this point is available in U.S. Department of Commerce (1984, p. 4).

to northern manufacturing areas. In the early seventies, however, there was a sharp increase in nonmetropolitan growth rates and a decline in the growth rates of metropolitan areas. Overall, the rural-urban turnaround is characterized by:

1. Increased growth rates of migration into nonmetropolitan areas that are adjacent to MSAs (Metropolitan Statistical Areas);
2. Increased growth rates of migration into nonmetropolitan areas that are remote from any MSA; and
3. Decreased growth rates for large MSAs, particularly those in Northeast and North Central areas.[2]

Calvin Beale's study of the shift in migration patterns as of 1975 (Beale, 1977) indicates that the annual rate of net migration for metropolitan counties dropped from .5 percent (for 1960 to 1970) to .1 percent (for 1970 to 1975) (see Table 1). However, during the same periods the rate for nonmetropolitan counties increased sharply from a minus .6 percent to a positive .6 percent. Similar changes occurred for both nonmetropolitan counties adjacent to metropolitan counties (from -.3 percent to .8 percent) and for nonadjacent nonmetropolitan counties (from -.9 percent to .5 percent). Beale (1977, p. 115) indicates that 37 percent of the national population increase occurred in nonmetropolitan areas in the 1970 to 1975 period as compared to 10 percent in the 1960 to 1970 period. Beale attributes the higher growth

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[2] For expanded analyses of these points, see Beale (1977), Chalmers and Greenwood (1977), Falaris (1982), Garnick and Renshaw (1979), McCarthy and Morrison (1977), and Wardwell and Gilchrist (1980).

Table 1

Population Change by Metropolitan Status and Selected County Characteristics: 1960 - 1975

Area	Annual Percentage Rate of Population Change		Net Migration			
			1970-1975		1960-1970	
	1970-1975	1960-1970	Number (million)	Annual Rate (%)	Number (million)	Annual Rate (%)
Total U.S.	.9	1.3	2.5	.2	3.0	.2
Metropolitan Status						
Metro	.8	1.6	.6	.1	6.0	.5
Nonmetro counties	1.2	.4	1.8	.6	-3.0	-.6
Adjacent	1.3	.7	1.1	.8	-.7	-.3
Nonadjacent	1.1	.1	.7	.5	-2.3	-.9
Size of Largest City (in nonmetropolitan counties)						
25000 or more	1.2	1.1	.2	.4	-.1	-.1
10000-24999	1.3	.8	.6	.7	-.5	-.3
2500-9999	1.1	.1	.7	.6	-1.7	-.8
less than 2500	1.3	-.3	.3	1.0	-.7	-1.1

Source:
Beale (1977, p. 115).

Note:
Annual Rates are net migration expressed as an annualized percentage of the population at the beginning of the specified period.
Net migration figures include immigration from abroad.

rates in nonmetropolitan areas solely to migration, with natural increases continuing to be higher in metropolitan areas.

Some of the growth of nonmetropolitan areas adjacent to MSAs was expected as a continuation of the "flight to the suburbs" which is defined as a movement to avoid the disadvantages of urban life while retaining both pecuniary and nonpecuniary benefits of urban life. Because of improvements in transportation (especially the interstate highway system) and communications, individuals were able to continue to work, shop, and enjoy the cultural amenities of urban life while living in a small town or rural atmosphere and enjoying such benefits as lower crime rates and more affordable single family dwellings.[3]

The decrease in growth rates for metropolitan areas and the increase in growth rates for remote nonmetropolitan areas that are nonadjacent to any MSA have been more surprising than the continued flight to the suburbs. Hansen indicates the extent of this surprise.

> Policy makers and regional scientists alike largely failed to anticipate the nature and magnitude of relatively recent shifts of population and economic activity from the Northeast and North Central parts of the United States to the South and West and from large metropolitan areas to smaller cities and rural areas.(Hansen, 1977, p. 161)

It should be noted that this phenomenon is not limited to the United States. Similar deconcentration movements have been noted in numerous non-communist, industrialized countries (Hansen, 1977, p. 162).[4]

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[3] Further information on the "flight to the suburbs" and the effects of transportation and communications are found in Beale (1977), McCarthy and Morrison (1977), Garnick and Renshaw (1979), and Herzog and Bjornstad (1982).

[4] It should be noted that the term 'deconcentration', which appears in much of the literature on this topic, refers to

Possible Explanations

Numerous explanations for the turnaround have been conjectured. These differ widely but generally characterize the turnaround phenomena as:

1. temporary;
2. due to deconcentration of industry;
3. due to a shift in the composition of industry;
4. due to the increasing numbers of affluent and mobile retirees;
5. due to the general "noneconomic" changes in lifestyles (or preferences);[5]
6. due to the changing nature of the labor force;
7. due to a change in the importance of urban hierarchies; or
8. some combination of the above.

Focus of the Study

This study focuses upon the testing of some of the seven explanations of the rural-urban turnaround which have been noted above.

It was not anticipated that the turnaround is a short-term phenomenon as is suggested by the first explanation, but neither was the turnaround anticipated. Accordingly, this question is addressed by determining whether the turnaround persisted through the 1970 to 1980 period. As noted earlier, there does appear to be some preliminary

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decentralization and geographic dispersal and is not used in the same sense as it is in literature concerned with industrial organization.

[5] The popular term 'noneconomic' is used here because it appears in so much of the literature. Such changes are, in fact, economic changes in that they affect or are affected by the economy.

evidence that the turnaround may be slowing or even reversing in the 1980s.

It is important to discover what types of jobs urban to rural migrants are finding. This helps to determine whether there is a shift in the composition of industry or a deconcentration of manufacturing as has been suggested in the second and third explanations listed above. Either or both cases are certainly possible. The relative importance of each should help to explain the causal nature of the turnaround.

The question of increasingly mobile and affluent retirees providing increased jobs in service industries (explanation #4) is not directly considered. This study focuses upon labor force migration. The significant aspect of this explanation (that is, increased service jobs) is considered in the investigation of what types of jobs migrants are finding.

While the fifth explanation (changes in preferences) offers some appeal, there is some question as to how deeply these preferences have changed. The fact that residences are moving to nonmetropolitan areas does not necessarily indicate that jobs are also moving. Given improvements in transportation, it is possible that people are choosing to commute farther to their jobs and that the flight to the suburbs is simply expanding into a flight to nonmetropolitan suburbs. Peter Morrison and Allan Abramhamse (1982) suggest that this is not the case. Instead, they have found that workers change jobs as well as residences with their new jobs tending to be located in satellite employment centers, resulting in shorter commuting distances. Investigation of the lifestyle issue provides some indication as to the extent of lifestyle

changes. Similarly, an investigation of the changes in incomes for urban to rural migrants sheds some light on whether people are sacrificing income or substituting two incomes for one in order to make lifestyle changes.

Finally, it is important to determine how the migration decision differs among migrants with respect to both personal and regional characteristics. This is used to evaluate what types of labor figure most prominently in the migration turnaround (the sixth explanation). The results aid in explaning the reasons for the turnaround and suggesting possible consequences of the phenomenon.

The changing nature and importance of urban hierarchies (the seventh explanation) is not tested in this study. Such research is certainly warranted but it would constitute a major work of research by itself. Thus, this explanation is left beyond the scope of the present work.

CHAPTER II

INVESTIGATION OF THE LITERATURE

The Literature in General

Literature concerning the rural-urban turnaround is largely based upon data for the 1970 to 1975 period. The literature varies widely in explaining what has happened in this turnaround period. Explanations of the phenomenon differ depending upon the extent of dissagregation and the regions and county types being investigated. There is some question as to whether the turnaround is a clear break with the patterns of the past or whether the turnaround may simply be a more recent result of a less noticed historical trend. There is little empirical work examining the role of migration decisions in the turnaround.

The Consensus of Opinion. If there is any clear consensus in the literature, it is that the turnaround is a complex phenomenon with different characteristics depending upon the regions and types of areas being investigated. The result is that there are no simple explanations which fit all of the experiences. On the other hand, there do appear to be a number of factors which have been largely accepted as contributing factors in the turnaround. To some extent a consensus does exist which indicates that both economic and 'noneconomic' factors are important.[1]

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[1] While this popular dichotomy is used here because of its continued use in the literature, it should be noted that factors such as demographic characteristics are economic factors. The term 'economic' as used in this dichotomy generally refers to monetized characteristics such as wages and prices.

Little has been done to establish what factors are important in migration decisions or to relate migration decisions to the turnaround.

An Overview of the Turnaround. One of the best overviews of the rural-urban turnaround is a study by Calvin Beale (1977). Beale's study focuses upon counties that have remained nonmetropolitan after the 1971 reclassification of Standard Metropolitan Statistical Areas (SMSA, hereafter MSA).

Beale notes that it has been fairly typical for nonmetropolitan areas adjacent to metropolitan areas to experience fast growth. This trend is shown to persist throughout the 1970 to 1975 period. More surprising is Beale's finding that "the difference in post-1970 annual growth of the adjacent and nonadjacent groups (1.3 percent versus 1.1 percent) is not great. . . ." and that the growth rates of the two groups seems to be converging (Beale, 1977, p. 114). Thus, it appears that part of the rural-urban turnaround involves growth in more remote, truly rural areas.

Monetary Motivation. A second surprising finding by Beale (1977, p. 116) concerns monetary motivation in the migration decision.

> On the average, people are simply not moving to or between nonmetropolitan counties in a manner associated with the income levels of the areas, suggesting that many of them are not moving for monetary motivations.

This finding runs counter to the experience of the 1960s which indicated a strong positive relationship between county income and population change. Similarly, Beale finds that the positive relationship between population density and nonmetropolitan growth evident in the 1960s dissapeared in the 1970s.

Beale points out that in some counties new economic opportunities, such as those available in new areas of mineral extraction, are the likely cause of increased growth. However, for nonmetropolitan counties as a whole, the attraction appears to be caused by something other than monetary considerations.

The distinction between monetary and nonmonetary motivation is questionable and may be misleading. First, there is conflicting evidence as to the fact of this statement. Some analyses indicate that income for migrants rises, as is expected in an economic model (such as a human capital model) of migration.[2]

Furthermore, even in the case of reduced per capita income, such a statement may be misleading. It is possible to have reduced individual wages but increased family wages because of multiple wage earners. More importantly, non-money considerations can be construed as trade-offs for money income and are therefore the same as income in kind. Just as psychic costs are important in migration decisions, it may therefore be important to consider advantages such as lower taxes and lower housing costs as additions to income before assessing whether economic motives are unimportant in migration decisions.

Diversity in Socio-Demographic Conditions. In a more comprehensive treatment of the issue, Brown and Beale (1981) suggest that the diversity in nonmetropolitan socio-demographic conditions argues against any "single all-inclusive explanation" for the

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[2] Examples of studies in which the findings support economic theory include Farber (1983), Grant and Vandercamp (1980) and Hunt and Kau (1985).

turnaround. They note that for nonmetropolitan counties in the 1970s there is great diversity in the rate of population growth, in economic structure, and in the population composition.

Brown and Beale maintain that the rate of population growth for nonmetropolitan counties is now greater than for metropolitan counties, both because of the turnaround in some counties and because many nonmetropolitan counties, that had earlier been growing, increased their growth rates. The increase in nonmetropolitan growth rates in the 1970s appears to be both a function of increased inmigration and decreased outmigration.

Patterns of Growth. Brown and Beale (1977, p. 28) classify nonmetropolitan counties according to their patterns of growth into the following four groups:

1. counties that grew in the 1960s and the 1970s;
2. counties that experienced a reverse turnaround (i.e., grew in the 1960s but declined in the 1970s);
3. counties that declined in the 1960s and the 1970s; and
4. counties that experienced turnaround (ie., declined in the 1960s but grew in the 1970s).

Brown and Beale find that counties experiencing growth in both the 1960s and the 1970s are not concentrated in any specific region but are dispersed throughout the nation. These counties tend to be relatively urbanized nonmetropolitan areas with almost 90 percent either located next to a metropolitan area or containing at least one interstate highway.

Reverse turnaround counties tend to be located in the Northeast, Great Lakes, and Great Plains regions between metropolitan areas. Significant numbers of these counties are dominated by military bases or colleges, or have older nonmetropolitan industrial areas with high income manufacturing employment within their borders.

Counties that declined in both the 1960s and 1970s are concentrated in areas adjusting to diminished agricultural employment and/or areas of heavy outmigration of the black population. Such counties include areas in the Great Plains, the western Corn Belt, and the Mississippi Delta. They tend to be very rural areas with high proportions of employment in agriculture.

Turnaround counties tend to be concentrated in the southern Appalachian coalfields, the Coastal Plains, and areas of the Great Plains. In some cases the turnaround appears to be tied to mineral extraction, but the number of such cases is relatively small. In other cases the counties appear to have worked through changes arising from agricultural declines. While moderate turnaround counties tend to be fairly urbanized, those counties experiencing extreme turnaround are in remote rural areas. Turnaround counties tend to have fairly low per capita income and high concentrations of agricultural employment (Brown and Beale, 1981, pp. 30-34, 44-52).

Nonmetropolitan Employment. Brown and Beale have also found great diversity in nonmetropolitan employment. Nonmetropolitan employment shows increasing similarity to employment in metropolitan areas, with the primary employment supplied by manufacturing, followed by trade, professional services, and finally, agriculture, forestry, and fishing.

Brown and Beale note substantial regional variation in employment in nonmetropolitan areas. Agricultural and agricultural related employment tend to be concentrated in the Great Plains and the central and western portions of the Corn Belt. Manufacturing is a principal source of employment in the South, East, and scattered areas of Michigan, Washington, and Oregon. The service industry tends to dominate in the West.

Nonmetropolitan Commuting. Nonmetropolitan commuting to metropolitan workplaces appears to be concentrated in the Northeast and the east North Central regions, with about 9 percent of all employed heads of households from nonmetropolitan counties commuting to metropolitan workplaces in 1970. In some nonmetropolitan counties as much as 30 percent of employed heads of households commuted to metropolitan workplaces in 1970. Brown and Beale note a high correlation between the degree of commuting to metropolitan workplaces and the rate of growth of nonmetropolitan areas but also point out that where the turnaround has occurred, it has been greater in remote nonmetropolitan counties which are presumed to have less commuting.

Morrison and Abramhamse (1982) suggest that population dispersal is not increasing commuting distance and infer that commuting in nonmetropolitan areas may be increasing without an increase in commuting distances. Their view is that workers change jobs as well as residences. Migrants to nonmetropolitan areas commute to satellite employment centers near the residence areas. They found that migrants from metropolitan areas tend to live closer to work when they move to nonmetropolitan areas that are not adjacent to a metropolitan area, while migrants moving from one metropolitan area to another metropolitan

area tend to end up further from their place of work. This highlights the importance of adjacency status in commuting patterns.

Beale's Model of Population Change. It should be noted that while the studies by Beale (1977) and by Brown and Beale (1981) are comprehensive descriptive works, there is no empirical investigation of the migration decision in either work. Beale (1977, p. 118) has provided results of multiple regressions used to consider "the associations between population change and migration and ten socio-economic variables and six regional location dummy variables."

Beale's socio-economic variables include population density, median family income, percent employed in manufacturing, percent employed in agriculture, percent of the population that is black, size of the largest city, presence of a senior state college, percent of military population, retirement status, and metropolitan adjacency status. Beale's findings show that the overall explanatory power of the population change model decreases in the 1970 to 1975 period as compared to the 1960 to 1970 period. The R-squared statistic is only .4 in the earlier period and falls to .34 in the latter period. He also indicates that the regional variable is more influential in the latter period. One should note that his results pertain to population change rather than to migration and as such offer little in the way of explaining migration motivations of the labor force.

Deconcentration and the Turnaround

A General Pattern of Population Deconcentration. Lichter and Fuguitt (1982) also suggest that nonmetropolitan growth is dispersed.

However, they suggest that the turnaround is part of a general pattern of population deconcentration and indicate that this deconcentration is evident even within nonmetropolitan counties. Lichter and Fuguitt acknowledge that improvements in communications and transportation may have contributed to this deconcentration by diminishing the constraints of distance, but they are generally not satisfied with economic explanations for the turnaround.

> Although many of the kinds of forces underlying the broader pattern of metro/nonmetro redistribution (e.g., quality-of-life, industrial deconcentration, and agricultural economic base) are also of some importance in understanding change in intracounty population shifts, it nevertheless remains clear that traditional ecological location and economic base variables have been of diminishing utility in explaining deconcentration during the 1970's (Lichter and Fuguitt, 1982, p. 220).

Richard Morrill (1982) has supplied evidence for such population deconcentration by examining deconcentration trends in trade. Changes in retail trade statistics should follow changes in population and employment. Morrill finds fairly rapid deconcentration of trade, both regionally and locally from 1972 to 1977.

Sources of Nonmetropolitan Growth. McCarthy and Morrison (1977) empirically investigate the turnaround in order to ascertain the sources of growth in nonmetropolitan areas. They use multivariate analysis to examine changes in population at the county level for the 1960 to 1970 period and for the 1970 to 1974 period. The results of their analysis agree with those of Brown and Beale (1981) in that migration into remote rural areas appears to have increased, indicating a clear break with

past trends. McCarthy and Morrison suggest that the primary change causing the turnaround is "a reversal in the 1970s of the prolonged historical out-migration from the nonmetropolitan sector." While they agree with Brown and Beale that the changes are diverse and cannot be described by any single explanation, McCarthy and Morrison (1977, pp. 123-142) do suggest that nonmetropolitan areas appear to be changing in three basic ways:

1. central place functions are moving to smaller places,
2. manufacturing is increasingly becoming decentralized, and
3. there has been a growth in the importance of government influences.

Central Place Functions. Advances in transportation have reduced distance constraints. This has allowed smaller places to take over some of the central place functions of large cities and has allowed people to settle in nonmetropolitan areas without being isolated from large urban areas (McCarthy and Morrison, 1977, pp. 125-127).

Herzog and Bjornstad (1982) have studied the relationship between proximity and accessibility and the affect of both on the migration decision. They indicate that accesibility to urban amentities has improved over the period of 1950 to 1970 largely as a consequence of an improved highway system. They find that proximity and accessibilty have been important in the rural-urban turnaround. Age selectivity is found to be important in the accessibility issue. Herzog and Bjornstad indicate that accessibility, as an offset to urban disamentities, is more important at older ages. Additionally, they find that accessibility and population density are both important in setting up an

environment conducive to the rural-urban turnaround. Their findings support the concept that there is a trade-off between accessibilty to urban amenities and the disamentities of urbanization. Improved transportation has allowed for an easing of this trade-off by allowing people to live further from urban areas while still being able to easily access those areas.

Manufacturing Deconcentration. McCarthy and Morrison (1977) suggest that two "industrial trends" have also contributed to the turnaround. Manufacturing is becoming increasingly decentralized because of decreased transportation costs and both lower land and labor costs in nonmetropolitan areas. In addition, as noted by Brown and Beale (1981), increased energy extraction has contributed to development in a few localized areas.

Government Influences. The third type of change found by McCarthy and Morrison is in "government influences," including the growth of institutions of higher education and state government, and changes in military installations. These changes have led to diverse developments in nonmetropolitan counties. McCarthy and Morrison note that,in the past, nonmetropolitan growth was often tied to urban integration. Whether or not a nonmetropolitan county grew was largely dependent upon the proximity of the nonmetropolitan county to a large city, access to such a city, and the degree of centralization within the county.

Central City Functions. Authors such as Lichter and Fuguitt (1982) still find growth to be at least somewhat dependent upon access to central city functions, but those functions appear to be more

dispersed down through the urban hierachy. McCarthy and Morrison (1977) suggest that nonmetropolitan growth in the 1970s is tied to specialized activities that are not integrated into national urban economies. Thus, growth appears in areas that are entirely rural, nonadjacent to any metropolitan counties, and having little commuting to metropolitan counties.

McCarthy and Morrison (1977, pp. 128-129) identify five areas of specialization (which often overlap) that serve as an impetus to nonmetropolitan growth. These include:

1. energy extraction;
2. recreation;
3. manufacturing;
4. retirement; and
5. government related activities.

McCarthy and Morrison (1977, p. 131) indicate that their county data shows shifts for the nonmetropolitan sector consistent with earlier findings by Beale.

> What stands out here is the magnitude of change in annual rates, rather than their absolute levels. All types of nonmetropolitan counties are now growing, with the sharpest increases evident in rural counties (both those adjacent and not adjacent to a SMSA).

This is not consistent with the findings of Brown and Beale (1981) who suggest that there are still nonmetropolitan counties with persistent decline. As mentioned above, Brown and Beale indicate that such counties often have significant agricultural employment experiencing decline or have significant outmigration of the black population. The difference in interpretation appears to be due to the difference in aggregation between the two sets of studies. Brown and Beale

disaggregated to a much greater extent and were thus able to discern between various types of growth in nonmetropolitan counties.

Earnings Patterns. McCarthy and Morrison also examine differential earnings patterns by county type and find that migration changes for high-wage specialized counties are more gradual than for lower wage specialized counties. They note that such a finding is counter to what one would expect from economically motivated migrants.

This does seem to be consistent with the, now generally accepted, notion that economic motivation is playing less of a role in the migration decision during the 1970s than during ealier periods. However, this situation could also be the result of more entry level job possibilities in low wage counties and changes in the labor force such as a greater concentration of entry level workers and job seekers.

Data Problems. It should be noted that the study by McCarthy and Morrison examines migration in nonmetropolitan areas using data for twenty-six states from the 10 percent Social Security Continuous Work History Sample (CWHS). As pointed out by the authors, there are considerable limitations to such data. The data, as used by McCarthy and Morrison, provide only county-wide totals for per worker earnings rather than information on individual migrants. Only one measure of economic conditions is provided (earnings per worker), workers not contributing to social security are excluded, data are only reported by place of work, and there is no accounting for multiple wage earners in a family. The CWHS data provide no way to measure total unemployment rates or employment levels. Furthermore, the aggregate nature of the

data does not take into account individual characteristics such as education that are likely to be of great importance in the migration decision. Their results should therefore be considered as inferences about the areas as opposed to inferences about migrant motivation.

The Turnaround--A Break with the Past? In contrast with the majority of the literature, which suggests that the turnaround is a radical break with the past and is evidence of a change in dominant migration decision factors, Hawley and Mazie (1981, p. 4) suggest that while the turnaround does indicate a new direction, it is not a clear break with history.

> To explain the reversal of nonmetro population decline is a more difficult task. Clearly there is no simple answer to the problem. A starting point, however, is that the resumption of nonmetro growth had been in preparation since the turn of the century. Of prime importance in that development has been a progressive extention of the communication and transportation network . . . . In short, as living conditions in nonmetro territory have become increasingly urbanized the distance restraints on the general centrifugal drift of urban population have been relaxed and the movement has accelerated.

Hawley and Mazie (1981, pp. 5-6) indicate that the shift in the distribution of population had existed since at least 1950 but was not noticed until it became prominent in the 1970s.

> Not only had total growth rates in metro counties been subsiding since earlier years, but the ability for metro counties to attract population from nonmetro areas diminished significantly. By the early 1960s, growth in metro areas due to internal migration had shifted from a net gain to a net loss. Meanwhile, of course, nonmetro counties were growing at increasing rates. Although much of that growth was supplied by natural increase, the important and novel source of growth was a turnaround in net migration; in the late 1950-60 decade nonmetro counties were losing population through out-migration, while after 1970 the net loss turned into a net gain. The reversal of the trend was most notable in the nonmetro counties that are not adjacent to metro areas, for those had the longest history of decline. Nine out ot ten nonadjacent nonmetro counties, or 979 counties, had

> been losing population through migration prior to 1970. After 1970 that declined to four of ten, or 438 counties.

