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The Effect of Immigrant Arrivals on Migratory Patterns of Native Workers

Randall K. Filer

Does the arrival of immigrants into a local labor market affect conditions (either wages or probabilities of employment) faced by native workers, thereby creating incentives for the migration of current residents to reestablish equality across geographic areas? Despite the importance of this question for understanding the economic effects of immigration on current U.S. residents, there has been little previous work dealing with the relation between immigrant arrivals and native migratory patterns.¹ Eldridge and Thomas (1964) report that, in the fifty-year period between 1870 and 1920, net internal migration rates for native-born whites were negatively related to the rate of white immigration (except in the western states, where the opening up of new territories attracted both groups). Fleisher (1963) suggests that the movement of white mainland residents to New York decreased during the 1950s, when the flow of Puerto Ricans into that city increased. Manson, Espenshade, and Muller (1985) present evidence that immigration to California has soared since 1970 while net internal migration to the region has virtually stopped.

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1. Migratory responses of native workers, e.g., are one mechanism for reconciling aggregate studies that suggest that immigration may have significantly depressed wages of unskilled native workers (see Borjas, Freeman, and Katz, in this volume) with cross-sectional research that has found little, if any, connection between the rate of arrival of immigrants into local labor markets and area wages (see, e.g., LaLonde and Topel 1991; and Altonji and Card 1991).

Furthermore, they find that the net internal migration consisted of a net inflow of skilled migrants and a net outflow of native migrants with socioeconomic characteristics similar to the arriving Mexican immigrants and conclude that "the flow from Mexico substituted for internal migration" (p. 32). In a study of the effect of the Mariel Boatlift on the Miami labor market, Card (1990, p. 20) reports that, "although the Mariel immigration added 7 percent to the Miami population in a matter of a few months, the Boatlift does not seem to have led to a long-run increase in the Miami population." Instead, he suggests that, at least in part, "the Mariels simply displaced other migrants from within the US who would have moved to Miami in the early 1980's" (p. 25). Similarly, Walker, Ellis, and Barff (1990) find that areas in the Southwest that experienced higher than average rates of Mexican immigration during the period 1975–80 also showed larger than average rates of out-migration of native workers.

A somewhat different conclusion is reached by Butcher and Card (1991), who, using CPS data for the 1980s, claim that the evidence of offsetting out-migration is limited to New York, Los Angeles, and Miami. On the basis of results for the twenty-one other cities in their sample, Butcher and Card conclude that "native in-migration flows during the 1980s were *positively* correlated with inflows of recent immigrants" (p. 294). It should be noted that this conclusion is based on an inference derived from rates of population growth rather than observed native migration. Thus, it requires assumptions regarding natural rates of increase in the absence of immigration. For example, the results found by Butcher and Card are also consistent with immigrants, especially Hispanic immigrants, being drawn to cities with large ethnic enclaves of Hispanic families with above-average fertility rates and unusually high rates of natural population increase. These results are dominated by patterns in three states (California, Texas, and Florida) that make up 43 percent of the cities on which the conclusion is based as opposed to 20 percent of the full set of standard metropolitan statistical areas (SMSAs).²

The following section presents the analytic framework and assumptions under which the estimates in this paper were developed. Section 8.2 discusses the data used to investigate the empirical relation between immigrant arrivals and native migration patterns. Section 8.3 analyzes simple correlation coefficients between native and immigrant locational decisions, and section 8.4 presents regression results where immigrant arrival rates are used along with other variables to predict native mobility patterns. Section 8.5 contains estimates of a simultaneous model of immigrant and native locational decisions.

2. An unpublished study by Bronárs (1992) finds that states with high rates of immigration tended to attract natives prior to the period 1975–80 but that there was no such relation in more recent data. Although using states as the unit of analysis has the advantage of having data available for a long period, it is not clear that state boundaries capture the relevant theoretical concept of the local labor market. Results may well differ between earlier and later years in this study due to the changing mix of immigrant characteristics that occurred with some lag following the major revision of U.S. immigration law in 1964.

Section 8.6 concludes with a discussion of some of the more interesting results from the study.

8.1 Analytic Framework

Underlying the analysis in this paper is a conventional economic model of migration behavior (see, among many others, Lansing and Mueller 1967; Greenwood 1975; Alonso 1978; and Long 1988). Formally, each worker can be assumed to choose an optimal location i such that

$$B_i = (C_i - C^*) - R_i^* > (C_j - C^*) - R_j^* \quad \forall i \neq j,$$

where C_i and C_j represent the present discounted value of location benefits (including wages, probabilities of employment, climate and other locational advantages, and the cost of living) for alternative areas, and C^* represents the locational advantages of the worker's current place of residence. R_i^* and R_j^* represent the costs (both monetary and psychic) involved in moving from the current location to alternative locations i and j . By definition, B^* is equal to zero so that, if $B_i = B^*$, the current location is optimal and the worker does not move. National boundaries have no particular importance in the basic model, so the optimal relocation may be in the worker's current country or in any other country. Equilibrium can naturally be defined as a state of the world where B_i is positive for no worker.³

The effect of immigrant arrivals on native workers will depend critically on two factors. The first of these is whether immigrants choose their location of settlement on the basis of the same factors as native workers.⁴ The second is the effect of immigrant arrivals on the utility that native workers derive from locating in a geographic area ($\partial C_i / \partial I$, where I indicates the immigrant arrival rate).⁵ The direction of this effect depends both on the effect of immigrants on economic conditions faced by native workers (which will tend to be negative

3. Of course, various countries may introduce a permanent disequilibrium into the model by restricting immigration (or in some cases emigration) so that the most advantageous moves from some workers' points of view are no longer allowable.