Thus, the turnaround may be viewed as a recent phenomenon which is part of a longer term trend toward deconcentration.

The Turnaround as General Deconcentration. Wardwell and Gilchrist (1980) have also examined this deconcentration. Their findings (p. 155) are consistent with those indicating that the pattern of deconcentration is a "general shift of people down the scale of city size and out from the city limits."

Hansen (1977, p. 162) also presents evidence of the pronounced trend toward deconcentration in the United States and adds that the phenomenon is not peculiar to the United States.

> It is pertinent that pronounced deconcentration tendencies have been noted in numerous non-Communist, industrially-advanced countries. What is involved is not a movement back to the farm but deconcentration favoring small and medium sized cities. . . .
>
> The international evidence makes it tempting to speculate that the cities in a country's urban system may pass through a sequential process wherein concentration and deconcentration are dependent on the country's stage of economic development. Only at an advanced stage of development are the benefits of large metropolitan size outwieghed by the diseconomies. Hoch (1976) has provided documentation suggesting that this is probably the case for the United States. Out-migration from the largest cities is thus a response to spontaneous market forces rather than to explicit policies.

Hansen goes on to state, however, that in more advanced countries what appears to be happening is not explainable solely by economic motives. Rather, improvements in transportation, communication, education, and other infrastructural factors coupled with a general increase in prosperity, allow people to satisfy basic needs and still be able to trade off economic gains for 'noneconomic' amenities.

Garnick and Renshaw (1979), in addressing competing hypotheses concerning the rural-urban turnaround, suggest that the deconcentration may be partially due to technological changes which have reduced transportation costs and the need for large centrally located skilled labor pools in production and distribution. Thus, dense concentrations are no longer needed for production. Garnick and Renshaw also note a close association between metropolitan and nonmetropolitan growth trends and regional growth trends. Heavily industrialized northern cities are seen as declining and nonmetropolitan areas of the West and South are seen as being particularly strong areas of growth. This is consistent with most of the literature but does not indicate the deconcentration shown in Brown and Beale. Garnick and Renshaw do, however, agree that there has been, and is, a general trend toward deconcentration, finding that in the 1970s all levels of disaggregation, based on county blocks, show deconcentration.

Economic Explanations

Equilibrating versus Disequilibrating Hypotheses.

Garnick and Renshaw do not have a specific single theory to explain the turnaround, but examine competing hypotheses as to the causes and results of the turnaround. They break these explanations down into two general categories: the equilibrating hypotheses and the disequilibrating hypotheses.

Garnick and Renshaw (1979, pp. 106-107) note that proponents of equilibrating hypotheses suggest that the long term trend in regional income differentials is one of regional convergence.

> The regional convergence of income reflects underlying processes in the geographic dispersion of economic activity and of population settlement patterns in which capital and labor locate to maximize their returns . . . the long term trend has clearly been in the direction of greater geographic dispersion of production, more regional geographic dispersion of production, more regional uniformity in industrial composition and reduced regional disparities in returns to labor.

In earlier periods of industrialization, concentration of industry and labor were required for efficient production and distribution. According to those sharing the equilibrating hypotheses, there is a trend toward deconcentration because technological changes including communications, transportation, and organizational changes have reduced the distance constraints and have allowed industry to seek lower cost labor and land. Garnick and Renshaw (1979, pp. 107-108) note that this has reduced production and distribution costs to industry and has increased returns to labor and land in nonmetropolitan areas.

Garnick and Renshaw point out that while the historic pattern of rural-urban migration has been from low income to high income areas, the 1970s migration pattern has often involved movement from high to low income areas. They also point out that even in these cases, migrants from metropolitan to nonmetropolitan areas are generally able to raise their earnings more than nonmigrants in either the metropolitan or the nonmetropolitan areas.

In apparent contradiction with much of the literature Garnick and Renshaw (1979, pp. 108-109) find that:

> Therefore, even abstracting from such 'noneconomic' motivations as reduced pollution and congestion, or 'amenity' values associated with rural and small town lifestyles, most migrants from metro to nonmetro areas regard themselves as benefitting from their moves.

They do acknowledge that there are strong human preferences to avoid dense concentrations, but suggest that one of the failings of the common demographic explanations of the dispersion of population to nonmetropolian areas in the 1970s has been to ignore the economic considerations.

Garnick and Renshaw (1979, p. 110) also describe the term 'disequilibrium hypothesis'.

> Those who characterize differential urban and regional growth as a disequilibrium process stress the combined effects of migration selectivity and external diseconomies in the process of growth and decline. The most capable individuals are usually the first to leave declining areas and their exodus often carries external costs that make the areas they leave progressively less attractive as a location for residential or economic activities--inducing more and more capable and marginally capable groups to seek alternatives elsewhere and thereby leaving many of the poorest and most dependent groups to fend for themselves as best they can in a setting of economic decline and increasing unit costs for public goods.

The disequilibrium hypothesis is important for its implications for residential location choice. Disequilibrium forces contribute to the accelerated decline of central cities even when higher energy prices might have suggested motivation for the reverse. Garnick and Renshaw do not resolve the question of the relative strengths of equilibrating and disequilibrating forces on the location decision or upon the rural-urban turnaround, but do suggest that both economic considerations and 'noneconomic' phenomena such as rising female labor participation, the changing nature of industry, externalities of central city life, changing family sizes and other social factors should be considered.

Income Differentials. Dunlevy and Bellante (1983, p. 66) suggest that both income differentials and demographic variables are important

to migration studies and state that the conventional viewpoint incorrectly assumes that:

> . . . income differentials adequately exlain net migration but that human capital i.e., demographic variables do not provide much explanatory power. Conversely, studies of gross migration find that demographic variables are highly useful but that income differentials are of diminished importance.

Contrary to Bellante and Dunlevy the consensus of opinion seems to be that regardless of whether net or gross migration is being examined, income, demographic, and other 'noneconomic' variables are all important, although noneconomic or "preferential factors" are becoming more important. Also, contrary to the comments of Bellante and Dunlevy human capital variables should not be equated to demographic variables. This brings into question their very definitions of "economic" and "noneconomic" variables.

The relative importance of economic and noneconomic factors is a very controversial point. A number of studies support the opposite hypothesis, that economic factors are much more important than demographic or noneconomic factors. For instance, Ballard and Clark (1981, p. 133) examine interregional migration to fast growing states and conclude that economic factors are dominant.

> The evidence suggested that economic factors are more important than environmental factors in determining the volume of in-migration to fast growing states . . . .
>
> Evidence from the second stage of analysis suggested, however, that migration as a macro-spatial labor allocation mechanism may have limited effeciency. Economic opportunity variables were not always significant for fast growing states. Further, some of the signs on the employment parameters were negative, implying that migrants may come from what are already high relative growth areas in the U.S..

That is, they suggest that interregional migration may not be efficient because migrants to fast growing areas tend to come from other

fast growing areas rather than depressed areas. Thus, Ballard and Clark (1981, p. 227) suggest that while interregional migration decisions are economically motivated, the decision of where to locate does not "take into account aggregate labor market efficiency objectives, although such decisions may result in their being better off."

Another possible explanation here might be that decisions to migrate may be determined differently than decisions as to migration destinations. This also suggests that traditional "economic" factors may not predominate in the migration destination decision. This is also the general consensus in much of the literature.

Intersystemic versus Intrasystemic Migration. Tweed, Longest, Owen, and Dabbs (1981) (herafter TLOD) suggest that the rural-urban turnaround can be seen as resulting from two types of migration changes: intersystemic and intrasystemic.

Intrasystemic migration is described as movement within a metropolitan region. Such migration would include movement to small towns surrounding an SMSA from within the SMSA or its surrounding region. Intersystemic movement is described as interregional migration. TLOD maintain that both types of movement are important in the turnaround, but they view intersystemic movement as the key factor in the turnaround for nonadjacent nonmetropolitan areas.

TLOD find that while intersystemic migration rose both through the pre-turnaround period (1960 to 1970) and through the turnaround period (1970 to 1975), it was least dominant in migration involving adjacent nonmetropolitan counties.

TLOD also find a difference between gross and net migration flows. Gross migration is dominated by intersystemic migration with less dominance for adjacent nonmetropolitan counties. Net migration involving counties with large metropolitan areas is also dominated by intersystemic changes.[3]

Net migration, which accounts for changes in the labor force size, is not always dominated by intersystemic migration. In particular, for counties with medium metropolitan areas, intrasystemic migration has been a prime factor in growth (TLOD, 1981, p. 137).

Intrasystemic migration was dominant for these counties from 1960 to 1970 but declined in importance during the turnaround period of 1970 to 1975. On the other hand, counties with small metropolitan areas, while having net losses in the 1960 to 1970 period (before the turnaround), experienced gains from intrasystemic migration in all periods with accelerated gains during the turnaround period. TLOD (1981, p. 138) explain differences in intersystemic and intrasystemic movements:

> For adjacent nonmetropolitan areas, there were substantial turnarounds in both intrasystemic and intersystemic movement. Both types of turnaround were necessary for the total turnaround effect. Moreover, for the 1970-1975 period (generally acknowledged to be the turnaround period), the data show that intrasystemic movement accounts for the greatest portion of the total net-migration rate, suggesting the greater role of centrifugal forces.
>
> For the nonadjacent nonmetropolitan areas, on the other hand, the turnaround period displays a different trend. Although the component of net migration because of intrasystemic movement has become more favorable to those areas (rising from a

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[3] Here metropolitan area sizes are defined as: small if the population is 50,000 to 249,000; medium if the population is 250,000 to 999,999; or large if the population is one million or more.

> -10.0 to a -2.5), it remains a source of loss for nonadjacent nonmetropolitan areas. Thus nonadjacent areas were still losing on a intrasystemic basis for the 1970-1975 period. The overall labor force turnaround for nonadjacent nonmetropolitan counties, therefore, was because of intersystemic or interregional forces and was not a function of centrifugal labor force movement.

While TLOD do not indicate the factors behind the intersystemic and intrasystemic migration decisions, they do indicate that there is a difference between net and gross migration and among the types of counties being examined on the basis of their dual migration types. This lends credence to the view that different motivations may dominate depending on whether one examines net or gross migration, and that the migration decision may differ for intrasystemic and intersystemic movement depending upon the types of counties involved. These differences should prove important in determing the proximate cause of the turnaround.

Migration and Economic Interdependence. Mead (1982) examines the interdependence of migration and economic change in nonmetropolitan areas and finds evidence supporting both the equilibrium and disequilibrium hypotheses. Mead finds that the interdependence of migration and employment or income growth changes from periods previous to the turnaround. Specifically, he finds that a push-pull model of migration is appropriate for the turnaround period. During this period business was locating in response to low wages, low property taxes, and labor availability so as to favor areas with net inmigration. With respect to the equilibrium and disequilibrium hypotheses, Mead suggests that while wage income appears to be converging interregionally, it is actually diverging within regions near SMSAs.

Mead finds economic factors to be important in explaining net migration rates for nonmetropolitan areas but notes that the interdependence between migration and economic changes causes considerable confusion with respect to the question of the relative importance of economic and noneconomic factors in the migration decision. In explaining the variation on net migration rates Mead (1982, p. 526) notes:

> On the whole, the economic variables were most successful in explaining the variation in net migration rates among nonmetropolitan counties. However, it is not possible to discern from the analysis whether migration responded to the changing geography of economic opportunity or whether the reversal of traditional migration patterns altered the distribution of economic growth and development. Whatever the direction of the relationship, it appears clear that economic growth and migration coninued to be interrelated processes.

Greenwood and Hunt (1984, p. 957) examine time series data from 1959 to 1975 in order to "measure the migrant attractive power of another job and the number of local jobs attributable to another migrant." These authors present only their results for major metropolitan areas where they find strong interdependence between migration and economic change. They find that incremental employment first goes to the Northeast and North Central regions because of their relatively large share of national employment in those regions. Migrants are drawn from these regions to the South and the West where an additional net in-migrant to the area is responsible for more than one additional job in the area. Thus, migrant induced employment goes to these regions of net in-migration at the expense of the regions of out-migration. The authors note that in other respects their results,

which stress the interdependence of migration and economic change, are very similar to the earlier results of Muth (1968).

Ballard and Clark (1981) suggest that economic factors are more important than environmental factors in determining the volume of in-migration to fast growing states.

Schlottman and Herzog (1982) describe the consensus with respect to migration decisions in the following paradox. On the one hand, they quote Lowry (1966):

> The evidence . . . suggests that the total volume of out-migration from a given place depends on the size and structural properties of the resident population rather than on the absolute or relative level of economic opportunities at this place.

But Schlottman and Herzog (1982, p. 950) also note:

> On the other hand, demographic characteristics of the resident population and economic conditions outside the area are commonly believed to have significant influence on both the magnitude and direction of this flow.

They suggest that home economic conditions are important in migration decisions and find that the cause of the apparent paradox is primarily due to aggregation problems, including the use of population rather than labor force data, failure to exclude autonomous population movements (including those associated with military service or college attendence), and failure to disaggregate migrants by prior mobility status.

Schlottman and Herzog find that when actual labor force migration is used, rather than using population as a proxy for this migration, a significant influence on migration is shown for home economic conditions. Unemployment increases the probability of migration and overall economic conditions significantly affect the migration decision.

Such an approach of disaggregating migrant flows and homogenizing the data prior to analysis seems to be the most promising with repect to determining the nature of migration decisions. Particularly important is the use of labor force, rather than population statistics. The majority of studies utilize population data, apparently because of availability. This has the effect of diluting the importance of economic factors in the migration decision and should therefore be avoided in studies focussing upon motivation.

Economic Opportunity and Population Distribution. Both Greenwood (1981) and Levin (1982) argue against concluding that the rural-urban turnaround has been caused by changing migration decision factors, and suggest that the evidence does not contradict the traditional view of the role of economic opportunity in population distributions. They see changes in the direction and strength of determining factors as being more important than new factors. Greenwood (1981, p. 95) suggests four major types of underlying causes in the rural-urban turnaround which are consistent with traditional economic explanations.

1. the social costs of transacting business in densely populated areas have been increasing;
2. there has been a general increase in income and wealth among the population;
3. exogenous changes have occurred in demand and supply conditions for primary inputs such as energy related inputs; and
4. the demographic structure of the labor force and population has been changing, including such changes as increasing

numbers of females in the labor force, earlier retirement, and smaller family size.

Rather than interpreting the turnaround as a sudden change occuring in the 1970s, Greenwood sees these changes as continuations of longer term historical changes in the pattern of population concentration. He states that the confusion results because much of the evidence prior to the turnaround period was of a more isolated nature and thus less noticed than those changes occurring in the turnaround period.

There is substantial support for Greenwood's view in the literature. Till (1981) examines trends in the manufacturing industries and notes that while nonmetropolitan areas had been previously seen as inferior to urban centers for manufacturing locations, it is clear that nonmetropolitan areas are now considered desirable for many manufacturing applications.

Till echoes the opinion of much of the literature in citing the primary cause of the attractiveness of nonmetropolitan areas as low-cost labor. He notes that this is often low-skilled labor and the benefits to nonmetropolitan areas are not so much the availability of high income jobs, but rather the ability for families to increase their incomes through multiple jobs. This would seem to indicate that migration to nonmetropolitan areas may result in lower incomes for the migrant unless the labor skills of the migrant are such that they capture high income employment opportunities in new manufacturing concerns.

Service Industries and Central Place Hierarchy. The service sector is also seen as a major contributor to employment opportunities in nonmetropolitan areas which has made the rural-urban turnaround possible. Menschik (1981) has examined the service industries in nonmetropolitan areas and supplies evidence that services are moving down the central place hierarchy. This is not a surprising conclusion if the deconcentration hypothesis is true. If population and/or industry is deconcentrating and increasingly locating in nonmetropolitan areas (lower order places), then the demand for services should be increasing in nonmetropolitan areas. Menschik thus supports other researchers who indicate that central place functions are generally moving down the central place hierarchy.

Summary

While much is still in debate, there does appear to be a consensus of opinion in the following areas:

1. There is no single cause for the rural-urban turnaround. Explanations are multifaceted and dependent upon the diverse nature of the various areas being affected.
2. Both economic and noneconomic factors appear to be important in the migration decision.
3. Changes in industrial location decisions have affected the rural-urban turnaround by increasing employment opportunities in nonmetropolitan areas.
4. Demographic changes have occurred which have, at least to some degree, affected both the migration decision and the impacts of migration.

5. More work needs to be done before definitive statements can be made concerning the causes of the turnaround and the nature and impact of factors influencing the migration decision.

CHAPTER III

METHODOLOGY

Introduction

This chapter sets forth the methodology used to test each of the hypotheses relevant to the nature and causes of the rural-urban turnaround. Each hypothesis and the expected results of testing that hypothesis is set forth as well as a description of the sources and types of data that are used.

The Hypotheses

This analysis focuses upon five questions which are important for an understanding of the causes, nature, and implications of the rural-urban turnaround. These questions have been transformed into the following hypotheses:

1. The 1970-1975 rural-urban turnaround in migration continues throughout the decade.
2. Migration to nonmetropolitan areas is, in large part, a continuation of the "flight to the suburbs" phenomenon, as evidenced by the fact that a significant portion of the migrants commute to work in metropolitan areas.
3. Labor force migrants to nonmetropolitan areas tend to be employed in manufacturing rather than service industries, indicating increased manufacturing employment opportunities in nonmetropolitan areas and implying a deconcentration of manufacturing rather than a shift in industrial composition to service industries in such areas.

4. Individual migrants to nonmetropolitan areas experience decreased wages but not decreased family income as compared to nonmigrant families.
5. The migration decision differs significantly between migrants from nonmetropolitan origins and those from metropolitan origins, and between those with nonmetropolitan destinations and those with metropolitan destinations.

Hypothesis One. The first hypothesis is concerned with whether the turnaround persists throughout the 1970s and is investigated using aggregated data. Calvin Beale (1977) has presented estimates of net migration expressed as an annualized percent of the population for the periods 1960 to 1970 and 1970 to 1975. Results from Beale's calculations, shown in Table 2, indicate that while metropolitan population increased by an annual average of .8 percent over the 1970 to 1975 period, nonmetropolitan population increased by an annual average of 1.2 percent. This compares with a .4 percent annual growth in population for nonmetropolitan areas and a 1.6 percent annual average growth for metropolitan areas during the 1960 to 1970 period.

Furthermore, Beale found that the annual net outlflow of .3 million persons in 1960 to 1970 for nonmetropolitan areas had reversed to about a .36 million annual inflow in the 1970 to 1975 period. On the other hand, the annual metropolitan inflow dropped from .6 million for the 1960 to 1970 period to .12 million in 1970 to 1975.

Population changes, similar to those calculated by Beale, are shown in the analysis presented in Chapter IV. These computations are based upon the 1980 Census definitions for metropolitan areas (which are

Table 2
Population Change by Metropolitan Status and Selected Characteristics: 1960 to 1975

	Population					Net Inmigration			
	Number (millions)			Annual Rate of Change (%)		Number (millions)		Annual Rate (%)	
	1975	1970	1960	1970 to 1975	1960 to 1970	1970 to 1975	1960 to 1970	1970 to 1975	1960 to 1970
Total U.S.	213.3	203.3	179.3	.9	1.3	2.5	3.0	.2	.2
Metro Counties	155.0	148.9	127.2	.8	1.6	.6	6.0	.1	.5
Nonmetro Counties	59.0	54.4	52.1	1.2	.4	1.8	-3.0	.6	-.6
Adjacent	30.1	28.1	26.1	1.3	.7	1.1	-.7	.8	-.3
Nonadjacent	27.9	26.4	26.0	1.1	.1	.7	-2.3	.5	-.9

Source:
Beale, 1977, pp. 114-115.

Note:
Annual rates are expressed as annualized percentages of the population at the beginning of the specified period.
Net migration figures include immigration from abroad.

different than the 1970 definitions) for total, metropolitan, and nonmetropolitan areas in the United States and for each of the census divisions for 1960 to 1970 and for 1970 to 1980. Net migration rates are calculated using population, birth rates, and death rates published by the Bureau of the Census for each year. Totals are calculated for the two decades. These calculations are then compared to those made by Beale.

It was anticipated that the results of this analysis would be similar to those found by Beale. The heaviest outmigration was expected to continue to occur in the metropolitan areas of the Northeast and North Central regions. This was expected because of the increased age of the capital stock of such regions, a continuing movement toward suburbanization, and increased job opportunities in other regions. Heaviest inmigration was expected to occur in nonmetropolitan areas of the South and the West, consistent with Beales' findings.

In addition, changes in population for various city and MSA sizes are investigated to determine the extent to which outmigration is uniform for all metropolitan areas and in order to suggest the extent to which cities or metropolitan areas are still experiencing significant inmigration.

Hypothesis Two. In order to examine whether migration to nonmetropolitan areas is a continuation of the "flight to the suburbs" phenomenon, population growth by commuting ties is examined for the 1960 to 1970 and the 1970 to 1980 periods for nonmetropolitan areas both at the national level and by census division. Commuting ties are defined as the percent of workers in nonmetropolitan areas that commute to

metropolitan areas to work. In addition, results from one of the logit models (to be discussed later) are used to establish the migrant types that are commuting to metropolitan areas to work.

This analysis indicates both the extent of population growth attributable to suburbanization and some of the factors leading to such suburbanization. It was anticipated that a significant portion of nonmetropolitan population growth would occur in areas with strong commuting ties and that the rates of growth would be highest in these areas. It was also anticipated that the portion of migrants who commute to metropolitan areas would be concentrated among blue collar workers. This would be counter to the results indicated by Morrison and Abrahmse (1982).

The Morrison and Abrahmse explanation contends that a large proportion of the migrants do commute, but that they tend to commute to nonmetropolitan employment centers rather than to metropolitan areas.

Hypothesis Three. The third hypothesis investigates whether migrants to nonmetropolitan areas tend to be employed in manufacturing rather than service industries. Two possible explanations for the growth in nonmetropolitan area population hinge upon this result. One explanation suggests that because of increased retirement and recreation in nonmetropolitan areas, the service industry is growing more than in metropolitan areas, thus providing more occupational opportunities and thereby drawing migrants. A second explanation is that manufacturing firms are decentralizing and locating in nonmetropolitan areas, thus providing more employment opportunities and drawing migrants. This hypothesis is tested by comparing the growth in blue collar, white

collar, and service industry jobs in both metropolitan and nonmetropolitan areas. The proportions of migrants to nonmetropolitan areas, in each of these job categories, is also calculated from the census microdata and compared between migrant types and between migrants and nonmigrants, for both metropolitan and nonmetropolitan areas.

Job occupations were used rather than industry classification because of the heterogeneity of jobs in the service industry. For example, while physicians, nurses, nurses aides, health technicians, and food service workers can all be classified as jobs in the service industry, the wages or salaries of, for instance, physicians and nurses are distinctly higher than the other lower skill jobs mentioned. Use of the service occupations and white collar occupations allow the grouping together of individuals of more similar education (or skill levels) and wages. If there is growth in the service industry for a given area one would expect similar growth in service occupations.

It was anticipated that blue collar jobs (these are primarily manufacturing jobs) would make up a higher percentage of employment growth in nonmetropolitan areas than in metropolitan areas, but it was also anticipated that much of that growth would be due to commuting. That is, it was expected that many of the migrants to nonmetropolitan areas were simply moving their residence to such an area but continuing to work in metropolitan areas. This would suggest "nonmetropolitan suburbanization." To investigate this possibility, the results of the logit equations discussed later in this chapter were used to investigate commuting decisions among migrants by occupational category.

It was anticipated that the likelihood of commuting to metropolitan areas would be substantially higher for blue collar workers than for either white collar or service workers. Such a result would suggest that industrial decentralization or deconcentration is not as important to the turnaround as has been otherwise indicated.

Hypothesis Four. The fourth hypothesis questions whether migrants to nonmetropolitan areas experience decreased individual wages but higher family wages. It has been asserted in the literature that migrants to nonmetropolitan areas are willing to exchange higher levels of individual incomes for rural amenities and the avoidance of urban disamenities. This may be possible for the migrant because of the lower cost of living in nonmetropolitan areas (especially for housing) which lowers the amount of real wages the migrant is actually giving up. This may also be the result of increasing the number of multiple wage earners in a family after such a move. This would result in lower individual wage and salary income but higher family income for such migrants.

Income equations which adjust for variation in human capital are used to investigate whether migrants to nonmetropolitan areas suffer a loss of income as compared to nonmigrants and migrants to metropolitan areas.

It was expected that migrants would have higher incomes (both individual and family) than nonmigrants, indicating that economic motives remain important in the decision process of migrants. It was also expected that the highest incomes (both family and individual) would be found for repeat migrants. This would indicate that prior mobility endows the migrant with greater understanding of the employment

process and more specific information with respect to labor markets at previous residences than is the case for primary migrants.[1]

It was further anticipated that the lowest incomes would occur among migrants to nonmetropolitan areas indicating fewer opportunities and opportunities of lesser economic value. It was therefore considered plausable that such migrants might even have lower individual incomes than nonmigrants. This could reflect less economic motivation on the part of such migrants.

Hypothesis Five. Hypothesis five suggests that migration decisions differ strongly depending upon the origin and destination area types (nonmetropolitan or metropolitan). This is a much more complex hypothesis than those discussed above and the econometric results employed to test this hypothesis are also used to examine the other hypotheses.

Three basic migration decisions are investigated here. Factors important in the initial decision to move are first investigated. Next, factors in the decision to move to a metropolitan rather than a nonmetropolitan area are determined. Finally, the decision of whether to commute to work in a metropolitan area for those migrants residing in a nonmetropolitan area is explored. The investigation of these questions also addresses how these three migration decisions vary

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[1] While Herzog, Hofler, and Schlottman postulated this, they found statistical evidence indicating that primary migrants invest more heavily in information than do repeat migrants. This extra investment overwhelms many of the advantages held by repeat migrants so that primary migrants arrive at the destination with more information than that of repeat migrants. See Herzog, Hofler, and Schlottman (forthcoming).

between migrants from metropolitan origins and those from nonmetropolitan origins.

A particularly interesting part of this investigation is the relative importance of noneconomic factors in these decisions. If noneconomic factors are relatively more important for metropolitan to nonmetropolitan migrants than for those migrating to metropolitan areas this may suggest that the cause of the turnaround may be a shift in values and would constitute a break with historical movements based upon economic motivation. On the other hand, if migrants to nonmetropolitan areas base their decisions primarily upon economic factors, this might imply that the cause of the turnaround is increased economic opportunity in nonmetropolitan areas, or a shift in the composition of industry. Alternatively, the turnaround may be the result of suburbanization moves with migrants continuing to work in metropolitan areas.

The three migration decisions are examined separately for head of households from nonmetropolitan areas and for those from metropolitan origins. The results of further dissagregation by prior mobility are shown in the appendix.[2]

Data

The Primary Data Base. The primary data base for much of this study is the Census of Population and Housing Public-Use Microdata

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[2] Chow tests indicate that prior mobility groups should not be pooled for analysis. However, because the results are generally consistent with the aggregated models and in order to coherently present metropolitan versus nonmetropolitan comparisons, only the results of the pooled models are considered in Chapter V.

Sample B. Such a data base allows examination of microlevel models. The importance of microdata in an examination of migration motivation has been emphasized by Belsborrow and Akin (1982, p. 263).

> Migration models are at their foundations microeconomic in nature.... Only a microlevel model can attempt to disentangle the behavioral relationships that explain why some families move and others do not, and why some move toward a given location whereas others move away.

The Public-Use microdata samples consist of information on the charactersitics of each housing unit and the people in it, for a sample from the 1980 census. The 'B' sample which is used in this study is a 1 percent sample which identifies "all metropolitan territory and most SMSAs individually, and groups of counties elsewhere." (Bureau of the Census, 1980, p. 1).

The "B" Sample. Of the full census population, 19.4 percent received census long-form questionnaires. The Public-Use sample is a stratified sub-sample of this population. The B sample contains 1 percent of the total national population. Due to the design of the sample, the frequency of any particular characteristic can be estimated by multiplying the sample frequency by 100. Data are provided for all persons living in the sampled household. Thus, for example, one can compare an individual's income to his/her family's income.

The B sample identifies 282 MSAs (Metropolitan Statistical Areas) of 100,000 or more inhabitants. The remaining thirty-six MSAs are paired so as to allow for separate analysis of metropolitan and nonmetropolitan areas. Outside of MSAs, there are 135 places which are grouped according to state planning districts or analytic units of 100,000 or more. There are 1,258 individual county groups identified.

Additionally, each household is identified by area type as central city of MSA, portion of MSA outside of central city, or outside of MSA.

The B sample identifies the place of work in 1980 and the place of residence in both 1975 and 1980. This allows for analysis of both migration and commuting patterns. Such migration and commuting data are available for only one-half of the sample, resulting in a 0.5 percent sample.

Data Selection. The Data utilized here have been further reduced in size in order to both homogenize the sample for analysis and to eliminate aggregation problems. The sample has been reduced, for most of the analysis, to a one-in-seven random sample of white labor-force participants who are not in college or in the armed forces. The resulting data set includes 27,817 households representing 269 MSAs and 11,832 households from outside of MSAs. There are 10,883 households from central cities within MSAs and 16,934 households from portions of MSAs that are outside of central cities. Metropolitan areas are defined in this study as area types both within central cities of MSAs and parts of MSAs that lie outside of central cities. Nonmetropolitan areas are defined, in this study, as those areas outside of MSAs.

By limiting the sample to the labor force rather than using the population as a proxy for the labor force, as is often done, possible economic motivations for migration can better be tested. Use of the entire population includes personal characteristics of those not in the labor force and can confuse the issue of economic motivation. Failure to so limit the sample can lead to aggregation problems and incorrect

conclusions. Data used here have been limited following the reasoning and methodology of Schlottman and Herzog (1982, pp. 950-961).

The exclusion of migrants associated with military service or college attendence eliminates autonomous movements from the analysis. In such autonomous movements neither the magnitude nor destinations of such individuals are responses to economic conditions, and attributing such reponses to economic conditions may blur the effect and importance of decision factors.

County Data

Logit equations estimated here also use county data from the 1983 City and County Data Book including population densities, numbers of physicians, crime rates, and use of public transportation. Such data has been aggregated by MSAs and county groups that are consistent with the "B" sample geographic grid. Portions of the analysis utilize census data of a more aggegate nature as supplied by the 1980 Census of Population Reports.

Logit Models

The logit models estimated here are estimated using maximum likelihood. Logit models are based upon a cumulative logistic distribution function and are used where the individual being examined has a limited set of alternatives. Consider the simple example of the decision of whether to migrate. Members of the population at risk to migration have two choices. They may migrate or stay. Once the decision to migrate has been made, migrants who have previously moved have two choices. They may return to a previous place or they may

migrate to a new destination. Binary choice models assume that individuals are faced with a choice between two such alternatives, and further assumes that the choice they make depends upon certain characteristics of the individual or his or her situation.[3]

Probabilities from Binary Choice Models. Binary choice models yield probabilities that can be interpreted as estimates of the conditional probability that an individual will respond with a certain choice given the characteristics of the individual and the pertinent situation.

For example, if the choice is between migrating or staying, and the decision is solely a function of income, then the probability estimated can be interpreted as the conditional probability that an individual will migrate given the level of his income. The average probability of migration may then be computed from the estimated equation using mean values from the sample. Additionally, elasticities may be calculated for both demographic and economic factors.

In each of the models evaluated here, a dichotomous random variable "y" is defined as equal to one if the event occurs and equal to zero if the event does not occur. It is assumed that the probability of the event occurring is dependent upon a vector of independent variables and a vector of unknown parameters (see Amemiya, 1981, p. 1486-1487).

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[3] The logit models are here preferred to probit models. Among the reasons for this choice is that the logit function is similar to the cumulative normal function but is, computationally, much more manageble.

Letting "X" denote the vector of independent variables, "A" denote the vector of unknown parameters, and "P_y" denote the probability of the event occurring, the model may be written as:

$$1) \qquad P_i = P(y_i = 1) = G(\overline{X}_i, \overline{A}),\ i = 1,2, \ldots ,n$$

where "y" is assumed to be independently distributed and "i" indicates the i-th individual. As an example if y=1 when the individual at risk decides to migrate and X represents income, then the model indicates to what extent (if any) the probability of migration depends upon the level the individual's income.

The model may then be generalized to a certain function, H(X ,A) and the problem is to find the right function, F, where:

$$2) \qquad P(y_i = 1) = F(H(\overline{X}_i, \overline{A}))$$

The linear specification is then assumed to be

$$3) \qquad H(X_i, A) = X_i'B$$

where B is the vector of coefficients. Then

$$4) \qquad P(y_i = 1) = F(X_i'B),\ i = 1,2, \ldots ,n$$

becomes the more specific form (Amemiya, 1981, p. 1486).

The functional form used in the logit model is

$$5) \qquad F(w) = L(w) = e_w / (1+e^w)$$

where e is the base of natural logarithms and w is the value for which the distribution function is sought. The probability function used for the logit model is the logistic distribution function. Such a distribution function is bounded by zero and one, is symmetric and has a variance equal to π /3 (Amemiya, 1981, p. 1487).

Using Logit Results to Calculate Probabilities. The results from the logit estimations may be used to calculate probabilities and elasticities. Assume the equation estimated is:

$$6) \qquad Y = a + b_1X_1 + b_2X_2 + b_3X_3$$

where "Y" is the dichotomous dependent variable which is set equal to one if the event takes place, and set equal to zero if the event does not occur. The average probability of the event occuring is the probability of the event occuring given that all independent values are set equal to their mean values. That probability Py is calculated as:

$$7) \qquad P_y = 1 / (1+e^{-(\overset{*}{a} + \overset{*}{b}_1\bar{X}_1 + \overset{*}{b}_2\bar{X}_2 + \overset{*}{b}_3\bar{X}_3)})$$

where e is the base of natural logarithms and "*" indicates an estimated coefficeint value. Then P_y is the probability that the event will occur if the individual is characterized by all mean values of independent variables (Pyndyck and Rubinfeld, 1981, p. 287).

Assume that X_1 represents the gender of an individual and is set equal to one if the individual is a female or equal to zero if the individual is male. The probability of the event occurring if all values except gender are equal to the mean values is calculated identically to the above calcuation of P_y except that X_1 is replaced by zero if the individual is assumed to be male and replaced by one if the individual is assumed to be female. In this manner the impacts of changes in each independent variable on the average probability may be calculated. Such a technique is most meaningful for dummy variables and variables with limited possible values.

Calculations of Elasticities. Elasticities indicate the percentage change in the probability of the event occurring given a 1 percent change from the mean value of the independent variable and given that all other independent variables are set at their mean values. Elasticities are calculated (see Pyndick and Rubinfeld, 1981, p. 298-300) as:

8) $$E_{X_i} = 100(B_i \Delta X_i)(1-P_y)$$

where E_{X_i} is the elasticity with repect to a 1 percent change in X_i, B_i is the coefficient of X_i, ΔX_i is the change in X_i (equal to a 1 percent

change from the mean value of X_i), and P_y is the predicted probability of the event occurring, given that all independent variables are at their mean values.

The Models

Theoretical Framework. The theoretical framework for the logit models is based upon the same assumptions as suggested by Kau and Sirmans (1977). Migration is assumed to be the result of a desire to maximize utility. This maximization is subject to incomes and prices in the potential destinations. Different information is assumed to be available to different types of migrants. Each migrant is assumed to arrive at his own subjective expectations of the costs and benefits of migration.

Migration decisions are generally assumed to be related to a number of personal, destination, and origin characteristics. This is consistent with the human capital approach which assumes that the decision to migrate is determined by the discounted flow of net benefits. Costs associated with migration include those related to information acquisition, relocation costs, opportunity costs, and psychic costs. Benefits include both expected income and quality of life improvements. The human capital approach maintains that someone moves if the benefits exceed the costs.[4]

The costs of moving may be generally characterized as of three types. They are information costs, psychic costs, and moving costs (see

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[4] Studies further describing the human capital approach include: Sjaastad (1962), Greenwood (1975) and Yezer and Thurston (1976).

Herzog and Schlottman , 1981). Moving costs include the money costs of transportation, food, and lodging involved in a move. Obviously, family size is important to the determination of such a cost.

Information costs are incurred as the individual seeks information on employment possibilities, wages, and living costs at potential destinations. Such personal characteristics as education, age, and prior mobility have been found to be important in determining the extent of such information costs. Similarly, psychic costs are affected by age, family size and education.

Personal characteristics affect all of these costs and are, therefore, important in the migration decision. Moreover, personal characteristics enter into the migration decision in multifaceted ways. For instance, employment information and job opportunities are both likely to increase with higher levels of education, but education also affects psychic costs by reducing the importance of tradition and family ties and by improving an individual's awareness of other localities (see Greenwood, 1975).

As another example, age may serve to increase psychic costs since the number of friends and relatives living in the home region are likely to be higher for older individuals (Herzog and Schlottman, 1981, p. 461). Additionally, older persons have shorter expected working lives and thus a shorter time in which to recoup the costs of migration, or a lower rate of return on migration (Greenwood, 1975, p. 406).

While personal characteristics are important to the migration decision, economic conditions have also been found to be of importance (see Schlottman and Herzog, 1982). Miller (1973) finds that it is

economic variables that are particularly important in gross outmigration. Miller specifically notes the growth of employment as the primary economic determinant.

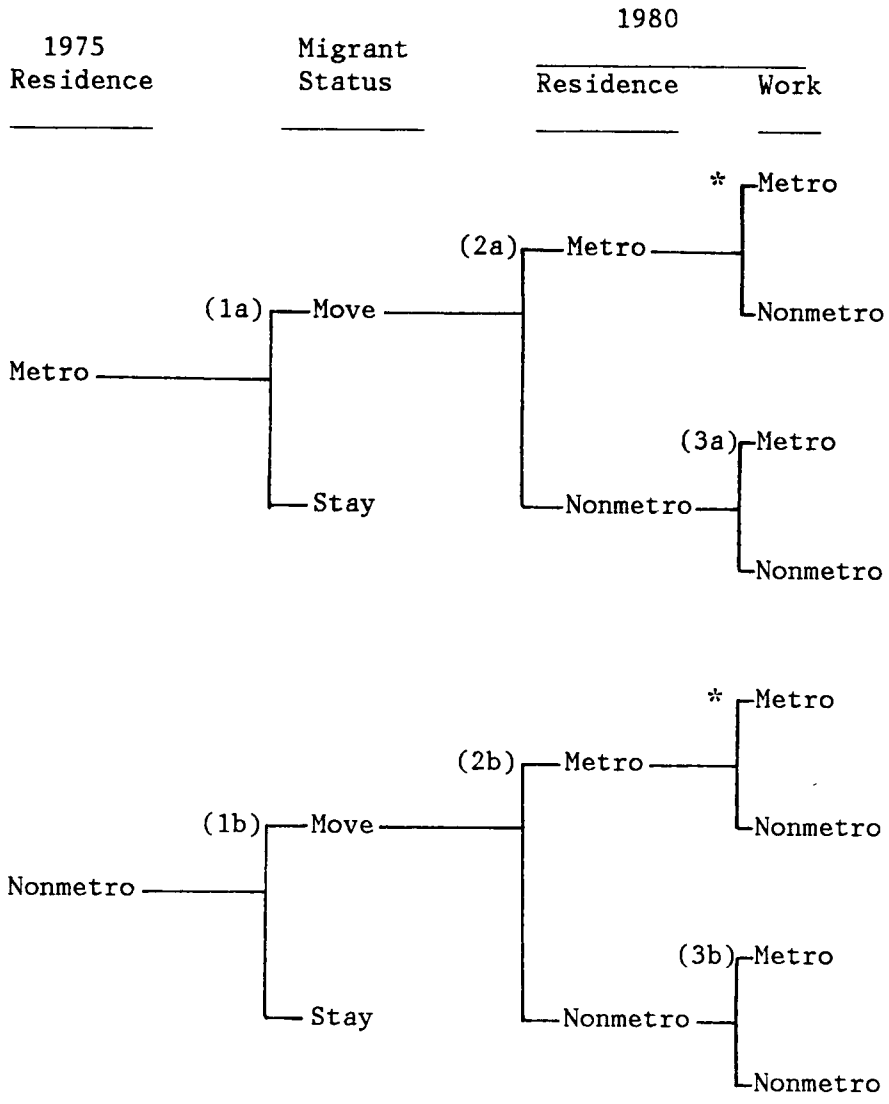
Navratil and Doyle (1977, p. 1558) examine both personal and area characteristics and indicate that:

> . . . in terms of both the significance of the coefficients and the computed elasticities, personal characteristics play a much more important role in the migration decision than do the characteristics of destination areas; and geographic characteristics are of only secondary importance.

It should be noted that while Navratil and Doyle attribute only secondary importance to area characteristics, many of those charateristics were significant in their results.

In summary, while there is considerable controversy as to which sorts of factors are most important, both personal and area characteristics have been found to be important in the migration decision.

Relationships Among the Models. Figure 1 demonstrates the relationships among the models for hypothesis five by using two binary choice decision trees. Model (1) helps to establish the nature of the decision process in migration and points out the differences in decision factors between migrants from metropolitan and nonmetropolitan areas. Model (2) highlights the factors leading to the choice of nonmetropolitan rather than metropolitan destinations. Model (3) helps to determine the extent of industrial deconcentration versus a flight to the suburbs phenomenon and indicates the differences in factors leading to migrants' decisions as to place of work.



*Choice not examined.
Model numbers in parantheses.

Figure 1
Relationships of Binary Choice Decision Models

For each of the models in Figure 1 the decisions of migrants from metropolitan areas (models labeled with an "a") are compared to the decisions of migrants from nonmetropolitan areas (models labeled with a "b").

These models are conditional logit models. For example, decision two is whether to migrate to a metropolitan or nonmetropolitan area given that the decision to migrate has been made. The reasons for using conditional logit models for studies of this nature have been amply stated elsewhere, based upon the work of McFadden (1974) and that of Strotz (1959).[5]

Briefly, these arguments maintain that even though the branches of a decision tree can be considered simultaneously, analysis along the tree is consitent with a model of utility maximization and rational behavior. Individuals make each choice as if costs and benefits of each migration decision are considered in an act of utility maximization. This is possible because the utility function is assumed to be additively separable.

Model One. Model one examines the decision of whether or not to migrate and considers the entire at-risk population of the sample. The model is evaluated for those residing in metropolitan areas in 1975 and for those residing in nonmetropolitan areas in 1975.[6]

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[5] For a more complete explanation of this point see Schlottman and Herzog (1982) and Falaris (1982).

[6] Results for the same model, evaluated by prior mobility (i.e. whether the state of birth was the same as the state of residence in 1975) are shown in Appendix 1.

Everyone in the sample is at risk to migration. The dependent variable "Migrate" is set equal to one if migration occurs or zero if migration does not occur.

The function estimated is:

Migrate = 1, Stay = 0

=f(Personal and Household Characteristics, Origin Characteristics).

Personal and household characteristics include the age, education, gender, wage and salary income, and occupation of the head of household, the employment status of the head of household in 1975, the number of persons living in the household, and the mobility status (with respect to prior interstate mobility) as of 1975. Origin characteristics include the product of the area employment rate times area mean income, the number of physicians per 100,000 population, the number of persons per 100,000 population using public transportation to commute to work, the number of serious crimes per 100,000 population, the census region, the area employment rate, and the mean area income. Both personal and household characteristics and area characteristics are expected to be important determinants of migration.

Age. Age is expected to have a negative coefficient. That is, the probability of a labor force member migrating is expected to decrease with age. Older persons are more likely to have higher psychic costs because the number of friends and relatives living in the home region is likely to be greater for older individuals, and ties to family and friends are likely to be stronger for such persons than for younger persons. Additionally, the human capital interpretation suggests that

older migrants have less time to discount the future benefits of migration.[7]

Education. Education tends to reduce both psychic costs and information costs. This is because employment information, geographic information, and job opportunities tend to increase with education, and because the importance of family ties tends to decrease with more education.[8] Moreover, the risks and uncertainties associated with migration tend to be less for those with more education since they are more likely to have a job at the new location prior to moving (see Saben, 1964).

Gender. There has been little research involving the difference in migration decisions due to gender differences. It is, however, expected that females are less likely to migrate. Because of the discrepency between male and female wages, the benefits of a move would likely be less for females than for males. It is also suspected that kinship ties may be greater for females than for males which would increase the psychic costs associated with geographic mobility.

Wage and Salary Income. Wage and salary income of the head of household is included as the migrant-specific income measure. The

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[7] For a discussion of the effects of psychic costs see Herzog and Schlottman (1981, p. 461), Greenwood (1975, p. 406) and Gallway (1969, pp. 171-180).

[8] The effects of education on migration are discussed in Greenwood (1975, p. 406) and Herzog and Schlottman (1981, pp. 459-475).

variable is expected to have a positive coefficient indicating that such greater incomes can be used to finance migration.[9]

Household Size. Household size is expected to increase both moving costs and psychic costs. Family size was shown to have such an effect by Herzog and Schlottman (1981, pp. 462-464), thus the sign on household size is expected to be negative indicating a lower probability of moving for larger households.

Quality-of-Life Factors. The physician rate, crime rate, transportation rate and population density in the origin county groups are included to capture quality of life and amentity factors at the origin. Higher crime rates and population densities at the origin are expected to increase the likelihood of migration by acting as proxies for the dissamentities of the origin area, whereas it is expected that higher physician rates and transportation rates reduce migration by acting as proxies for specific amentities at the origin relating to access to health care and public transportation, respectively.

Prior Mobility. It is expected that those persons who have previous migration experience are more likely to move again than those who have no previous migration experience. This has been shown to be

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[9] It should be noted that the wage and salary figure is the income as of 1979, and is therefore likely to represent post-move compensation. It is therefore a measure of the earning power of a potential migrant. Since the variable is not normally be a pre-move measure a bias in the estimate for income may result in a lack of significance for the variable. Pre-move values are, however, not available for this variable. A similar problem is encountered for occupation, homeownership, and household size.

the case by such authors as Kaluzny (1975) and Navratil and Doyle (1977).

Regional Variables. Regional dummy variables are also included for the North Central, Northeast, and South Census regions of origin with the West census region used as the control. It is expected that the probability of migration is highest in the Northeast and North Central regions as is generally suggested in the literature. The regional variables are included because there are factors such as age of capital stock and variations in personal preferences that may vary by region and which are not, and in some cases can not, be included as separate variables.

Occupation. Occupational dummy variables are included with the expectation that this would provide some insight into the manufacturing deconcentration hypothesis. Occupation dummy variables are included for white collar, blue collar, and service occupations, with agricultural workers being the control group. There is also reason to believe that differentials in information costs exist by occupational category. Lansing and Mueller (1967) and Tilly and Brown (1968) indicate that that family and friends are sources of job information for white collar workers while blue collar workers are less likely to rely on family and friends. Studies by Saben (1964) and by Herzog and Schlottman (1984) also suggest differential rates of migration by occupation.

Employment Status. Employment status in 1975 is included as a push factor. Survey data collected in 1962 and 1963 by the Bureau of

Labor Statistics indicated that unemployed men are more likely to migrate than employed men. Results of a study by Schlottman and Herzog (1981) further support this finding.

Employment Rates and Mean Income. Todaro (1979) and Cole and Sanders (1983 and 1985) have analyzed internal migration in the third world using models which evaluate the discounted net present value of the net gain from securing a job in the modern urban sector (versus staying in the rural sector). An integral component to those models is the product of the probability of obtaining a job and the average income of the area. In this study the logit models contain the product of the employment rate times the mean income for the area which serves a similar purpose to the above component of the Todaro and Cole and Sanders models. The employment rate serves as a proxy for the probability of finding a job in the area and, ceteris paribus, the higher the value of the employment rate times mean income for the origin area, the greater the value of remaining in the origin area. Similarly, as used later in the study, the higher the value of the employment rate times mean income for the destination region, the greater the benefit of moving to the destination (under ceteris paribus conditions).

Here, the employment rate in the origin area and the mean origin area income are included as individual variables and the product of the two variables is also included as an interaction term. It is expected that high employment rates and mean area incomes in the origin region reduce the incentive to migrate. The use of the interaction term as well as it's individual components allows the investigation of each variable while retaining the possibility of joint impacts.

Model Two. Model Two uses, as its base, that portion of the population at risk which actually does move between 1975 and 1980, and examines the decision of whether to move to a metropolitan or nonmetropolitan area. If the migrant moves to a metropolitan area the dependent variable is set equal one. If the move is to a nonmetropolitan area the dependent variable is set equal to zero. Model Two includes a variable for homeownership in 1980 in addition to the same independent variables used in Model One.

It is expected that both noneconomic and economic factors are important to this destination choice decision. The relative strengths of these two types of location factors should help to indicate whether or not the cause of the turnaround is primarily based upon increased economic opportunities. Such would be the case if the economic variables prove to be the stronger of the two types.

Homeownership. To some extent, the homeownership variable is a proxy for the desire to own a home as a factor in migration and to some extent this may mirror homeownersip in 1975. Kim (1963, p. 41) finds that "regardless of their previous homeownership status people who migrate in the most ruralward manner have become homeowners."

Gender. Gender is also expected to be a significant factor in the decision process. Since female wage rates are generally lower than male wage rates, ceteris paribus, and since traditionally female jobs are generally lower paying jobs, it is expected that female heads of households are more inclined to migrate to metropolitan areas where one would expect higher wages and more opportunities.

Occupation. Occupational categories are expected to be very important to the destination decision. It is expected that workers in service occupations are least likely to migrate to metropolitan destinations if one of the primary causes of the turnaround is the growth of service industries in nonmetropolitan areas. Additionally, since there has been particularly strong nonmetropolitan growth in certain white collar occupations such as the technical, sales, and administrative category, it is anticipated that such workers have high probabilities of migration to nonmetropolitan areas relative to the other categories.

If blue collar workers show a lower than average probability of migration to metropolitan areas, this would lend support to the industrial deconcentration hypothesis. On the other hand, if this does not prove to be the case it may indicate nonmetropolitan suburbanization as an important factor. This would not disprove the industrial deconcentration hypothesis, since there may simply be many more blue collar jobs available in metropolitan areas than in nonmetropolitan areas, but it would decrease the importance of industrial deconcentration as a factor in the turnaround.

Model Three. The third model uses as its base the portion of the population which migrated to nonmetropolitan destinations. The decision examined here is whether to commute to a metropolitan area to work.

If the migrant commutes to a metropolitan area to work, the dependent variable is set equal to one. If the migrant does not commute to a metropolitan area to work, the dependent variable is set equal to

zero. The independent variables used are similar to those in model two. The function estimated is:

Migrant works in a metropolitan area = 1.

Migrant works in a nonmetropolitan area = 0.

= f(Personal and Household Characteristics, Destination Characteristics).

Personal and household characteristics include the age, education, gender, wage and salary income, and occupational category of the head of household in 1980, mobility status, homeownership, the employment status of the head of household in 1975, and family income other than head of household wage and salary income. Destination area characteristics include the number of serious crimes per 100,000 population, the census region, the employment rate, the mean area income, and the product of area employment rate and mean area income.

This model examines the decision of whether to commute to work in a metropolitan area given that the migrant has already decided to migrate to a nonmetropolitan area.

Expectations. It is expected that the most significant variables are the employment rate times mean income at the destination and the occupation categories. If the employment rate times mean area income interaction term is low the migrant would be motivated to look for work in an area with greater prospects for a high paying job. This would serve as a commuting push factor. Conversely, a high value for the interaction term would indicate that the jobs at the nonmetropolitan destination are high paying and/or they are plentiful which would allow

the migrant to forgoe the search and transportation costs involved with finding and commuting to a job in a metropolitan area.

The occupational categories are also expected to be significant. It is expected that high probabilities of commuting are associated with blue collar occupations. This might suggest that industrial deconcentration is not so important to the turnaround as suggested by other authors. Alternatively, deconcentration may have taken place, but not to such an extent as to eliminate the preponderance of manufacturing jobs still remaining in metropolitan areas. This could suggest that much of the turnaround may be of a nonmetropolitan suburbanization nature. That is, the suburban flight may be extending to nonmetropolitan areas with individuals willing to commute farther and farther with improvements in the interstate highway system making this possible.

It is also expected that a fairly high probability of commuting is associated with white collar workers. This could further substantiate the concept of extended suburbanization. Service workers were not expected to have high probabilities of commuting. If this is true and if it is true that there has been a disproportionate growth in service industry employment in nonmetropolitan areas, such a result could support the hypothesis that some of the turnaround is the result of increased service occupations in nonmetropolitan areas. Such a result would indicate a need for more research on the suggested causes of such service industry growth (increased migration of affluent retirees to nonmetropolitan areas and increased recreation facilities in such areas).

Summary

Five hypotheses which address the rural-urban turnaround are tested in this dissertation. These hypotheses are tested using tabular presentations, ordinary least squares human capital income equations, and logit models. Figure 2 indicates each of the hypotheses tested and the manner in which each is investigated.

Hypothesis Investigated	Method of Investigation:				
	Tabular	OLS Human Capital	Logit Model #1	#2	#3
1)Continuation of the turnaround to 1980	X				
2)Flight to Suburbs	X				X
3)Manufacturing Deconcentration or Shift in Industrial Composition	X			X	
4)Individual and Family Wage Changes		X			
5)Differences in Migration Decisions by Origin and Destination Area Types			X	X	X

Figure 2
Methods of Investigation for the Hypotheses

CHAPTER IV

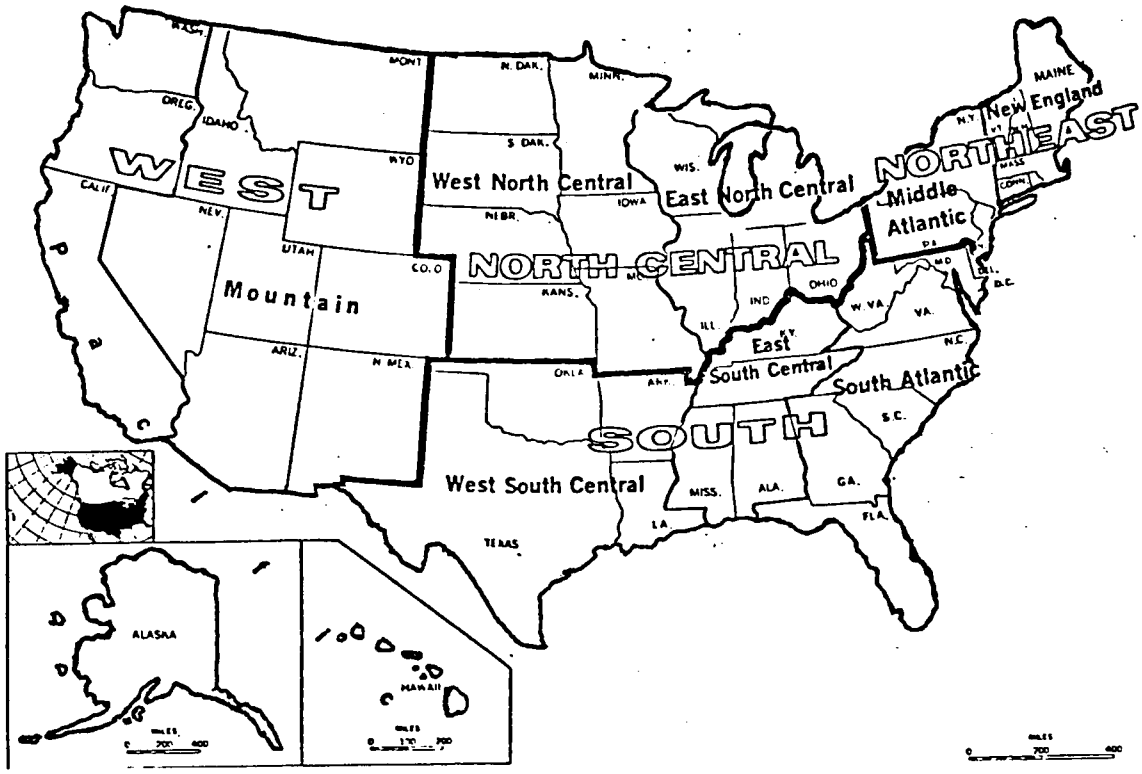
RESULTS FOR HYPOTHESES ONE THROUGH FOUR

Hypothesis One - The Turnaround Continues

The first, certainly most obvious, conclusion of this study is that the rural-urban turnaround continues throughout the 1970s. Metropolitan growth rates declined between the 1960 to 1970 and the 1970 to 1980 periods for all but three Census divisions shown in Figure 3 (East South Central, West South Central, and Mountain). Nonmetropolitan growth rates increased between the two decades for every census division.

Prior to 1970, nonmetropolitan areas were primarily exporters of people to metropolitan areas. The established pattern of migration was out of small towns and rural areas into, for the most part, large metropolitan areas. The traditional pattern of movement was from the South to Northern manufacturing areas. Between the 1960 to 1970 and the 1970 to 1980 decades, overall population growth for the United States declined from 13.4 to 10.9 percent according to the U.S. Commerce Department (1980, p. 12).

During 1960 to 1970, growth rates were higher than the national growth rates in the Southern and Western Census regions and lower than the national rate in the North Central and Northeastern regions (see Figure 3). These relative positions remained the same in the 1970 to 1980 period, but the change from previous period growth rates for each region was pronounced. The 1970 to 1980 growth rate in the Northeast was actually negative (declining from 9.8 to -0.1 percent). Similarly,



Source:

U.S. Bureau of the Census

Figure 3

Map of U.S. Census Regions

the growth rate for the North Central region declined from 9.6 to 3.7 percent. On the other hand, growth rates in the West remained very high, although declining somewhat (from 24.2 to 23.4 percent) and growth rates in the South increased from 14.3 to 19.3 percent (U.S. Department of Commerce, 1980, p. 12).

Within the North Central region, the industrialized eastern portion grew less rapidly than the western portion over the 1970 to 1980 period. While the 1970 to 1980 period showed declines for New York and Rhode Island, the remaining portion of the Northeast region increased in population, resulting in a very mild decline in population for the region as a whole (U.S. Department of Commerce, 1980, pp. 3-12).

All the states in the West and all except Delaware, Maryland, and the Distict of Columbia in the South experienced higher growth rates than the nation in the latter period. Thus, the traditional movement to northern industrialized areas has been replaced by a movement to less (or perhaps newer) industrialized areas in the South and West. Even in the North, there has been a movement from older industrialized areas to less industrialized areas within the region (U.S. Department of Commerce, 1980, p. 11).

The U.S. as a Metropolitan Nation. Table 3 indicates metropolitan and nonmetropolitan growth rates from 1960 to 1980 by census division. The United States continues to be metropolitan in nature, but in the 1970 to 1980 period, the growth rates for metropolitan and nonmetropolitan areas radically changed. Metropolitan growth rates continue to be positive for the 1970 to 1980 period. However, the metropolitan growth rate declined to little more than half of the

Table 3

Metropolitan and Nonmetropolitan Population Growth Rates
1960 to 1980
(in percentages)

Division	Metropolitan Area Growth Rates		Nonmetropolitan Area Growth Rates	
	1960 to 1970	1970 to 1980	1960 to 1970	1970 to 1980
United States	17.0	10.2	3.4	15.1
North East	12.6	1.0	13.3	16.5
Middle Atlantic	9.2	-2.7	6.6	11.7
East North Central	12.7	1.9	5.7	9.8
West North Central	14.7	5.6	-2.3	4.9
South Atlantic	25.9	20.8	3.2	19.6
East South Central	11.9	13.9	.8	15.1
West South Central	21.0	26.3	1.3	15.4
Mountain	34.1	41.3	4.7	30.5
Pacific	27.0	18.6	10.9	30.7

Source:
U.S. Department of Commerce (1982, p. 16).

national total growth rate during this period (U.S. Department of Commerce, 1980, p. 6).

Nonmetropolitan growth rates experienced more than a four-fold increase over the same period, climbing from less than 4 percent to 15 percent. This pattern of growth differed widely from region to region, within regions, and between city sizes.

Population Growth by City and MSA Size. Table 4 indicates the changes in population from 1960 to 1980 for cities of 10,000 or more in population. The very largest cities experienced declines in population during the 1970 to 1980 period after exhibiting substantial growth in the previous decade. Only three of the seven metropolitan areas of population of 3 million or more experienced any growth in the 1970 to 1980 period (Chicago, Los Angeles, and San Francisco); Chicago's gain was very small. Growth rates of all city sizes greater than 10,000 fell from the 1960s to the 1970s except for cities of 250,000 to 500,000, although only cities greater than 500,000 experienced losses. This suggests that much of the increase in nonmetropolitan growth is in unincorporated or truly rural areas.

An examination of Metropolitan areas (rather than cities) indicates that growth rates have declined for MSAs with populations greater than 500,000 with the greatest growth rates in the 1970s occurring in the smallest metropolitan areas. For MSAs smaller than 500,000 the growth rates in the later period exceed those for the earlier period (U.S. Department of Commerce, 1981, p. 16). Since the findings for metropolitan areas are not generally true for cities, this leads to the supposition that a significant portion of migration is

Table 4

Cities by Population Size
1960 to 1980

Population Size	Population (millions)			Percentage Change	
	1960	1970	1980	1960-1970	1970-1980
1 million or more	17.5	18.9	17.5	8.0	-7.4
500000 to 1 million	11.1	13.1	10.9	18.0	-16.8
250000 to 500000	10.8	10.7	12.2	-.9	14.0
100000 to 250000	11.4	14.1	16.5	23.7	17.0
50000 to 100000	12.5	16.3	17.3	30.4	6.1
25000 to 50000	12.7	16.4	18.4	29.1	12.2
10000 to 25000	15.1	18.2	19.6	20.5	7.7
Total	91.0	107.7	112.5	18.3	4.5

Source:
U.S. Department of Commerce (1982, p. 16).

occurring in suburban areas and further leads to the question of whether movement to nonmetropolitan areas may also be characteristic of a type of suburbanization.

Hypothesis Two - Flight to the Suburbs

Population Growth and Commuting. One indication of whether suburbanization figures prominently in the turnaround is the extent to which nonmetropolitan areas with high population growth are characterized by substantial commuting to work in metropolitan areas. Table 5 shows nonmetropolitan population growth by intensity of commuting. The intensity percentages are the percentages of workers who commute to a metropolitan area to work. In general, counties having highest growth rates in both the 1960s and 1970s were those with at least 20 percent commuting intensities. This would indicate that a substantial portion of nonmetropolitan growth can be attributed to suburbanization (in the sense of living outside of the metropolitan area where one works). However, it should also be noted that the gap between growth rates in high intensity commuting areas and those with lower intensities narrows in the 1970s even in remote, distant (noncommuting) areas. In fact, because of population sizes of such areas, the greatest percentage of total increase in each region is due to counties with less than 3 percent commuting in all but the Northeast region. Thus, growth rates indicate suburbanization as a major factor in nonmetropolitan growth, but a significant amount of growth is also attributable to growth in remote rural areas. Relocation of retired persons has been offered as a partial explanation for this occurrence, but such an

Table 5

Population and Percentage Changes in Population for Nonmetropolitan Counties by Commuting Ties to Metropolitan Areas

Commuting Intensity	Population (thousands)			Percentage Change		Change as a % of Total Change	
	1960	1970	1980	1960 to 1970	1970 to 1980	1960 to 1970	1970 to 1980
United States							
Total	50470	52419	60296	3.9	15.0	100.0	100.0
30% or more	1110	1346	1755	21.3	30.4	12.1	5.2
20% to 29%	2897	3037	3533	4.8	16.3	7.2	6.3
10% to 19%	8796	9370	10873	6.5	16.0	29.5	19.1
5% to 9%	8435	8899	10217	5.5	14.8	23.8	16.7
3% to 4%	4817	4989	5709	3.6	14.4	8.8	9.1
less than 3%	24414	24778	28209	1.5	13.8	18.7	43.6
Northeast							
Total	6069	6580	7404	8.4	12.5	100.0	100.0
30% or more	331	500	704	50.8	40.8	33.1	24.8
20% to 29%	599	618	661	3.2	7.0	3.7	5.2
10% to 19%	1613	1757	1963	9.0	11.7	28.2	25.0
5% to 9%	1455	1544	1679	6.1	8.7	17.4	16.3
3% to 4%	385	405	470	5.2	15.9	3.9	7.9
less than 3%	1685	1755	1927	4.2	9.8	13.7	20.9
North Central							
Total	16146	16464	17652	2.0	7.2	100.0	100.0
30% or more	470	516	610	9.8	18.1	14.5	7.9
20% to 29%	829	868	964	4.7	10.9	12.3	3.3
10% to 19%	3039	3237	3537	6.5	9.3	62.3	25.3
5% to 9%	2665	2770	2997	4.0	8.2	33.0	19.1
3% to 4%	1565	1575	1655	0.6	5.1	3.1	6.7
less than 3%	7578	7498	7891	-1.0	5.2	-25.2	33.1

Table 5 continued

	Population (thousands)			Percentage Change		Change as a % of Total Change	
	1960	1970	1980	1960 to 1970	1970 to 1980	1960 to 1970	1970 to 1980
South							
Total	22153	22725	26511	2.6	16.7	100.0	100.0
30% or more	306	326	437	6.8	33.9	3.5	2.9
20% to 29%	1434	1506	1846	5.0	22.6	12.6	9.0
10% to 19%	3851	4024	4804	4.5	19.4	30.2	20.6
5% to 9%	3343	3448	3993	3.2	15.8	18.4	14.4
3% to 4%	2604	2680	3140	2.9	17.2	3.9	12.2
less than 3%	10616	10742	12291	1.2	14.4	4.7	40.9
West							
Total	6102	6650	8730	9.0	31.3	100.0	100.0
30% or more	3	4	5	40.4	23.4	.2	.05
20% to 29%	35	45	63	27.7	38.9	1.8	.9
10% to 19%	293	353	569	20.5	61.4	10.9	10.4
5% to 9%	973	1137	1549	16.9	36.3	29.9	19.8
3% to 4%	262	329	444	25.6	34.6	12.2	5.5
less than 3%	4537	4782	6101	5.4	27.6	44.7	63.4

Source:

U.S. Department of Commerce (1981, p. 12).

explanation does not account for all of the growth in remote areas. An acceptable explanation requires increased employment opportunities in rural areas. This factor will be explored later in this chapter.

Net Migration in the 1960s and 1970s. Table 6 shows net migration for the 1970 to 1980 period, expressed as an annualized percent of population at the beginning of the period. This has been estimated for nonmetropolitan and metropolitan areas and compared to similar ratios for the 1960 to 1970 period in a manner similar to that presented by Beale (1977, pp. 114-115).

The estimates in Table 6 differ from those of Beale largely because of differences in the MSA definitions in the 1970 and 1980 censuses. The results, however, strongly reinforce Beale's findings and conclusions.

In addition to net migration rates in metropolitan and nonmetropolitan areas for the nation as a whole, similar ratios have also been calculated in Table 6 by census division.

Net Migration in Metropolitan Areas. Between the 1960s and the 1970s aggregate annual net migration rates in metropolitan areas for the nation were reduced from .6 to .4 percent (see Table 6). The changes in net migration rates for metropolitan areas differ by census division with the East South Central, South Atlantic, West South Central, and Mountain metropolitan areas experiencing increased net migration rates. One can thus characterize metropolitan migration as a movement to the west and the south.

Table 6

Population and Net Migration Change and Annual Rates of Change by Metropolitan Status and Census Division

Area	Population					Net Migration			
	Number (millions)			Rate of Annual Change (%)		Number (millions)		Rate of Annual Change (%)	
	1960	1970	1980	1960 to 1970	1970 to 1980	1960 to 1970	1970 to 1980	1960 to 1970	1970 to 1980
Total United States	179.3	203.3	226.5	1.3	1.1	4.8	10.5	.3	.5
Metropolitan	131.3	153.7	169.4	1.7	1.0	8.1	6.2	.6	.4
Nonmetropolitan	48.0	49.6	57.1	.3	1.5	-3.3	4.3	-.6	.8
North East	10.5	11.9	12.4	1.3	.4	.4	.1	.4	.1
Metropolitan	8.3	9.4	9.5	1.3	.1	.3	-.2	.4	-.2
Nonmetropolitan	2.2	2.5	2.9	1.4	1.6	.1	.3	.5	1.2
Middle Atlantic	34.2	37.2	36.8	.9	-.1	.2	-1.6	.1	-.4
Metropolitan	30.4	33.2	32.3	.9	-.3	.3	-2.0	.1	-.6
Nonmetropolitan	3.8	4.0	4.5	.5	1.3	-.1	.3	-.3	.8
East North Central	36.2	40.3	41.7	1.1	.3	.2	-1.1	-.1	-.3
Metropolitan	28.4	32.0	32.6	1.3	.2	.6	-1.4	.2	-.4
Nonmetropolitan	7.9	8.3	9.1	.5	1.0	-.4	.5	-.5	.6
West North Central	15.4	16.3	17.2	.6	.6	-.4	0	.3	0
Metropolitan	7.6	8.7	9.2	1.4	.6	.4	0	.6	0
Nonmetropolitan	7.8	7.7	8.0	-.1	.3	-.8	0	-1.0	0
South Atlantic	26.0	30.7	36.9	1.8	2.0	1.6	4.4	.6	1.4
Metropolitan	17.1	21.6	26.0	2.6	2.0	2.3	3.2	1.4	1.5
Nonmetropolitan	8.8	9.1	10.9	.3	2.0	-.7	1.3	-.8	1.4
East South Central	12.1	12.8	14.7	.6	1.5	-.6	.9	-.5	.7
Metropolitan	6.0	6.7	7.6	1.2	1.3	0	.5	0	.7
Nonmetropolitan	6.1	6.1	7.1	0	1.6	-.6	.5	-1.0	.8

Table 6 continued

Area	Population					Net Migration			
	Number (millions)			Rate of Annual Change		Number (millions)		Rate of Annual Change	
	1960	1970	1980	1960 to 1970	1970 to 1980	1960 to 1970	1970 to 1980	1960 to 1970	1970 to 1980
West South Central	17.0	19.3	23.7	1.4	2.3	.3	2.6	.2	1.3
Metropolitan	10.9	13.2	16.7	2.1	2.7	.9	2.2	.8	1.7
Nonmetropolitan	6.0	6.1	7.0	.2	1.5	-.6	.4	-1.0	.7
Mountain	6.9	8.3	11.4	.9	3.7	.5	2.0	.7	2.4
Metropolitan	3.8	5.1	7.2	3.4	4.1	.7	1.4	1.8	2.2
Nonmetropolitan	3.1	3.2	4.2	.3	3.1	-.3	.6	-1.0	1.9
Pacific	21.2	26.5	31.8	2.5	2.0	2.8	3.2	1.3	1.2
Metropolitan	18.9	24.0	28.4	2.7	1.8	2.8	2.6	1.5	1.1
Nonmetropolitan	2.3	2.6	3.4	1.3	3.1	0	.6	0	2.3

Source:

U.S. Department of Commerce (1982, pp. 17, 58, 60, 72).

Notes:

Net migration is calculated as the total population change plus deaths less births (calculated by census division using birth and death rates for each division).

The rate of annual change is expressed as the annualized percentage of the population at the beginning of the period.

Net Migration in Nonmetropolitan Areas. On the other hand, the nonmetropolitan net migration rates were more uniform across the nation. More impressive, is the increase from -.6 (in the 1960s) to .8 (in the 1970s) percent for the national annual net migration rate for nonmetropolitan areas. Other than the West North Central division, where net migration was negligible in the 1970s, all divisions experienced growth in net migration rates in nonmetropolitan areas. The greatest increases in nonmetropolitan annual net migration rates occurred in the North East, Mountain, and Pacific divisions.

Overall, nonmetropolitan areas experienced a net annual inflow of about .43 million people from 1970 to 1980. This contrasts sharply with the annual net outflow of .33 million people during the 1960s, and provides evidence that the rural-urban turnaround both continued and grew during the 1970s.

Hypothesis Three - Manufacturing Deconcentration or Shifting Industrial Composition

Rural and Urban Occupations. One question which keeps resurfacing in any examination of the turnaround concerns the occupations of individuals in the nonmetropolitan areas. It has been alleged that growth of nonmetropolitan and rural areas is largely attributable to increases in employment in service industries and/or to deconcentration of industry.[1]

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[1] Such logic can be found in Beale (1977, pp. 117), McCarthy and Morrison (1977, pp. 126-140) and Garnick and Renshaw (1979, pp. 105-124).

An examination of employment by occupation and by rural and urban residence indicates no such trend in service occupations. There has been substantial growth in service ocupations but, as Table 7 shows, that growth has only been slightly higher in rural areas than in urban areas. It should be noted that the terms "rural" and "urban" in Table 7 refer to the residence of the employees rather that job location.

Growth in Employment. Growth of employment in manufacturing occupations has been greater in rural residence areas than in urban residence areas. Combined employment (in Table 7) for precision production, craft or repair, operators, fabricators and nonfarm laborers in rural areas has grown by 16.2 percent between 1970 and 1980 as compared to a growth of only 8.5 percent in urban areas. Because of such growth this combined group made up 47.7 percent of the rural employment in 1980. There is still, however, a question as to whether such growth is simply reflective of increased suburbanization or is truly the result of a deconcentration of industry which is placing more manufacturing operations in rural areas. This question will be further investigated in the logit models which are examined later in this chapter.

In any event, it appears that people from rural areas tend to be employed in the same sort of occupations as those of urban residents, with one major exception. The growth of rural employment in technical, sales, and administrative jobs has grown by over 76 percent since 1970 while such growth in urban areas has only been about 50 percent. It should be noted that the higher rate in rural areas may be partially due to the smaller base for rural employment. Such occupations include

Table 7

Employment Growth by Occupational Category
1970 to 1980
(numbers in thousands)

	1980			1970		
	Total	Urban*	Rural	Total	Urban*	Rural
Employed persons 16 yrs. and older	97639	73754	23885	76554	57874	18680
Percent of Area Employment	100	100	100	100	100	100
Percent Change from 1970	27.5	27.4	27.9			
Managerial-Professional	22152	17999	4153	17722	14408	3314
Percent of Area Employment	22.7	24.4	17.4	23.2	24.9	17.7
Percent Change from 1970	25.0	24.9	25.3			
Technical, Sales, and Administrative	29594	24035	5559	19194	16044	3150
Percent of Area Employment	30.3	32.6	23.3	25.1	27.7	16.9
Percent Change from 1970	54.2	49.8	76.5			
Service	12629	9842	2788	9773	7638	2135
Percent of Area Employment	12.9	13.3	11.7	12.8	13.2	11.4
Percent Change from 1970	29.2	28.8	30.6			
Farm, Forestry and Fishing	2811	775	2036	2367	330	2037
Percent of Area Employment	2.9	1.1	8.5	3.1	.6	10.9
Percent Change from 1970	18.8	42.6	-.04			

Table 7 continued

	1980			1970		
	Total	Urban*	Rural	Total	Urban*	Rural
Precision Production and Craft or Repair	12594	8808	3786	10610	7627	2982
Percent of Area Employment	12.9	11.9	24.4	13.9	13.2	16.0
Percent Change from 1970	18.7	15.5	27.0			
Operators, Fabricators, and Laborers	17859	12296	5564	16888	11826	5062
Percent of Area Employment	18.3	16.7	23.3	22.1	20.4	27.1
Percent Change from 1970	5.8	4.0	9.9			

Source:
Bureau of the Census, 1974 and Bureau of the Census, 1984.

Note:
Urban refers to places of 2500 people or more.

health technologists, sales clerks, secretaries, typists, records processing, and other clerical workers. Over 64 percent of this group are female. This may imply that those moving to rural areas include many females who continue to work in urban areas, or that many of these jobs are becoming available in rural areas. Alternatively, this may imply that more women in rural areas are choosing to enter the labor force and are commuting to such jobs in urban areas.

Occupational Differences by Migrant Type. An examination of the sample data used in the qualitative response models in Chapter V indicates some interesting occupational differences by migrant type (Table 8). Occupational groups are aggregated into four general categories. White collar occupations include managerial and professional, technical, administrative, clerical and sales. Services include all census categories within the service occupations, such as nurses aides, housekeepers, policemen, and firefigthers. Blue collar occupations include precision production, craft, repair, operators, fabricators and nonfarm laborers. The final category is farm occupations and is not statistically evaluated because of its extremely small size.

The mean percentages of each of the three occupation categories was calculated and the hypothesis that the mean of any migrant group's occupation category was equal to any other group's mean percentage was evaluated using t-tests. The means for all occupation groups except for service occupations are statistically different for each migrant type (nonmovers, primary migrants, nonreturn repeat migrants, and return migrants). Service occupations are not statistically different between

Table 8

Percentage of Workers by Occupation type and Migrant Status

	White Collar	Blue Collar	Services
Nonmovers	36.8	49.5	8.7
Migrants			
Primary	49.3	38.5	10.1
Return Repeat	58.2	32.8	7.0
Nonreturn Repeat	62.5	29.1	6.5
All Migrants	54.7	34.7	8.4
TOTAL	50.2	38.5	8.5

Source:
Bureau of the Census (1983)

return migrants and nonmovers but are different between all other migrant types. In each of the other groups, white collar workers make up the largest single percentage of occupations with the largest percentage of white collar workers occuring in the nonreturn repeat category.[2]

Nonmovers had the highest percentage of workers in blue collar occupations (49.5 percent) followed in order by primary, return and nonreturn repeat migrants. That white collar workers tend to be more mobile than blue collar workers is consistent with other studies such as Greenwood (1973) and Schlottman and Herzog (1984).

The percentage of workers in service occupations are higher for primary migrants than for nonmovers, but those categories of migrants with previous migration experience have lower percentages of workers in service occupations than nonmovers.

Similar percentages are also calculated by origin type and destination area (metropolitan or nonmetropolitan). The highest percentage of workers migrating to metropolitan areas are in professional occupations. These percentages vary from 57 to 62 percent for inner city and MSA areas outside the central city. The percentage for nonmetropolitan areas is only 35.4 percent. It should also be noted that many of the workers in the professional category are engaged in

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[2] Migrants are defined as those individuals with different residence states in 1975 and 1980. Primary migrants are defined as migrants whose residence state in 1975 was the same as their state of birth. Nonreturn repeat migrants are defined as those whose residence state in 1980 and 1975 were different from their state of birth. Return migrants are those whose residence state in 1980 was the same as their birthplace.

what would normally be considered sevice industry occupations even though the census does not classify these occupations as service occupations (for example physicians, nurses, lawyers, and accountants).

The percentage of workers enaged in what the census considers service occupations tends to be higher but not significantly higher for metropolitan areas than for nonmetropolitan areas. Even combining the white collar and service occupations, there does not appear to be a higher growth of occupations that arise from the service industry in nonmetropolitan areas than in metropolitan areas.

Blue collar (primarily manufacturing) jobs comprise the single largest percentage (48.3 percent) of workers who have migrated to nonmetropolitan areas. This is significantly larger than the percentage of migrants to metropolitan areas who are blue collar workers.

With respect to origin, migrants from nonmetropolitan areas have a higher percentage of workers (in 1980) in the service category than those from metropolitan areas. The percentage of migrants in white collar occupations is significantly greater for metropolitan origins than for nonmetropolitan origins. Manufacturing occupations constitute a larger portion of nonmetropolitan origin migrants than nonmetropolitan origin migrants.

All of this is suggestive of three points. Primary migrants (who, in general, have less education and job experience) tend to take more service jobs than do other types of migrants but the number of service jobs is not, in general, different between migrants to metropolitan and nonmetropolitan areas. Secondly, white collar workers tend to be more mobile in general and tend to migrate to metropolitan areas, but they

also constitute a significant portion of the migrants to nonmetropolitan areas. Finally, migrants to nonmetropolitan areas tend to be blue collar workers to a greater extent than those migrating to metropolitan areas. This might suggest that both industrial deconcentration and commuting are important elements in migration to nonmetropolitan areas.

Hypothesis Four - Individual and Family Income Changes

Income Differences. Hypothesis Four tests one of the explanations that has been offered in the literature which suggests that migrants to nonmetropolitan areas tend to forgo individual income in order to live in a rural area, but that spousal employment more than compensates for such income loss.

In order to examine hypothesis four, modified human capital equations are estimated in a manner similar to that shown by Herzog, Hofler, and Schlottman (forthcoming), although only ordinary least squares estimation is used here.

Two semi-log equations are estimated which separately investigate individual and family income. The first equation is for head of household wage and salary income and the second is for family income.

The first equation takes the form:

ln (Head of Household Income)= f(age, education, age squared, education squared, age times education, employment status in 1975, white collar occupation, service occupation, blue collar occupation, migration direction by prior mobility), where

age, education, employment status, occupation dummies, and sex are characteristics of the head of household and the migration direction variables are dummy variables for primary and repeat migrants. For each of these two prior mobility types the dummy variables describe whether

the migrant is from a metropolitan or nonmetropolitan area, and whether the destination of the migrant is metropolitan or nonmetropolitan. The control group for the migration direction variables is nonmigrants.

The equation for family income is exactly the same as that for head of household income except that the dependent variable is the natural log of family income and one additional independent variable (persons) is included to account for the number of persons in the household.

The equations are estimated using Ordinary Least Squares and the results are shown in Table 9. Table 10 shows the predicted income for each equation when one of the migrant type dummy variables is set equal to one and all of the other migrant type dummies are set equal to zero (as well as the case when all migrant direction dummy variables are set equal to zero, reflecting nonmovers).

These human capital income equations bear resemblance to models estimated by Blinder, Rosenzwieg, and Herzog, Hofler, and Schlottman. The logarithm of income is assumed to be a quadratic function of both schooling and age. The interactive impacts between schooling and age are allowed through the age times education interaction variable. The possible interuption of work experience because of unemployment is accounted for through the variable for employment status in 1975. Other independent variables are included to account for differences in occupation, gender, and migrant direction (from and to metropolitan or nonmetropolitan areas). Alternative models were estimated without the interaction term for age and education, without the squared education and age variables, and as both double log and linear equations. The

Table 9

Results of Human Capital Income Equations

Variable	ln of Head of Household Income		ln of Family Income	
	coefficient	t-statistic	coefficient	t-statistic
Intercept	6.3372	45.77	7.0682	59.01
Age	.1101	27.61	.0536	14.97
Education	.0624	6.11	.0964	10.58
Age Squared	-.0013	-35.94	-.0004	-11.35
Education Squared	-.0025	-9.83	-.0020	-8.90
Age times Education	-.0005	-2.98	-.0002	-1.57
Employment in 1975	.2103	14.40	.0456	3.50
Occupations				
White Collar	.4488	9.71	.0316	15.99
Service	-.0753	-1.51	.3598	8.41
Blue Collar	.2408	5.23	.5050	12.87
Primary Migrants				
From Nonmetro Areas				
To Nonmetro Areas	.1113	3.53	-.0533	-2.03
To Metro Areas	.0241	.80	.0321	1.26
From Metro Areas				
To Nonmetro Areas	.0912	3.62	-.1198	-5.65
To Metro Areas	.0447	2.71	.0346	2.25
Repeat Migrants				
From Nonmetro Areas				
To Nonmetro Areas	-.0586	-2.04	-.0167	-.72
To Metro Areas	.0499	2.32	-.0210	1.13
From Metro Areas				
To Nonmetro Areas	-.0029	-.14	.0067	.40
To Metro Areas	-.0029	-15.36	.1409	11.71
Sex	-.2125	-38.15	-.4756	-31.30
Persons	n.a.	n.a.	.0221	5.95
R-Squared	.2452		.2617	

Table 10

Predicted Incomes for Human Capital Equations
by Migrant Types

Migrant Type	Head of Household Income	Family Income
Nonmovers	12,802	14,168
Primary Migrants		
Nonmetro to Nonmetro	13,132	13,433
Nonmetro to Metro	13,168	14,629
Metro to Nonmetro	13,211	12,568
Metro to Metro	13,355	14,667
Return Migrants		
Nonmetro to Nonmetro	13,585	13,934
Nonmetro to Metro	13,737	13,873
Metro to Nonmetro	14,300	14,263
Metro to Metro	15,469	16,312

Note:

Migrant direction dummy variables were insignificant at the 10 percent level in the Head of Household equation for primary nonmetro to metro migrants, and for repeat metro to nonmetro migrants. In the family income equations the primary nonmetro to metro, repeat nonmetro to nonmetro, repeat nonmetro to metro and Repeat metro to nonmetro variables were not significant at the 10 percent level.

present equations are by far the most acceptable in terms of R-square, t-statistics, coefficient signs, and conformability to theory and previous empirical work.[3]

Results for Human Capital Income Equations. The results of the head of household income equations (Table 9) are generally consistent with the results of Herzog, Hofler, and Schlottman (HHS) with respect to age, age squared, previous employment status, and white collar occupations. The results reported in HHS indicated that the education variable was not significant at the 10 percent level, whereas both education and education squared are siginficant in these results.

The results shown in Table 9 for family income are also generally consistent in terms of magnitude and significance with those of Perkinson (1980) with respect to age, age squared, and education variables (Perkinson did not include education squared or the age-education interaction term).

The results indicate that those individuals who are male, older, better educated, more concentrated in white collar occupations, and who were employed in 1975 have higer individual and family incomes. The results also indicate that the direction of migration flow by prior mobility tends to be more important for individual incomes than for family incomes in terms of the number of significant variables. Because of the low level of significance for some of the dummies, particularly

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[3] Pertinent studies involving human capital models include Blinder (1976), Herzog, Hofler, and Schlottman (forthcoming), Mincer (1974), and Mark R. Rosenzweig (1976).

for the family income equation, some caution should be maintained in examining the predicted values shown in Table 10.

Head of Household Income. The results in Table 10 indicate that when all other variables are held constant, head of household income is higher for all migrant types than for nonmovers. For all migrant types, repeat migrants have higher head of household income than primary migrants, as expected. For both primary and repeat migrants, the lowest head of household income is predicted for those who migrate from nonmetropolitan areas to other nonmetropolitan areas.

Regardless of origin area type, migrants to metropolitan areas have higher predicted incomes than the same prior mobility and origin type migrants to nonmetropolitan areas. Thus, while predicted head of household income is higher for all migrant types than for nonmigrants, the decision to migrate to nonmetropolitan areas results in a smaller predicted income increase than is the case for metropolitan destinations.

Family Income. An equivalent analysis is also shown on Tables 9 and 10 for family incomes. Unlike the head of household income results, predicted family income is lower for four of the migrant types than for nonmigrants. The lowest predicted family incomes are for primary migrants going to nonmetropolitan areas and for repeat migrants coming from nonmetropolitan areas.

The results for family income also differ from the head of household results in that nonmetropolitan to metropolitan primary

migrants have higher predicted incomes than nonmetropolitan to metropolitan repeat migrants.

One of the hypotheses mentioned previously suggested that migrants to nonmetropolitan areas may accept lower individual incomes in order to migrate to the nonmetropolitan areas, with the lower compensation being made up by spousal incomes. There does appear to be some truth in the first part of that statement. Migrants to nonmetropolitan areas do not appear to be sacrificing income as compared to nonmovers, but they do appear to be sacrificing income relative to the incomes predicted for those migrating to metropolitan areas. There is, however, no indication that family income increases make up for the lower head of household incomes of nonmetropolitan destination migrants (relative to metropolitan destination migrants).

Summary of Hypotheses One Through Four

To summarize the results of testing the first four hypotheses:

1. The rural-urban turnaround continues.
2. Migration to nonmetropolitan areas does appear to be at least partially attributable to a continuation of the flight to the suburbs, but also includes a component of migration which cannot be explained as suburbanization. That component is migration to rural areas without commuting ties and characterized by lower incomes.
3. The growth in nonmetropolitan employment has not been primarily in service occupations. There has been disproportionate growth in manufacturing and other blue collar jobs in nonmetropolitan areas. There has also been even more nonmetropolitan growth in certain white collar occupations, particularly in sales and administrative jobs.

Much of this is probably due to suburbanization growth, with the new nonmetropolitan suburbs taking on more of the characteristics of urban areas such as retail stores, offices, and general urban services, with the lines between metropolitan and nonmetropolitan life becoming increasingly blurred. The growth of nonmetropolitan blue collar occupations can be partially attributed to growth in high commuting nonmetropolitan areas, but it is also suggestive of a decentralization of industry.

4. Finally, migrants to nonmetropolitan areas are not experiencing a decline in individual income relative to nonmigrants. There is less of an increase in individual incomes for migrants to nonmetropolitan areas than for similar migrants to metropolitan areas, but the difference does not appear to be made up by additional family income. This would suggest that the concept of people moving to nonmetropolitan areas and taking lower paying jobs may be correct with respect to incomes at alternative destinations, but spouses do not appear to be making up the difference in such incomes.

CHAPTER V

RESULTS OF THE DECISION MODELS

Introduction

Up to this point the examination has been limited to specific issues such as growth patterns and some suggestions as to the nature of decisions being made. To further examine these decisions and to examine the differences in migration decisions between metropolitan and nonmetropolitan dwellers, binary choice models of the logit type are estimated using Maximum Likelihood techniques.

Logit Models

Logit models are based upon a cumulative logistic distribution function and are used where individuals have a limited set of alternatives. For example, members of the population at risk to migration have two choices. They may migrate or stay. Migrants, who have previously moved, have two choices. They may return home or move to a new location. Binary choice models assume that individuals are faced with such a choice of two alternatives, and that the choice they make depends upon the characteristics of the individuals and his situation. Binary choice models yield probabilities that can be interpreted as estimates of conditional likelihoods that an individual will respond with a certain choice given the characteristics of the individual and the area.

For each model considered, the average probability of the 'yes' decision is calculated for migrants from nonmetropolitan and metropolitan areas by origin area type. The change in average

probability due to a change in each independent variable is also calculated.

Model One - Whether To Migrate

Model one considers the choice of whether or not to migrate. The dependent variable is set equal to one if an interstate move occurs and equal to zero if there is no interstate move.

Independent variables consist of the the personal and household characteristics and origin area characteristics which were discussed in Chapter III. Parameters are estimated by using maximum likelihood evaluations of logit models for those from nonmetropolitan areas, and for those from metropolitan areas.[1]

Tables 11 and 12 summarize the impacts of demographic and economic variables by origin area type (metropolitan or nonmetropolitan) for model one. Table 11 shows the coefficients and t-statistics estimated from the logit equations for those from metropolitan and nonmetropolitan origins. The last column of Table 11 shows the F-statistic for the test of the hypothesis that a particular coefficient is the same for individuals from nonmetropolitan origins as for those from metropolitan origins. The null hypothesis (that the coefficients are identical) is rejected by large values of the statistic indicating that the coefficients differ between the two groups and that the groups should therefore be estimated separately (Maddala, 1977, pp. 200-201).[2]

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[1] Results of the logit models estimated by prior mobility types are shown in Appendix 1.

[2] It should be noted that this Chow test is redundunt (or consistent with pairwise tests) in the sense that the rejection of the

Table 11

Results of Logit Equations for Model One--Decision of Whether to Move--by Metropolitan and Nonmetropolitan Origins

Variables	Nonmetro Origin		Metro Origin		F-Statistic for Individual Coefficients
	Coefficient	T-stat	Coefficient	T-Stat	
Personal and Household Characteristics					
Intercept	-23.0018	-3.38	26.7513	5.08	17.89
Age of Head of Household			-.0033	-1.69	.63
Education of Head of Household	-.1109	-6.93	.0935	10.49	59.27
Gender of Head of Household	-1.0946	-9.71			37.79
Wage and Salary Income of Head of Household	6.074E-06	1.87			7.78
Number of Persons in the Household	.0572	2.15	-.1208	-7.86	16.99
Occupation Category					
White Collar	1.7892	6.31	1.0299	4.24	.75
Service	.7303	2.38	.6067	2.36	.49
Blue Collar	1.8261	6.53	1.0743	4.429	.80
Prior Mobility	1.4668	18.59	1.2880	29.82	.0001
Employment in 1975	-1.0656	-10.14			38.24
Origin Area Characteristics					
Employment Rate Times Mean Area Income	-.0009	-1.59	.0018	5.26	9.54
Population Density	.0028	4.54	3.887E-05	4.98	11.29
Physician Rate	.0073	9.12	.0005	2.08	27.63
Transport Rate	-.1661	3.23	-.0154	-3.01	4.30
Crime Rate	.0002	5.02	.0001	6.58	2.67
North Central Region			.4362	6.65	4.72
Northeast Region	.5642	3.13	1.2116	15.61	6.67
South Region	-.4557	-3.15	.3104	5.36	12.79
Employment Rate	22.4431	3.12	-29.9234	-5.50	18.14
Mean Area Income	.0009	1.66	-.0018	-5.51	10.74

Table 11 continued

(1) All variables for which coefficients are shown are significant at the 10 percent level (except Employment rate times mean area income which is significant at the 15 percent level).
(2) Individual coefficient F-statistics are used to test the hypothesis that a particular coefficient is the same for individuals from nonmetropolitan origins versus those from metropolitan origins. The critical values of the F-statistic in this case are 3.00 for the five percent level of significance and 4.61 for the 1 percent level of significance.
(3) The Chow test, indicating the stability between the two population subgroups, results in an F-value of 34.57 with 20 and 15810 degrees of freedom. The critical F-statistic at the 1 percent level is 1.88.
(4) The Likelihood Ratio test statistic is 5.7 for the nonmetopolitan group and 4.06 for the metropolitan group. The critical Chi-square value at 10 percent with 20 degrees of freedom is 28.412, Thus the hypothesis that the sample could have come from a population with the hypothesized parameters is not rejected at the 10 percent level.

Table 12

Effects of Changes in the Means
on the Probability of Moving

Sources of Changes in Probability	Effect on the Average Probability	
	Nonmetropolitan Origin	Metropolitan Origin
Personal and Household Characteristics		
Increase of 1% in mean age		-.0003
Increase of 1% in mean education	-.004	+.067
Sex=0, i.e., all sample is male	+.045	
Sex=1, i.e., all sample is female	-.212	
Increase of 1% in mean of head of household wage and salary income	+.0002	-.00001
Increase of 1% in mean of household size	+.0004	-.00008
Occupation Category		
White collar	+.034	+.010
Service	-.214	-.094
Blue collar	+.043	+.021
No prior mobility	-.163	-.150
Prior mobility	+.188	+.161
Unemployed in 1975	+.204	
Employed in 1975	-.052	
Origin Characteristics		
Increase of 1% in mean population density	+.001	+.0002
Increase of 1% in mean physician rate	-.027	+.0003
Increase of 1% in mean transport rate	+.001	+.0002
Increase of 1% in mean crime rate	-.0004	-.0002
North Central Census region		+.010
Northeast Census region	+.152	+.195
South Census region	-.098	-.022
Increase of 1% in mean employment rate	+.026	-.003
Increase of 1% in mean area income	+.001	-.004
Probability at the mean of all variables	.490	.490
Actual percentage of individuals migrating	.490	.490

Note:
Changes in probability are shown only for those variables having coefficients which are significant at the 10 percent level.

The Chow test indicates that the coefficient estimates between the two population subgroups are unstable; thus the metropolitan origin group and the nonmetropolitan origin group each define seperate populations and should not be pooled for estimation. The computed F-value for the Chow test (Chow, 1960) is equal to 34.57 with 20 and 15,810 degrees of freedom. This value is significant at the 1 percent level (1.88 is the critical F-statistic).

Table 12 shows the effects of changes in the means of significant (at the 10 percent level) independent variables on the average probability of migration, by origin area type (metro or nonmetro). The average probability is the probability calculated at the mean of all independent variables. The ratio of the calculated average probability to the prior probability (the actual percentage of those at risk who did migrate) is 1.004 and .998 for nonmetropolitan origin and metropolitan origin migrants respectively indicating that the predicted average probability is a very close approximation to the actual average occurrence.

For those at risk to migration from nonmetropolitan origins, three of the variables are insignificant at the 10 percent level (age, the interaction term of mean origin area income and origin area employment rate, and the dummy variable for the North Central region).

Three of the variables are also not significant at the 10 percent level for the metropolitan origin group (gender, wage and salary income of the head of household, and employment status in 1975).

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equality of <u>any</u> pair of corresponding coefficients across origin groups constitutes rejection of pooling.

Personal and Household Characteristics. Where personal and household characteristics are significant for both origin types they generally have opposite signs, indicating a very different influence of such variables on the decision process for the two migrant populations.

Prior mobility, the most important personal or household characteristic in each group in terms of t-statistics, has a positive coefficient (Table 11). This indicates that individuals who had migrated at least once prior to 1975 were more likely to migrate between 1975 and 1980 than those with no prior mobility. This finding is consistent with findings by other authors such as Navratil and Doyle (1977).

For the metropolitan origin group, all significant personal and household characteristic coefficients are of the expected signs (Table 11). Age carries a negative coefficient (Table 11), indicating a decreased probability of migration for older individuals (Table 12) and is consistent with studies such as those of Gallaway and Werthiemer. The coefficient of education, for the metro origin group, is also significant (Table 11) and is positive as would be expected considering earlier research by other authors.[3]

Employment status in 1975 proved to be not significant for the metropolitan origin group, but is significant and of the appropriate (negative) sign for the nonmetropolitan population (Table 11). The nonmetropolitan origin results indicate that those who were employed in

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[3] For examples of the effects of age and education, see Gallaway (1969), Wertheimer (1970), Herzog and Schlottman (1981) and Navratil and Doyle (1977).

1975 have lower than average probabilities of migrating than those who were unemployed in 1975 (Table 12).

The coefficient for number of persons in the household carries the expected negative sign for the metropolitan group (Table 11). Herzog and Schlottman have indicated that family size increases both moving costs and psychic costs, thereby reducing the probability of migration for larger families. This holds true for household size in this model (Herzog and Schlottman ,1981, pp. 459-467)

For the nonmetropolitan population, the coefficient of age is not significant at the 10 percent level, but both education and household size are significant and carry signs opposite of those that were expected (Table 12). Individuals from nonmetropolitan areas appear to be less likely to migrate if their educational attainment is high or if they have few persons in their household. It is possible that higher educated individuals who have a personal preference for a nonmetropolitan residence perceive a better chance to find an adequate job without migrating than do similarly motivated individuals of lower educational attainment.

The gender of the head of the household and the wage and salary income of the head of household are significant only for the nonmetropolitan population (Table 11). The coefficient for gender indicates that females from nonmetropolitan areas are less likely to migrate than males from the same area type (Table 12). Such a result may be due to higher psychic costs for such female head of households because of closer family ties.

Wage and salary income of the head of household is positive (Table 11) for the nonmetropolitan population which may reflect greater benefits for high income households. It is, however, also posible that it reflects the ability to finance migration or that those who migrate simply tend to find jobs at higher wages. The results in Table 11 for occupational categories were consistent for the two origin groups. All coefficients are positive and significant at the 10 percent level. When each specific occupation dummy is set equal to one with the others set equal to zero and all other variables are at their mean, those in both blue collar and white collar occupations are more likely than the average probability (the probability calculated at the mean of all variables) to migrate. On the other hand, those in service occupations were less likely than average to migrate (Table 12). This probably reflects the low monetary benefits of moving, relative to costs, for this generally low wage group.

For both origin groups the probabilities of migration are somewhat higher for blue collar workers than for white collar workers (Table 12). This would at first seem counter to the results shown in Table 7 which indicate that white collar workers are the most mobile group. But, the logit results hold all other variables constant, whereas a simple tabulation does not account for differences in age, education and other factors. For example white collar workers have the greatest proportion of individuals with prior mobility so that when both occupation and prior mobility are considered white collar workers are more mobile. But, if all other factors are held constant so that only occupation is considered, blue collar workers are more mobile.

Origin Area Characteristics. The origin area characteristics include quality of life, economic, and geographic variables. The quality of life variables include population density, numbers of physicians per 100,000 population (physician rate), number of serious crimes per 100,000 population (crime rate), and the number of workers per 100,000 population who utilize public transportation to get to work (tranport rate). Chapter III contains a discussion on these variables.

The results indicate that regardless of origin type, people are more likely to migrate if their origin area has a high (relative to other areas of the same type) population density or high crime rate (Table 12, p. 99). The results for transport rates seem to indicate that availability of public transportation at the origin reduces the probability of outmigration (Table 12, p. 99). This indicates that public transportation is an amentity which helps to reduce outmigration.

The results for physician rates, however, are not as expected. It was expected that this variable would result in negative coefficients and that greater availability of health care at the origin would serve to reduce outmigration. The coefficients for physician rates are positive and significant at the 10 percent level (Table 11, pp. 97-98). One possible explanation for this is that the presence of ample health care at the origin is perceived by potential migrants as indicative of the same situation at all possible destinations. This could reduce some of the psychic costs of moving and perhaps reduce the information costs (in that it is not perceived necessary to investigate health care availability). Alternatively, this may suggest that health care may be highly correlated with living costs.

The economic characteristics of the origin area result in opposite signs for the coefficients in the two populations, although the employment rate times mean income variable is not significant for the nonmetropolitan population (Table 11, pp. 97-98).

With respect to the probabilities of moving (Table 12, p. 99), the employment rate times mean income at the origin variable should be considered together with its components. The implicit assumption which is made in including the compound employment rate and income variable and its components is that the relationship between the probability of migrating and the mean income at the origin also depends upon the employment rate of the origin county group. Similarly, it is assumed that the relationship between migrating and the employment rate at the origin is also dependent upon the mean income at the origin. These assumptions are also based upon the premise that potential outmigrants evaluate their expected income at the origin when making their migration decisions. The interaction variable is the proxy for the probability of achieving this expected income. To properly evaluate the joint effects, the component terms must be evaluated including the coefficient of the cross term, since the derivitive of the dependent variable with respect to either component includes the coefficient of the cross term.[4]

The results for these variables show that their effect on the probability of migration is opposite for the two populations (Table 12, p. 99). In the case of the metropolitan population, an increase in

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[4] Since the t-statistic for the employment rate times mean income at the origin was so close to being significant at the 10 percent level (1.59) it is treated as though significant in the presentation.

either the mean income or employment rate at the origin results in a decrease in the probability of migration (Table 12, p. 99). This is the anticipated result. Individuals are less likely to leave an area where there are ample economic opportunities. The results for these variables in the nonmetropolitan origin group were, however, opposite of the anticipated signs suggesting that economic opportunities at the origin may not be important in the migration decisions of these individuals, or that they percieve them much differently than do metropolitan origin migrants.

The most important variables in this model for nonmetropolitan origin migrants, in terms of the magnitude of impact on the average probability of migration (Table 12, p. 99), are gender, occupation, prior mobility, and origin region. If the head of household is female, the probability of migration decreases from 49 percent (the average probability) to 28 percent. If the head of household is a service worker, the probability is reduced to 28 percent. If the potential migrant has prior mobility then the probability of migration increases to 68 percent.

For the metropolitan origin group, the variables with greatest impact are prior mobility and region of origin. If the potential migrant is at risk to primary migration the probability of migration decreases from 49 percent (the average) to 34 percent, whereas the probability of migration for those at risk to repeat migration is 65

percent. If the potential migrant is from the Northeast the probability of migration increases to 68 percent.[5]

Model Two--Whether to Move to Metropolitan Destinations for Those Who Do Move

Model two considers the choice of whether to migrate to a metropolitan area, given that the individual does migrate. The dependent variable is set equal to one if the migrant moves to a metropolitan destination and equal to zero if the destination is a nonmetropolitan area. Independent variables consist of the the personal and household characteristics and origin area characteristics which were discussed in Chapter III. Parameters are estimated by maximum likelihood evaluations of logit models separately for those who migrate from nonmetropolitan and metropolitan areas.[6]

Tables 13 and 14 summarize the impacts of demographic and economic variables by origin area type (metropolitan or nonmetropolitan) for model two. Table 13 shows the coefficients and t-statistics estimated from the logit equations for each of the origin types. The last column of Table 13 shows the F-statistic for the test of the hypothesis that a particular coefficient is the same for individuals from nonmetropolitan origins versus those from metropolitan origins. The null hypothesis (that the coefficients are identical) is rejected by large values of the statistic indicating that the coefficients differ between groups and

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[5] These impacts assume that all other variable remain at their average value.

[6] Results of the logit models estimated by prior mobility are shown in Appendix 1.

Table 13

Results of Logit Equations for Model Two--Decision of Whether to Move to a Metropolitan Area for Those Who Do Migrate, by Metro and Nonmetro Origins

Variables	Nonmetro Origin		Metro Origin		F-Statistic for Individual Coefficients
	Coefficient	T-stat	Coefficient	T-Stat	
Personal and Household Characteristics					
Intercept	-32.7327	-2.64	-58.9162	-7.71	1.94
Age of Head of Household	.0196	3.45	.0290	8.42	.20
Education of Head of Household	.1765	6.54			15.58
Gender of Head of Household	.47539	2.18			1.64
Wage and Salary Income of Head of Household			2.784E-05	8.18	5.33
Number of Persons in the Household			-.4471	-17.58	45.76
Prior Mobility	.4365	3.49	.4254	5.98	.04
Homeownership	.3948	1.78	1.3592	9.98	4.60
Employment in 1975	-.9484	-6.25	.5942	7.00	43.36
Occupation					
White Collar	2.0874	3.64	1.0543	2.42	.59
Service	1.0655	1.77	1.0388	2.29	.003
Origin Area Characteristics					
Blue Collar	1.5670	2.76	1.3865	3.21	.001
Employment Rate Times Mean Income	-.0040	-3.86	-.0047	-9.29	.24
Population Density					1.18
Physician Rate	.0031	2.49	-.0011	-3.19	7.13
Transport Rate					.22
Crime Rate	-.0002	-5.17			14.86
North Central Region	-2.1113	-10.20	.1715	1.64	57.88
Northeast Region	-.5773	-2.31	.6270	5.14	11.70
South Region	-1.5493	-7.21			23.24
Employment Rate	36.3242	2.76	59.3371	7.57	1.35
Mean Area Income	.0035	3.54	.0046	9.23	.64

Table 13 continued

(1) All variables for which coefficients are shown are significant at the 10 percent level.
(2) Individual coefficient F-statistics are used to test the hypothesis that a particular coefficient is the same for individuals from nonmetropolitan origins versus those from metropolitan origins. The critical values of the F-statistic in this case are 3.00 for the five percent level of significance and 4.61 for the 1 percent level of significance.
(3) The Chow test, indicating the stability between the two population subgroups, results in an F-value of 38.98 with 21 and 7715 degrees of freedom. The critical F-statistic at the 1 percent level is 1.88.
(4) The Likelihood Ratio test statistics are 7.98 for the nonmetro group and 8.36 for the metro group. The critical Chi-square value at the 10 percent level for 21 degrees of freedom is 29.615 so the hypothesis that the sample could have come from a population with the hypothesized parameters is not rejected.

Table 14

Effects of Changes in the Means on the Probability of Moving to a Metropolitan Destination for Those Who Do Move

Sources of Changes in Probability	Effect on the Average Probability			
	Nonmetropolitan Origin		Metropolitan Origin	
Personal and Household Characteristics				
Increase of 1% in mean age	+.002		+.002	
Increase of 1% in mean education	+.006			
Sex=0, i.e., all sample is male	-.013			
Sex=1, i.e., all sample is female	+.093			
Increase of 1% in mean of head of household wage and salary income			+.001	
Increase of 1% in mean of household size			-.002	
Occupation Category				
White collar	+.074		-.020	
Service	-.171		-.023	
Blue collar	-.046		+.046	
No prior mobility	-.065		-.057	
Prior mobility	+.039		+.031	
Homeownership	-.067		-.027	
No homeownership	+.088		+.025	
Unemployed in 1975	+.150		-.110	
Employed in 1975	-.055		+.020	
Origin Characteristics				
Increase of 1% in mean physician rate	+.001		-.0005	
Increase of 1% in mean crime rate	-.002			
North Central Census region	-.225		-.004	
Northeast Census region	+.131		+.080	
South Census region	-.086			
Increase of 1% in mean employment rate	-.035		-.037	
Increase of 1% in mean area income	-.010		+.001	
Probability at the mean of all variables	.620		.715	
Actual percentage of individuals migrating	.589		.682	

Notes:

Changes in probability are only shown for those variables having coefficients which are significant at the 10 percent level in Table 13.

that the two groups should be estimated separately (Maddala, 1977, pp. 200-201).

The Chow test (Chow, 1960) indicates that the coefficient estimates between the two population subgroups are unstable, and thus provides further evidence that the two groups should not be pooled for estimation.[7] The computed F-value for the Chow test is equal to 38.98 with 21 and 7,715 degrees of freedom. This value is significant at the 1 percent level (1.88 is the critical F-statistic).

Table 14 shows the effects of changes in the means of significant (at the 10 percent level) variables on the average probability of migrating to a metropolitan area for those who do migrate.

For those migrants from nonmetropolitan areas of origin, four of the variables are not significant at the 10 percent level (head of household wage and salary income, number of persons in the household, population density, and transportation rates).

For those migrants from metropolitan areas, six of the variables were not significant at the 10 percent level. These were education, gender, population density, transportation rates, crime rates, and the regional dummy variable for the South.

Personal and Household Characteristics. Of the six personal and household characteristic variables which are significant in Table 13 for both origin types, four of these differ in their effect on the

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[7] Again, the redunduncy of the Chow test and the pairwise tests should be noted.

probability of migrating to metropolitan areas between origin types (Table 14).

For the occupational variables, the probability of migrating to metropolitan areas decreases from the average for service workers from both origins (Table 14). These results give some support to the hypotheses that include service industry growth as a factor in the turnaround.

The effects on average probability differ between the two origin groups for white collar and blue collar workers (Table 14). For nonmetropolitan origin migrants, white collar workers are more likely than average to migrate to metropolitan areas. The opposite is true for metropolitan origin migrants.

The effects of prior mobility are the same for the two origin types. Migrants that have moved at least once prior to 1975 are more likely than average to move to a metropolitan area, regardless of their origin area type.

Employment status in 1975 has opposite effects between the two groups. Those migrants who were employed in 1975 are more likely than average to migrate to the same area type as their origin area (Table 14), while the reverse is true for the unemployed.

The effects of homeownership on the probability of migration to a metropolitan area are the same for both origin groups. Migrants who own homes in 1980 are more likely that average to have migrated to a nonmetropolitan area. This is consistent with Kim's findings (Kim, 1983) but, does not give any clear evidence with respect to homeownership prior to 1980.

The effects of age on the probability of migrating to a metropolitan area are also the same for each of the two origin types. Older migrants are more likely than average to migrate to metropolitan destinations (Table 14). This also is consistent with the results found by Kim.

Education and gender of head of household were significant only for nonmetropolitan origin migrants (Table 13). Nonmetropolitan origin migrants with higher educational levels are more likely than average to migrate to metropolitan areas (Table 14). This is probably due to the greater general availability of jobs requiring higher education in metropolitan areas.

Female head of households from nonmetropolitan origin areas are also more likely than average to migrate to metropolitan areas (Table 14). This may reflect lesser degrees of gender discrimination in metropolitan areas and greater availability of traditionally female jobs at relatively higher wages than available in nonmetropolitan areas.

Wage and salary income of head of households and household size were significant only for metropolitan origin migrants. For these individuals, higher income levels result in a higher probability of migrating to metropolitan areas. However, since this is a post-move wage level, it may simply be reflective of higher wage levels in metropolitan areas.

Larger households from metropolitan areas are less likely than average to migrate to metropolitan areas. It is possible that nonmetropolitan amentities are more attractive to families with children. Such amentities as single family housing, neighborhood

schools, and less forced bussing are probably more important to such families.

Origin Area Quality of Life and Economic Characteristics. Of the four quality of life characteristics in the model only two are significant for nonmetropolitan origin migrants and only one is significant for metropolitan origin migrants (Table 13).

For both origin types, physician rates are significant but the signs of the coefficients are opposite (Table 13). Nonmetropolitan origin migrants with high physician rates are more likely than average to migrate to metropolitan areas while the reverse is true for metropolitan origin migrants.

Crime rates are significant only for nonmetropolitan origin migrants with the probability of migrating to a metropolitan area decreasing with higher origin crime rates. Experience with high crime rates in nonmetropolitan areas and the perception that crime rates are even higher in metropolitan areas may cause a more ruralward migration in order to escape such high rates.

All regional dummy variables are significant at the 10 percent level with the exception of the dummy for the South region in the metropolitan origin population (Table 13). The results indicate that regardless of origin type, migrants from the North Central region are less likely than average to migrate to metropolitan areas, whereas those from the Northeast are more likely than average to migrate to metropolitan areas (Table 14). Nonmetropolitan origin migrants from the South are also less likely than average to migrate to metropolitan areas.

The origin economic variables are significant for both origin types (Table 13). Migrants from areas with higher employment rates are less likely than average to migrate to metropolitan areas regardless of whether their origin is metropolitan or nonmetropolitan (Table 14).

Nonmetropolitan origin migrants from areas with high mean incomes are less likely than average to migrate to metropolitan areas, while the reverse is true for metropolitan origin migrants. That is, experience with high origin area mean incomes tends to increase the probability that the destination area type will be the same as the origin area type.[8]

Model Three--Whether to Commute to Work in a Metro Area for Those Who Migrate to Nonmetro Areas

Model three considers the choice of whether to commute to work in a metropolitan area, given that the individual has migrated to a nonmetropolitan area of residence. The dependent variable is set equal to one if the migrant commutes to work in a metropolitan area workplace and zero if the individual does not so commute. Independent variables consist of personal, economic, and quality of life factors that were discussed in Chapter III.

Tables 15 and 16 summarize the logit results and the impacts of the demographic and economic varables by origin area type for model three. The coefficients and t-statistics estimated from the logit

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[8] It should be noted that these effects incorporate the coefficient of the the cross term with each of its components. This is why the direction of the effect is not necessarily the same as the sign of the coefficient for that variable.

Table 15

Results of Logit Equations for Model Three--Decision of Whether to Commute to a Metropolitan Workplace for Those Who Migrate to Nonmetropolitan Areas

Variables	Nonmetro Origin		Metro Origin		F-Statistic for Individual Coefficients
	Coefficient	T-stat	Coefficient	T-Stat	
Personal and Household Characteristics					
Intercept	-10.4147	-.44	60.7108	4.33	5.74
Age of Head of Household	-.0871	-6.46	.0124	2.20	28.60
Education of Head of Household	-.4281	-7.83	.0761	2.63	44.15
Gender of Head of Household	1.2544	3.11	.6752	3.30	.16
Wage and Salary Income of Head of Household	9.472E-05	5.98			5.51
Number of Persons in the Household			-.1794	-3.55	2.69
Occupation Categories					
White Collar			-2.4664	-6.34	15.22
Service			-2.6081	-5.81	3.91
Blue Collar			-2.1647	-5.86	7.15
Prior Mobility	.7120	2.97	-.8396	-6.64	11.05
Homeownership	.3948	1.78	1.3592	9.98	4.60
Family Income Other than Head of Household	3.097E-05	1.86	3.658E-05	5.88	.47
Employed in 1975	.7579	2.67	.5488	3.47	.71
Destination Characteristics					
Employment Rate Times Mean Income at			.0043	3.67	107.89
Population Density			.0154	9.35	10.69
Crime Rate	.0006	6.86	.0006	9.14	.43
North Central Region			2.0927	9.49	27.99
Northeast Region					.32
South Region	1.8942	4.98	1.7460	6.27	.29
Employment Rate			-67.2242	-4.57	6.94
Mean Area Income			-.0043	-3.78	5.60

Table 15 continued

(1) All variables for which coefficients are shown are significant at the 10 percent level.
(2) Individual coefficient F-statistics are used to test the hypothesis that a particular coefficient is the same for individuals from nonmetropolitan origins versus those from metropolitan origins. The critical values of the F-statistic in this case are 3.00 for the 5 percent level of significance and 4.61 for the 1 percent level of significance.
(3) The Chow test, indicating the stability between the two population subgroups, results in an F-value of 22.38 with 20 and 4016 degrees of freedom. The critical F-statistic at the 1 percent level is 1.88.
(4) The Likelihood Ratio test statistic is 18.89 for the nonmetro group and 28.39 for the metro group. The critical Chi-square value at the 10 percent level with 20 degrees of freedom is 28.412. Thus the hypothesis that the sample could have come from a population with the hypothesized parameters is not rejected at the 10 percent level.

Table 16

Effects of Changes in the Means on the Probability of Commuting to a Metropolitan Work Place

Sources of Changes in Probability	Effect on the Average Probability	
	Nonmetropolitan Origin	Metropolitan Origin
Personal and Household Characteristics		
Increase of 1% in mean age	-.003	+.001
Increase of 1% in mean education	-.005	+.002
Sex=0, i.e., all sample is male	-.010	-.017
Sex=1, i.e., all sample is female	+.148	+.103
Increase of 1% in mean of head of household wage and salary income	+.001	
Increase of 1% in mean of household size		-.001
Occupation Categories		
White collar		-.024
Service		-.043
Blue collar		+.023
No prior mobility	-.028	+.096
Prior mobility	+.030	-.044
Homeownership	+.013	+.122
No homeownership	-.018	-.087
Unemployed in 1975	-.040	-.059
Employed in 1975	+.013	+.018
Increase of 1% in "other" family income	+.00005	+.0001
Destination Characteristics		
Increase of 1% in mean employment rate		-.017
Increase of 1% in population density		+.001
Increase of 1% in mean crime rate	+.002	+.003
North Central Census region		+.218
Northeast Census region		
South Census region	+.344	+.138
Increase of 1% in employment rate		
Increase of 1% in mean area income		-.003
Probability at the mean of all variables	.093	.193
Actual percentage of individuals migrating	.188	.285

Notes:

Changes in probability are only shown for those variables having coefficients which are significant at the 10 percent level in Table 15).

equations for each of the origin types are shown in Table 15. In addition, Table 15 shows the F-statistics for the test of the hypothesis that a particular coefficent is the same for individuals from nonmetropolitan areas and metropolitan areas. The null hypothesis (that the coefficients are identical) is rejected by large values of the statistic. The critical values of F in this case are 3.00 for the 5 percent level of significance and 4.61 for the 1 percent level of significance.

The Chow test (Chow, 1960) indicates that the coefficient estimates between the two population subgroups are unstable. The computed F value is equal to 22.37 with 20 and 4016 degrees of freedom. This value is significant at the 1 percent level (the critical value is 1.88).

Table 16 shows the effects of changes in the means of significant (at the 10 percent level) independent variables on the average probability of commuting to a metropolitan workplace for those who migrate to nonmetropolitan areas.

The difference between origin types in the results are striking in this model. For nonmetropolitan origin migrants, ten of the 20 variables are not significant at the 10 percent level (Table 15). These include all of the economic variables, two of the three regional dummy variables, and all of the occupational variables.

On the other hand, only two of the variables are not significant at the 10 percent level for the metropolitan origin migrants. These are wage and salary income of the head of household and the regional dummy variable for the Northeast.

Nine of the ten significant variables for nonmetropolitan origin migrants are also significant for metropolitan origin migrants. Of these, six have identical signs for both origin groups.

Personal and Household Characteristics. Personal and household characteristic variables are the most significant group of variables for nonmetropolitan origin migrants (Table 15). Only gender of the head of household, homeownership, family income other than wage and salary income of head of household, and employment status in 1975 have coefficients with the same sign for both origin groups.

For both groups, females are more likely to commute to a metropolitan workplace than are males (Table 16). This is probably because wage discrimination by gender is less active in metropolitan areas and job availability for many traditionally female jobs (such as teachers, nurses, and secretaries) are more widely available in metropolitan areas.

The effects of homeownership are also of the same sign for the two groups (Table 15). The results indicate that migrants who purchase homes in the nonmetropolitan destination area are more likely than average to commute to metropolitan area jobs (Table 16). This may be the result of such migrants seeking the higher paying jobs of metropolitan areas in order to defray the costs of homeownership.

Family income other than wage and salary income includes nonwage income as well as income of spouses, but it was hoped that this would serve as a partial proxy for spousal income. Regardless of the nature of the "other" income, it was anticipated that the sign of the coefficient would be negative indicating that such income would allow

the head of household to forgo some wage and salary income in order to work within the nonmetropolitan residence and presumably maintain better access to rural amentities. This proved not to be the case for either of the origin groups. In both cases, the coefficients are both positive and significant (Table 15).

Employment status in 1975 is the last of the personal and household characteristics with the same sign for both origin types. Those who were employed in 1975 are more likely than average to commute to a metropolitan area workplace in 1980 (Table 16). Such individuals may simply be more willing to take any work, regardless of the place of work and therefore find themselves employed in the area of greatest employment opportunity.

Age and education coefficients are significant for both groups but the signs are opposite between groups (Table 15). Both age and education coefficients are negative for nonmetropolitan origin migrants indicating that older and more highly educated individuals from nonmetropolitan origins are less likely to commute to metropolitan workplaces while the same sort of individuals from metropolitan origins are more likely to commute to metropolitan area workplaces (Table 16).

The effect of prior mobility is also opposite between origin groups (Table 16). Repeat migrants from nonmetropolitan origins are more likely than average (and repeat migrants from metropolitan origins are less likely than average) to commute to metropolitan area workplaces (Table 16).

Wage and salary income of the head of household is the last of the personal and household characteristics which is significant for

nonmetropolitan origin migrants (Table 15). It is not, however, significant for metropolitan origin migrants. The positive coefficient may be reflective of higher wages paid in metropolitan areas (Table 15).

The remaining personal and household characteristics (household size and occupation category) are only significant for metropolitan origin migrants.

The results for household size suggest that there may be some psychic costs involved in commuting, such as time spent away from family. Migrants with larger household sizes are less likely than average to commute to a metropolitan area workplace (Table 16).

The coefficients of all of the occupational categories for metropolitan origin migrants are significant (Table 15). The results show blue collar workers as more likely than average to commute to metro area workplaces while both white collar and service workers are less likely than average to so commute (Table 16). This provides support to the hypothesis that migrants move from metropolitan to nonmetropolitan areas in order to pursue service occupations there. The fact that both service and white collar workers are less likely than average to commute is more convincing than is the result for service occupations alone, since many of the white collar jobs are in service industries. The fact that blue collar workers are more likely than average to commute suggests that manufacturing deconcentration may not be as important to nonmetropolitan growth as has been suggested in the literature. This may, however, also be partially due to the preponderance of blue collar jobs that are still available in metropolitan areas. It does suggest, for many blue collar workers, that the move to nonmetropolitan areas is

nonmetropolitan suburbanization, reminiscent of the "flight to the suburbs" of earlier years.

Economic and Destination Area Characteristics. None of the economic characteristics of the destination are significant for the nonmetropolitan origin migrants, and only two of the area characteristics are significant for this group (Table 15, pp.116 -117). The regional dummy variable for the South is significant and positive, showing an increased probability of commuting for those nonmetropolitan origin migrants who moved to nonmetropolitan areas of the South (Table 16, p. 118).

The coefficient for the crime rate at the destination is positive and significant for both origin groups, indicating a greater willingness to commute if the crime rate is relatively high in the desination area. A strong correlation between high crime rates and proximity to metropolitan areas might also suggest that this serves as a proxy for proximity and indicates lower costs of commuting.

Except for the regional dummy variable for the Northeast, all of the remaining characteristics are significant for metropolitan origin migrants (Table 15, pp. 116-117). As expected, the coefficients for the economic variables indicate that if the migrant's destination residence area has a high employment rate or high mean income level, the migrant is less likely than average to commute to a metropolitan area workplace. Thus, economic motivation is a strong factor in the commuting decision of metropolitan origin migrants.

High population densities in the destination area contribute to commuting for metropolitan origin migrants. It is possible (as with

crime rates) that high population densities are indicative of proximity to the metropolitan area and thus also represent decreased transportation costs of commuting. Such densities at one's residence may also suggest an acceptance of urban congestion and thus a willingness to tolerate such "costs" through job commuting.

Conclusions for the Decision Models

Conclusion for Model One - Decision to Migrate.

Personal characteristics, quality of life considerations, and home economic conditions are all important to the outmigration decision, but the particular variables that are important differ between populations. Household size, physician rates, origin area employment rates, and origin area mean income have opposite effects on the two populations.

For both populations, one of the most important variables influencing the initial move or no move decision is prior mobility, which increases the probability of migration. Additionally, both blue collar workers and white collar workers are more likely than average to migrate, whereas service workers are less likely to migrate. This holds true regardless of area type of origin.

Conclusion for Model Two - Migration to a Metro Area.

Origin economic variables are important to both origin types in the decision of whether or not to migrate to a metropolitan area. There are, however, differences in the impact of some the variables.

Quality of life variables are not nearly as important to this decision as they are to the initial decision of whether or not to move. Personal characteristics are important for each of the origin groups,

but the particular variables which are important differ between the two groups. No individual variable seems to dominate the decision process, and the decision process appears to be very different between origin types.

The model demonstrates that migration to nonmetropolitan areas is selective of younger migrants which is counter to what has been viewed as the traditional view of migrants to nonmetropolitan destinations. Age, occupation, prior mobility, and home economic conditions prove to be characteristics which are important to the decision of both origin types.

Conclusion for Model Three - Commuting to a Metro Workplace. The results generally indicate a striking difference in the commuting decision between metro and nonmetro origin migrants. Metropolitan origin migrants are influenced by personal, economic, quality of life, and destination characteristics, but nonmetropolitan origin migrants are primarily influenced by personal characteristics.

The findings generally support the concept that migrants may be moving to nonmetropolitan destinations because of growth in service industries in such areas. Blue collar workers, however, seem to be moving in a manner indicating nonmetropolitan suburbanization, and little evidence was found to support the industrial deconcentration hypothesis.

Summary

The results from the three logit models tend to confirm the general consensus in the literature which maintains that migration

decisions are functions of both economic and noneconomic characteristics. The exception to this general finding is in the decision by nonmetropolitan migrants to nonmetropolitan areas to commute to metropolitan area workplaces. For this group and this decision, personal characteristics clearly dominate the decision process.

The most surprising general result is the extent to which decision factors differ in their impact between nonmetropolitan and metropolitan origin migrants. The results indicate that these two groups are distinctly different in their responses to many of the variables.

With the increasing mobility of the population and the possibility of a slowdown or reversal in the turnaround in the future, some interesting questions arise. Does living in a nonmetropolitan area change the personal preferences or values of the individual and his response to factors in the decision process? Will inmigration to nonmetropolitan areas by metropolitan origin migrants change the impact of factors on the decision making process of the new nonmetropolitan origin group? Will the increased inmigration to nonmetropolitan areas in the 1970s be halted because nonmetropolitan areas are unable to cope with the increased demand for public services? Was the turnaround primarily caused by the economic recessions of the 1970s and will it cease with extended economic recovery? These questions have not been answered here, but a foundation for future research into these questions has been introduced.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND POLICY IMPLICATIONS

Introduction

Three main points are explored in this final chapter. First, an explanation of what the study does and does not accomplish is set forth. Next, a summary of primary conclusions from the study is presented. Commentary on the primary conclusions includes both explanations and suggestions for areas of future research. Finally, policy implications of the conclusions are explored.

What the Study Does. This study begins by setting forth specific explanations of the rural-urban turnaround that have appeared in economic literature. The most promising of those explanations are then transformed into hypotheses to be tested. In addition, one very general hypothesis was set forth in order to examine differences in the migration decision between migrants from metropolitan origins and those from nonmetropolitan origins.

The specific explanations addressed by the hypotheses include:

1. whether the turnaround was a short term phenomenon,
2. whether suburbanization figures prominently in the turnaround,
3. whether deconcentration of manufacturing or growth in service occupations are prime factors in the turnaround, and
4. whether participants in the turnaround are giving up individual income in order to participate in the turnaround.

The final hypothesis examines how specific factors in the migration decision differ between migrants from metropolitan origins and those from nonmetropolitan origins.

What the Study Does Not Do. The study does not formulate new hypotheses to explain the turnaround. Rather, it concentrates on testing existing explanations. The goal here is to establish the validity of explanations which have been conjectured in the literature.

The study does not attempt to fully explore all of the possible factors in the migration decision. It instead focusses upon a selected group of factors and the differences in importance of these factors between migrant groups (nonmetropolitan origin and metropolitan origin).

The study does not attempt to forecast migration or to develop a model which will forecast migration. The literature has pointed out that migration affects the economy of the destination and origin areas just as the economies of those areas affect migration. A satisfactory forecasting model would necessarily involve a simultaneous equation approach not used here.[1]

In this study, insignificant variables for one group become significant for another group. Therefore the same model is used for each group with the emphasis on discovering differences in the importance of these variables for different groups.

Finally, this study does not indicate the future of the rural-urban turnaround. The results of the study allow one to make

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[1] For examples, see Muth (1971), Greenwood (1975), Moriarity (1976) and Mead (1982).

certain reasonable inferences about future possibilities but not empirical forecasts.

Primary Conclusions

The conclusions reached in this study can be summarized as six general points for further elaboration.

1. The rural-urban turnaround was not a temporary phenomenon. It has continued for the entire decade of the 1970s. There is no apparent reason to suggest an end to the phenomenon, although recent census data (1982-1983) indicates that another change (either a slow down or turnaround) may be starting.
2. Growth in the service industry has been substantial in nonmetropolitan areas but it has also been substantial in metropolitan areas. There is, however, some evidence that service workers are more likely than average to migrate to nonmetropolitan areas when all other characteristics are held constant.
3. There does appear to be a considerable spread of industry to nonmetropolitan areas which may be the result of industrial deconcentration to some degree. But, blue collar workers are, ceteris paribus, more inclined to migrate to metropolitan areas than are other types of workers. This does not suggest that industrial deconcentration is not a factor in the turnaround, but only that the preponderance of blue collar jobs remain in metropolitan areas.

4. A factor of some importance in the turaround is nonmetropolitan suburbanization.
5. Migrants to nonmetropolitan areas are not sacrificing income (relative to the incomes of nonmovers) in order to make a lifestyle change. There is, however, a sacrifice in income relative to the incomes of those moving to metropolitan areas.
6. There are distinct differences in the importance of factors affecting the migration decisions of different types of migrants. The importance of these factors differ markedly between metropolitan and nonmetropolitan origins.

The Turnaround Continues. That the turnaround has continued through the 1970s is not a particularly surprising conclusion. It should, however, be noted that while the turnaround is important, it has not transformed the United States into a nonmetropolitan society and is not likely to do so. While growth rates have changed dramatically, migration to metropolitan areas still substantially exceeds migration to nonmetropolitan areas. The actual proportion of migrants who do move and choose a metropolitan destination is more than 58 percent for nonmetropolitan origin migrants and over 78 percent for metropolitan origin migrants. Metropolitan areas still hold the bulk of the population and will do so in the forseeable future. Furthermore, recent data from the census indicates that the situation may once again be changing.

The importance of the rural-urban turnaround is seen in the shift of trends and relative growth rates. Nonmetropolitan areas are increasingly becoming the destination for migrants. The expansion of

nonmetropolitan population brings new problems to both nonmetropolitan and metropolitan areas. More people in a nonmetropolitan area mean an increasing demand for public services. The turnaround may also mean a new sort of megalopolis. With much of the movement into nonmetropolitan areas appearing to be a sort of nonmetropolitan suburbanization, the metropolis boundaries are becoming less distinct and it may be important to consider different areas than metropolitan or nonmetropolitan places when considering policy implications.

> In part, the apparent population losses in metropolis reflect the spread of, rather than a turning away from metropolis; that is, they reflect the sprawl of population beyond the official boundaries of SMSAs with some lag to be expected before the boundaries are adjusted outward (Levin, 1982, p. 8).
>
> Indeed as metropolitan activities spread to the new "spaceless" metropolis of the countryside, they leave behind them in the "old" metropolis, a residue of the economically disadvantaged who cannont compete effectively (Levin, 1982, p. 22).

Service Industry Growth. It has been suggested that increasing employment opportunities in the service sector in nonmetropolitan areas are pulling labor from urban areas to nonmetropolitan areas. Menschik has examined service industries in nonmetropolitan areas and has concluded that the reasons for this increase in service sector employment opportunities in nonmetropolitan areas is that services are moving down the central place hierarchy (McCarthy and Morrison, 1977) (Menschik, 1981).

The concept of urban (or central place) hierarchies assumes that there are various "orders" or classes of central places. Each order of central places carries on all of the activities of lower order places plus some additional activities. The idea that services are becoming a

lower order activity merely suggests that smaller places are now able to provide services that were previously only avaliable in larger cities. Improvements in communications and information technology allow smaller firms to offer services previously only offered by large firms or firms located in large cities. For example, computers allow stockbrokers in areas other than major cities to place orders and participate in stock exchange transactions thus providing, to a local community, what was only available in larger cities a few years ago.

The demand for services has also grown dramatically. Middle income people in small towns who would never have considered needing a lawyer or accountant thirty years ago are now faced with a society which seems to thrive on litigation and complex tax laws. Additionally, as more activities move into less populated areas, the process becomes reinforcing. The demand for services increases because of the increase in local population. But, the demand for services has also grown dramatically in urban areas. The question is whether there has been disproportionate growth of services in nonmetropolitan areas.

One note of caution should be considered at this point. The Bureau of the Census takes a different interpretation of services when identifying occupations than it does when identifying industries. For example, health care, physician offices and lawyer offices are all considered to be part of the services industry. Occupations such as nurses aide, health aide and hospital cook are considered to be service occupations. But physicians, nurses, lawyers and accountants are not considered to be service occupations. Rather, they are included as professional occupations. Thus when we consider the growth of the

service industry we should perhaps include managerial and professional occupations. As noted in chapter IV, service occupations grew by 30.6 percent from 1970 to 1980 in rural areas but in urban areas the growth was nearly as great. Even including all managerial and professional occupations, the pattern remains very similar. Growth for the two combined groups from 1970 to 1980 was 27.3 percent for rural areas as compared to 26.3 percent for urban areas. Whether considering service workers alone or also including such white collar workers, one finds that there is dramatic growth but that it is not dissproportionate within either rural or urban areas.

Service occupations did prove to be important in the decision of individuals to move to metropolitan areas. For both primary and return repeat migrants, the average probability of moving to a metropolitan area was reduced for those in service occupations. Thus, when factors such as income, age and education are held constant, service workers are more likely to migrate to nonmetropolitan areas than are "other" migrants.

White Collar Occupations. The occupational group with the greatest differences in growth rates between metropolitan and nonmetropolitan areas is the technical,sales and administrative group (a group of white collar occupations).

White collar workers from nonmetropolitan origins have higher than average probabilities of migrating to metropolitan areas. On the other hand, the majority of migrants come from metropolitan areas. Among these (metropolitan origin) migrants, white collar workers are more likely than average to migrate to nonmetropolitan areas.

It is true that some of the white collar jobs are in service industries, but if the growth in service industries is of prime importance in the turnaround, one would expect relatively high growth of service occupation jobs in such areas as well. This is not the case (see Table 7, pp. 81-82).

The most dramatic growth in nonmetropolitan areas (relative to metropolitan areas), as shown on Table 7, is for technical, sales and administrative occupations which are white collar jobs. When this fact is coupled with the results of decision model two, which shows white collar workers from metro areas as having higher than average probabilities of migration to nonmetropolitan areas--the evidence suggests that the deconcentration or growth of such white collar jobs in nonmetropolitan areas may be of more importance than the growth of service industries (unless one chooses to define service industries very broadly).

White collar workers in sales, administrative and technical occupations include employees of industrial home offices, insurance, finance, real estate and research facilities. Other white collar workers include professional workers from the service industries, but the growth of this group in nonmetropolitan areas has not been as dramatic as the sales, administrative and technical group.

Further research should concentrate on the specific types of companies responsible for the growth of adminstrative, technical, and sales occupations in nonmetropolitan areas, and the reasons for such growth.

Industrial Deconcentration. There is evidence that some sort of industrial deconcentration is occuring. It is not clear whether this is the result of existing firms breaking up large urban operations and moving to smaller nonmetropolitan operations, or whether this is the result of new firms locating in nonmetropolitan areas. Indeed this is extremely fertile ground for future research. Garnick and Renshaw (1977), Hansen (1977) and McCarthy and Morrison (1977) all have cited industrial deconcentration as an explanation for the turnaround.

The results of this study do not refute this view. Combined growth in employment between 1970 and 1980 for precision production, craft or repair, operators, fabricators and nonfarm laborers was 16.2 percent in rural areas as compared to 8.5 percent in urban areas. Indeed, such occupations constitute 47.7 percent of all rural employment in 1980. As mentioned previously, blue collar workers are more likely than other occupational groups, under ceteris paribus conditions, to migrate to metropolitan areas. However, manufacturing occupations still comprise the single largest percentage of workers who have migrated to nonmetropolitan areas and constitute a significantly larger percent of total migrants to the area than for those migrating to metropolitan areas. The usual explanation for industrial deconcentration also receives support from these results. That is, it is often contended that while industrial deconcentration is made possible by improved technology, communications and transportation, deconcentration really takes place because of lower wages paid in nonmetropolitan areas. Indeed, migrants to nonmetropolitan areas have average incomes that are lower than those of migrants to metropolitan areas.

There is one point that reduces the power of the explanation. That is the phenomenon of nonmetropolitan suburbanization. For migrants from metropolitan origins the average probability of commuting to a metropolitan area work place increases for only one occupational group (blue collar occuaptions). Thus, for blue collar workers, industrial deconcentration may be of importance, but a substantial number of these individuals are participating in nonmetropolitan suburbanization.

Nonmetropolitan Suburbanization. Heaton and Fuguitt have suggested a theory for which this study has found some support.

> Statements regarding deconcentration to smaller sized places must also be qualified. While suburbanization continues to redistribute persons into a less concentrated pattern, there is evidence to suggest that the process of suburbanization may be slowing down. Perhaps this process is being replaced in part by an alternative; movement to smaller places and rural areas outside of metropolitan areas altogether,... we may be witnessing "nonmetropolitan suburbanization." Nevertheless, resurgence of nonmetropolitan growth is apparently not simply an extention of metropolitan areas , as is indicated by greater change in nonadjacent than in adjacent counties. Rather, it may be that improvements in transportation and communication networks have made possible participation in an urban society combined with residence in a bucolic setting, thus facilitating the substitution of one form of deconcentration for another (Heaton and Fuguitt, 1980, p. 521).

In general, nonmetropolitan counties having the highest growth rates were those with at least 20 percent commuting intensities. This would suggest that a substantial portion of nonmetropolitan growth can be attributed to nonmetropolitan suburbanization. The evidence is tempered, however, when one notes that growth rates are very high in the 1970s even in remote, distant commuting areas. Thus, nonmetropolitan suburbanization can not be cited as the sole or primary reaon for the turnaround but it does appear to be a factor of substantial importance.

Migrants who commute from nonmetropolitan residences to metropolitan workplaces tend to be those who have migrated from metropolitan origins. This suggests that at least a substantial portion of the turnaround is a movement out of the metropolitan areas while retaining or finding new metropolitan employment. This implies the same sort of nonmetropolitan suburbanization suggested by Heaton and Fuguitt. However, the average probability of a migrant to a nonmetropolitan area commuting to a metropolitan area workplace is still relatively low. Among migrants from metropolitan origins the actual proportion who commute from a nonmetropolitan residence to a metropolitan workplace is 28.5 percent. For migrants coming from nonmetropolitan origins the actual proportion commuting is only 19 percent.

Nonmetropolitan suburbanization does not appear to be the primary cause of the turnaround. It does appear to be a factor in drawing migrants from metropolitan areas to nonmetropolitan areas, but not as much of a factor in drawing those from one nonmetropolitan area to another.

Sacrificing Income. One surprising result of this study involves income. In model three, the elasticity for income of the head of household is quite low for nonmetropolitan origin migrants and the variable is not significant for metropolitan origin migrants. Additionally, while it is shown that individual incomes for migrants exceed those for nonmigrants (indicating economic motivation), migrants to nonmetropolitan destinations experience lower average individual head of household incomes than those moving to metropolitan areas, but higher

incomes than for nonmigrants. This contradicts the findings of Perkinson who states:

> The extention of the Urban in-migrant rationale would imply that rural in-migrants would have higher incomes than nonmigrants and this is clearly not the case (Perkinson, 1980, p. 2).

Family incomes of migrants to nonmetropolitan areas are lower than those of nonmigrant families for each of the migrant types except those repeat migrants moving from metropolitan to nonmetropolitan areas. It has been suggested that preferences have changed and that people are more willing to give up income in order to move to nonmetropolitan areas (McCarthy and Morrison, 1977, p. 741). Such a view is not supported by the evidence in this study except in the sense of accepting lower individual incomes than those moving to metro areas.

It has also been suggested that increased female labor force participation has allowed male heads of households to accept reduced incomes in nonmetropolitan areas while increasing family income (Chalmers and Greenwood, 1977, p. 169). This also does not appear to be true, even when considering incomes relative to those of migrants to metropolitan areas.

The Migration Decision. The probabilities of deciding to migrate are very nearly the same for both nonmetropolitan and metropolitan origin populations. Personal characteristics, quality of life considerations, and home economic conditions are all important to the migration decision. Prior mobility is particularly important and increases the probability of migration for both origin groups.

There are, however, differences between origin groups with respect to the effects of individual variables which are important. Household

size, physician rates, origin area employment rates, and origin area mean incomes all have opposite effects between the two groups of potential migrants. For metropolitan origin migrants, larger household sizes, higher origin area employment rates, and higher origin area mean incomes all tend to reduce the probability of migration, whereas higher physician rates tend to increase the probability, The opposite is true for nonmetropolitan origin migrants.

The Destination Decision. Once the decision to migrate has been made, the probability of migrating to a metropolitan area is highest for those from metropolitan origin areas. This decision is a function of many variables, but the effects of particular variables often differ between migrant groups.

Among occupational groups the most likely group to migrate from nonmetropolitan areas to metropolitan areas are those in white collar occupations. Both blue collar and service workers are more likely to migrate from nonmetropolitan origin areas to nonmetropolitan destinations. On the other hand, both service workers and white collar workers are more likely than average to migrate from metropolitan areas to nonmetropolitan areas, while blue collar metropolitan origin migrants are more likely to migrate to metropolitan destinations.

Prior mobility increases the probability of a metropolitan destination regardless of origin area type, and migration to metropolitan areas tends to be selective of older migrants.

Origin economic variables are important to both groups. Increases in origin area mean employment rates reduce the probability of selecting a metropolitan destination for both origin groups. On the other hand,

when the mean origin area income increases (ceteris paribus), the migrant tends to select a destination area of the same type as the origin.

There are also interesting gender differences in the decision to migrate to a metropolitan area. Gender is not significant for metropolitan origin migrants but among those from nonmetropolitan origins, females are much more likely to migrate to metropolitan areas than are their male counterparts.

The Decision to Commute. There are remarkable differences in the commuting decision between metropolitan and nonmetropolitan origin migrants. Whereas metropolitan origin migrants are influenced by personal, quality of life, and destination area characteristics, nonmetropolitan origin migrants are primarily influenced by personal characteristics.

These results also suggest that there are significant differences by gender, origin, and migration experience. The average probability of commuting to a metropolitan area workplace is highest among those from metropolitan origins. Females are much more likely than males to commute to a metro area workplace. Among occupations from metropolitan area origins, blue collar workers are the most likely to commute to a metropolitan workplace. By previous migration experience, repeat migrants are most likely to commute to metro area workplaces if the migrant is from a nonmetropolitan origin, but primary migrants are more likely to commute if the origin area is metropolitan.

There are also indications that there is a pattern of nonmetropolitan suburbanization among metropolitan origin blue collar

workers, which somewhat limits the importance of industrial deconcentration as a factor in the turnaround.

Institutional Factors

This analysis has discussed economic motivations, geographic variation, quality of life influences, and other important factors in the turnaround. One important ingredient in an explanation of the rural-urban turnaround has been left out of this analysis as being beyond the scope of this research, but it should be investigated in the future. It has become apparent during the course of this research that institutional changes have an important role in explaining the turnaround.

Some institutional changes that may be important to the turnaround have already been suggested. Transportation improvements, communications improvements, and technological changes (such as microcircuitry in manufacturing) have altered the type of business being conducted, the way business is conducted, and the places in which business is conducted. Microcircuitry and super highways allow small assembly plants in nonmetropolitan areas to sometimes operate more efficiently than centralized plants in urban areas. The realization that the small is beautiful philosophy may be important, even to big business, is altering the way businessmen think and plan (Gore, 1984).

Increasing growth in the service industry appears to be shifting many workers from occupations where they produce a good, to technical, administrative, clerical, sales, and service occupations. Improvements in computers and sophisticated electronics, reduction in the cost of electronics, and the increasing familiarity of the general populace with

such equipment, mean that research need no longer be the sole province of urban centers. Increasing litigation and complex tax laws have increased the demand for attorneys and accountants, even in nonmetropolitan areas. Forced bussing now may include entire metropolitan areas. This, combined with the fear that traditional suburban areas may be annexed by urban entities, may be pushing people into more remote nonmetropolitan areas.

These are only a few of the institutional changes that may have a role in the rural-urban turnaround and which need to be investigated and evaluated. Such changes may influence migrants as much or more than economic and demographic characteristics, and research in this area represents a formidable challenge.

Policy Implications

Growth Pole Strategy. The essence of growth pole strategy is the concept that regional development assistance should focus upon a small group of "growth poles" or centers. Such growth poles are areas where infrastructure and external economies are sufficient for an expansion of employment. The growth pole is then given assistance and as employment opportunities develop, both migrants and commuters are attracted to the center and secondary growth is stimulated in surrounding areas (Hoover, 1975, pp. 278-281).

> An assumption implicit in the growth center strategy is that people in the backward regions will migrate more readily to a growth center in their own region than they will to places outside that region (Hoover, 1975, p. 283).

The results of this study would at first seem to suggest that people are moving from growth centers to rural areas. However, it

should be remembered that net migration is still contributing to the growth of many urban areas. In a sense, what may be happening is that in many of the older cities, especially in the Northeast and North Central regions, there is an older capital stock. This has led to the loss of both labor and business. People tend to move to cities in the West and South that have more up to date capital stocks and better employment opportunities. One would expect such a movement to growth centers. In light of such developments, it is not surprising to find an increase in commuters from nonmetropolitan areas to growth centers and secondary employment growth in the nonmetropolitan areas.

Here again, there is great need for future research. Specifically, an attempt should be made to correlate assistance to lagging regions with the advancement of growth poles and surrounding areas. There does appear to be a growth center phenomenon occurring. If this can be validated, the question which remains is whether it is the result of assistance to such regions or simply the result of market forces finally recognizing the lower costs of operating in areas that are now growing. The results of such future research could be important in formulating policy to deal with the older cities that are presently losing employment.

General Policy Consideration. Nothing in this study indicates why the turnaround should permanently stop, although a slowing or even reversal is possible. We are likely to see more movement to nonmetropolitan areas and can expect major cities in the Northeast and North Central areas to continue to lose valuable members of their labor forces. One way to look at this phenomenon is to suggest that market

forces are redistributing the population in an economically efficient manner, and that there is no need to deal with the changes.

However plausable or desirable one may think "the invisible hand" to be, problems still exist for many large metropolitan areas because of the population redistribution and there are likely to be equally compelling, if not similar, problems on the horizon for popular migrant destinations.

At this point we may somewhat arbitrarily divide the major metropolitan areas into two camps. The older "mature" metropolis is largely represented in the North Central and Northeast areas of the country. The new or growing metropolis is best represented by cities in the South and West and often by smaller SMSAs.

Older metropolitan areas are characterized by a declining industrial and commercial base, low skill-level labor forces, and aging capital stock and infrastructure.

As transportation costs decline, urban taxes increase, technology improves, and urban population and congestion increase, the advantages of large metropolitan areas are reduced for both businesses and individuals. As businesses leave, the fiscal burden is increasingly shifted to the residential sector inducing even more of the middle and higher income individuals to leave the area.

The strong disamentities of urban life can be seen in the willingness of migrants to rural areas to accept lower incomes than those migrating to metropolitan areas. With the loss of business and labor and the increase in disamentities in many of the urban areas, what policies should the mature metropolis pursue?

> . . . at some stage, vacant land and vacant factories and warehouses can be sufficiently available in central cities as to foster a rebirth of activities with low labor skill requirements. But we should not be sanguine about how rapidly this self adjustment might occur (Levin, 1982, p. 23).

It may be neccessary for such metropolitan areas to reconsider their development policies. Rather than promoting heavy industry and seeking to increase their population through annexation, it may become important to concentrate on improving existing public capital, improving human capital through increased investments in education, promoting minority business ventures, and concentrating development efforts on attracting high growth industry.

Nonmetropolitan areas will also face problems such as providing more public services, increasing tax bases, providing adequate housing, solving political coordination between themselves and urban areas, and coping with a rapid conversion of agricultural land. Both nonmetropolitan and metropolitan areas must realize that these problems must be solved in the face of decreasing federal involvement.

Much research remains to be accomplished in order to establish priorities and solutions to these problems. For rural areas such research should concentrate on settlement patterns, adequacy of housing, commuting patterns, and the demand for public facilities. For urban areas, research should focus on determining and strengthening locational advantages for urban areas, improving infrastructure and public facilities, promoting local business, and providing amentities that will retain and attract an adequate labor force.

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APPENDIX

Table 17

Results of Logit Equations for Model One--Decision of Whether to Move for Nonmetropolitan Origin Migrants by Prior Mobility

Variables	Primary Migrants		Repeat Migrants		F-Statistic for Individual Coefficients
	Coefficient	T-stat	Coefficient	T-Stat	
Personal and Household Characteristics					
Intercept	9.6393	.80	-69.3100	-6.72	15.41
Age of Head of Household					.16
Education of Head of Household	-.1869	-7.05			12.92
Gender of Head of Household	-1.3175	-7.40	-.5482	-2.89	3.86
Wage and Salary Income of Head of Household			1.545e-05	3.02	6.25
Number of Persons in the Household	-.1756	-4.39	.4630	9.27	50.25
Occupation Category					
White Collar	2.5138	5.43	.9822	2.15	1.61
Service	1.9251	3.93	-.7984	-1.61	1.73
Blue Collar	2.4229	5.30	1.7250	3.81	.16
Employed in 1975	-.6102	-3.77	-1.0333	-6.05	.34
Origin Area Characteristics					
Employment Rate Times Mean Income	.0021	2.08	-.0057	-6.92	22.55
Population Density	-.0015	-1.82	.0094	6.27	25.30
Physician Rate			.0139	10.68	12.81
Transport Rate	.4209	3.47	-.3690	-4.78	17.09
Crime Rate	.0002	3.30	.0005	8.29	8.53
North Central Region					.34
Northeast Region	.9573	4.02	-1.3085	-3.96	17.69
South Region	-1.0257	-4.61			6.08
Employment Rate			73.2506	6.70	15.85
Mean Area Income	-.0018	-1.92	.0051	6.54	19.97

Table 17 continued

(1) All variables for which coefficients are shown are significant at at 10 percent level.
(2) Individual coefficient F-statistics are used to test the hypothesis that a particular coefficient is the same for individuals from nonmetropolitan origins versus those from metropolitan origins. The critical values of the F-statistic in this case are 3.00 for the 5 percent level of significance and 4.61 for the 1 percent level of significance.
(3) The Chow test, indicating the stability between the two population subgroups, results in an F-value of 52.37 with 19 and 4,208 degrees of freedom. The critical F-statistic at the 1 percent level is 1.88.

Table 18

Results of Logit Equations for Model One--Decision of Whether to Move for Metropolitan Origin Migrants by Prior Mobility

Variables	Primary Migrants		Repeat Migrants		F-Statistic for Individual Coefficients
	Coefficient	T-stat	Coefficient	T-Stat	
Personal and Household Characteristics					
Intercept	39.2765	4.77	-15.1181	-1.92	10.20
Age of Head of Household	-.0195	-5.93	.0053	1.91	14.27
Education of Head of Household	.0920	6.10	.0887	7.46	.08
Gender of Head of Household	-.5352	-5.32	.5995	6.25	35.11
Wage and Salary Income of Head of Household	1.522E-06	4.32			9.15
Number of Persons in the Household	-.2153	-7.96	-.1146	-5.59	2.95
Occupation Category					
White Collar	1.5153	3.27	.6253	2.11	.90
Service	1.0408	2.18			1.48
Blue Collar	.9905	2.14	1.3781	4.63	1.18
Employed in 1975	1.0937	10.27	-.9786	-10.56	106.68
Origin Area Characteristics					
Employment Rate Times Mean Income	.0027	5.06	-.0009	-1.77	10.55
Population Density			.00005	4.36	9.30
Physician Rate	.0011	2.81	.0006	1.96	.15
Transport Rate	.0184	2.43	-.0318	-4.34	13.20
Crime Rate	5.044E-05	2.40	8.743E-05	5.06	.53
North Central Region	.5297	4.92	.4024	4.25	.21
Northeast Region	1.3141	10.90	.6705	6.18	8.80
South Region	.2551	2.52	.0661	.82	.98
Employment Rate	-42.7900	-5.05	14.7447	1.81	10.60
Mean Area Income	-.0027	-5.29	.0008	1.67	11.02

Table 18 continued

(1) All variables for which coefficients are shown are significant at the 10 percent level.
(2) Individual coefficient F-statistics are used to test the hypothesis that a particular coefficient is the same for individuals from nonmetropolitan origins versus those from metropolitan origins. The critical values of the F-statistic in this case are 3.00 for the 5 percent level of significance and 4.61 for the 1 percent level of significance.
(3) The Chow test, indicating the stability between the two population subgroups, results in an F-value of 91.90 with 19 and 11564 degrees of freedom. The critical F-statistic at the 1 percent level is 1.88.

Table 19

Results of Logit Equations for Model Two--Decision of Whether to Move to a Metropolitan Area for Nonmetropolitan Origin Migrants by Prior Mobility

Variables	Primary Migrants		Repeat Migrants		F-Statistic for Individual Coefficients
	Coefficient	T-stat	Coefficient	T-Stat	
Personal and Household Characteristics					
Intercept	-232.6470	-4.42	-21.5926	-1.54	12.51
Age of Head of Household			.0297	3.88	2.76
Education of Head of Household			.2820	7.61	4.60
Gender of Head of Household	-1.1344	-2.59	2.0792	5.43	18.89
Wage and Salary Income of Head of Household	8.507E-05	4.19	1.745E-05	1.94	1.37
Number of Persons in the Household	-.4200	-3.54	.2117	3.22	11.02
Occupation Category					
White Collar			1.9283	3.04	.77
Service			3.5466	4.44	2.08
Blue Collar			1.4482	2.32	.59
Homeownership	-1.1286	-3.47	-1.3737	-6.16	1.35
Employed in 1975	-2.1737	-4.75	-.3186	-1.67	5.09
Origin Area Characteristics					
Employment Rate Times Mean Area Income	-.0229	-8.32			20.39
Population Density					.03
Physician Rate					2.45
Transport Rate	.9846	4.65			4.71
Crime Rate	-.0006	-6.44			7.00
North Central Region	-2.3640	-5.18	-2.0546	-6.56	2.15
Northeast Region			1.5741	3.01	3.19
South Region	-2.0787	-3.60	-1.3130	-4.19	.15
Employment Rate	245.1690	7.59			13.67
Mean Area Income	.0213	8.19			19.82

Table 19 continued

(1) All variables for which coefficients are shown are significant at the 10 percent level.
(2) Individual coefficient F-statistics are used to test the hypothesis that a particular coefficient is the same for individuals from nonmetropolitan origins versus those from metropolitan origins. The critical values of the F-statistic in this case are 3.00 for the 5 percent level of significance and 4.61 for the 1 percent level of significance.
(3) The Chow test, indicating the stability between the two population subgroups, results in an F-value of 16.79 with 20 and 2038 degrees of freedom. The critical F-statistic at the 1 percent level is 1.88.

Table 20

Results of Logit Equations for Model Two--Decision of Whether to Move to a Metropolitan Area for Metropolitan Origin Migrants by Prior Mobility

Variables	Primary Migrants		Repeat Migrants		F-Statistic for Individual Coefficients
	Coefficient	T-stat	Coefficient	T-Stat	
Personal and Household Characteristics					
Intercept	-27.3192	-1.52	-98.1093	-8.59	13.56
Age of Head of Household	.0345	4.73	.0098	2.31	9.47
Education of Head of Household	-.1927	-6.53	.1210	5.84	40.25
Gender of Head of Household	-1.3520	-5.71	.3431	2.647	20.37
Wage and Salary Income of Head of Household	.0001	7.17	1.49E-05	3.59	10.79
Number of Persons in the Household	-1.0455	-16.92	-.1910	-6.10	85.58
Occupation Category					
White Collar			1.9963	3.36	41.32
Service	-3.3337	-2.75	3.9648	6.08	20.26
Blue Collar			1.8995	3.23	1.80
Homeownership	-.3395	-2.04			3.15
Employed in 1975			.9696	9.54	20.88
Origin Area Characteristics					
Employment Rate Times Mean Income	-.0034	-2.75	-.0067	-9.20	9.01
Population Density	.0001	4.45			14.38
Physician Rate	-.0038	-4.08	-.0015	-3.37	3.57
Transport Rate	-.0625	-4.26	.1302	7.79	31.31
Crime Rate	.0002	3.13	-.0001	-5.85	18.16
North Central Region	1.6489	6.10			20.74
Northeast Region	1.9063	6.58			9.02
South Region	-.3857	-1.69	.4912	4.19	8.33
Employment Rate	34.1674	1.86	98.2774	8.36	10.84
Mean Area Income	.0033	2.71	.0064	9.10	9.24

Table 20 continued

(1) All variables for which coefficients are shown are significant at the 10 percent level.
(2) Individual coefficient F-statistics are used to test the hypothesis that a particular coefficient is the same for individuals from nonmetropolitan origins versus those from metropolitan origins. The critical values of the F-statistic in this case are 3.00 for the 5 percent level of significance and 4.61 for the 1 percent level of significance.
(3) The Chow test, indicating the stability between the two population subgroups, results in an F-value of 47.06 with 20 and 5637 degrees of freedom. The critical F-statistic at the 1 percent level is 1.88.

Table 21

Results of Logit Equations for Model Three--Decision of Whether to Commute to a Metropolitan Workplace for Nonmetropolitan Origin Migrants by Prior Mobility

Variables	Primary Migrants		Repeat Migrants		F-Statistic for Individual Coefficients
	Coefficient	T-stat	Coefficient	T-Stat	
Personal and Household Characteristics					
Intercept	21.71	.91	-3.7081	-.19	.19
Age of Head of Household					.55
Education of Head of Household	-.2807	-3.18			1.28
Gender of Head of Household					.01
Wage and Salary Income of Head of Household			-.0001	-2.90	1.87
Number of Persons in the Household					.13
Occupation Category					
White Collar	-3.1728	-3.11	1.2250	1.72	5.54
Service	-3.7869	-2.72			4.11
Blue Collar	-1.8423	-2.11	1.8792	2.71	7.42
Homeownership					.23
Employed in 1975	-1.6867	-3.26	-.7907	-2.46	1.75
Family Income Other than Head of Household	-.0001	-2.64			3.45
Destination Area Characteristics					
Employment Rate Times Mean Income					10.32
Population Density	.0048	2.15			1.47
Crime Rate	-.0007	-3.44			8.41
North Central Region	-1.7466	-2.19			.47
Northeast Region					4.12
South Region			-.8966	-1.97	1.41
Employment Rate					.04
Mean Area Income					.001

Table 21 continued

(1) All variables for which coefficients are shown are significant at the 10 percent level.
(2) Individual coefficient F-statistics are used to test the hypothesis that a particular coefficient is the same for individuals from nonmetropolitan origins versus those from metropolitan origins. The critical values of the F-statistic in this case are 3.00 for the 5 percent level of significance and 4.61 for the 1 percent level of significance.
(3) The Chow test, indicating the stability between the two population subgroups, results in an F-value of 6.69 with 19 and 821 degrees of freedom. The critical F-statistic at the 1 percent level is 1.88.

Table 22

Results of Logit Equations for Model Three--Decision of Whether to Commute to a Metropolitan Workplace for Metropolitan Origin Migrants by Prior Mobility

Variables	Primary Migrants		Repeat Migrants		F-Statistic for Individual Coefficients
	Coefficient	T-stat	Coefficient	T-Stat	
Personal and Household Characteristics					
Intercept	.2427	.01	16.4166	1.10	.02
Age of Head of Household	.0388	3.20	.0365	5.02	.03
Education of Head of Household					.02
Gender of Head of Household					.01
Wage and Salary Income of Head of Household	4.232E-05	2.99			2.31
Number of Persons in the Household			-.1794	-3.55	.001
Occupation Category					
White Collar			-2.4664	-6.34	.85
Service	1.7959	2.03	.9199	1.89	.66
Blue Collar	1.5535	2.04	.6373	1.53	.93
Homeownership					.71
Employed in 1975	-1.3484	-3.25	.6134	2.84	8.93
Family Income Other than Head of Household					.10
Destination Area Characteristics					
Employment Rate Times Mean Income			.00234	1.94	6.97
Population Density			.0030	3.38	1.05
Crime Rate			.0002	2.74	1.66
North Central Region	1.6152	3.35	.8746	3.28	.65
Northeast Region	1.7620	3.12	.7690	2.05	.51
South Region	1.0265	2.30	1.2947	4.99	1.08
Employment Rate					.06
Mean Area Income			-.0021	-1.86	1.14

Table 22 continued

(1) All variables for which coefficients are shown are significant at the 10 percent level.
(2) Individual coefficient F-statistics are used to test the hypothesis that a particular coefficient is the same for individuals from nonmetropolitan origins versus those from metropolitan origins. The critical values of the F-statistic in this case are 3.00 for the 5 percent level of significance and 4.61 for the 1 percent level of significance.
(3) The Chow test, indicating the stability between the two population subgroups, results in an F-value of 5.11 with 19 and 1493 degrees of freedom. The critical F-statistic at the 1 percent level is 1.88.

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