4. Although many aspects of local areas such as climate and job opportunities should hold similar attractions for these two groups, other aspects of their locational calculus may be very different. For example, the decisions of immigrants are likely to be heavily influenced by the location of past immigrants from the same source country (who can provide a cultural and linguistic "home") as well as transport cost considerations from their country of origin.

5. There is an assumption underlying the current line of inquiry that all effects of immigrant arrivals in the United States on the welfare of American workers require direct contact. Thus, arrival of a Mexican worker in southern California directly affects the welfare only of Americans in southern California. Indirectly, if his arrival causes Americans to relocate elsewhere, this relocation will, of course, have an effect on the welfare of natives wherever those Americans relocate. Explicitly excluded by this assumption is a situation where the arrival of the immigrant lowers production costs and hence prices of goods traded in a national market. This is equivalent to an assumption of free trade in the world since with free trade there is no need for the immigrant actually to arrive in the United States in order to have this effect. Also excluded is the somewhat more probable case where there is a divergence between the lifetime federal and state taxes paid by an arriving immigrant and the additional demand for services that are financed by those taxes

if immigrants and native workers are substitutes in production and positive if they are complements)⁶ and on the direct utility that natives derive from locating near immigrants.⁷

Combining these two determinants of the effect of immigrant arrivals on native mobility patterns, there are four distinct possibilities, each with a different implication concerning the sign and magnitude of the expected empirical relation. These will be considered in turn.

1. Imagine a "helicopter drop" of immigrants into the U.S. economy. Suppose that these immigrants make locational decisions based on the same factors as natives and have a positive effect on native utility (either because of complementarity in production or because of consumption externalities). This combination will result in a strong positive correlation between immigrant concentrations and net native migration since, not only will immigrants and natives initially be attracted to the same geographic areas, but this effect will also be reinforced by the positive effect of the immigrants on native welfare, which will serve to further attract natives.

2. If, on the other hand, immigrants make locational decisions based on different criteria than natives but continue to have a positive effect on natives' utility, the predicted relation between immigrant arrivals and native mobility will be positive but weaker than in the previous case. Here, there will be no initial correlation between locational decisions, only the secondary effect caused by the increase in an area's attractiveness for natives because of the settling of immigrants there.

3. Now consider the case where immigrants and natives respond to the same locational incentives but there is a negative effect from immigrant arrivals on native welfare. The sign of the correlation between immigrant arrivals and native mobility will in this case be indeterminate. The initial similarity of motivations will create a positive correlation between these variables. This may be offset, however, by the negative effect of immigrants on native welfare. Thus, for example, both immigrants and natives may find a warm climate desirable and, therefore, in a world without effects from one group on

that is created by the immigrant's arrival. Although in theory such an effect on native welfare could be either positive or negative, Simon (1989, p. 122) claims that each arriving immigrant in 1975 transferred between \$15,000 and \$20,000 in excess taxes to natives during his postimmigration lifetime. If true, this implies that the net effect of immigrant arrivals on native welfare could be positive even if the immediate migratory patterns analyzed in this paper find that the direct contact effects are negative.

6. In addition to the extent of complementarity in production, the sign of the economic effect of immigrant arrivals on native workers will depend on the consumption patterns of the immigrants and, in particular, whether they increase demand for products produced by natives.

7. Obviously, this direct effect may be either positive or negative. One can imagine a world where native workers are prejudiced against "foreigners" and, therefore, seek to locate in areas with low concentrations of immigrants. Those with a preference for ethnic cuisine, however, might find that the concentration of immigrants in a geographic area made a positive contribution to their utility. In addition, it is likely that the marginal effect of changes in immigrant concentrations on natives' utility will be a function of the initial concentration level.

the other, both might tend to locate in California. However, a large enough influx of alien settlers in an area could serve to overcome its natural attractiveness to natives, causing them to shy away from the area. The eventual sign of the correlation will depend, therefore, on the relative magnitude of these two effects.

4. The final case is one where natives and immigrants respond to different incentives in making migration decisions combined with a negative effect of immigrants on native utility. Here, there is an unambiguous prediction of a negative relation between immigrant arrivals and native migration. Initial locational decisions will not be correlated (since the two groups are responding to different incentives). Once immigrants have settled in an area, however, this will reduce the attractiveness of that area for natives, leading some current residents to find it optimal to relocate and causing some natives who would have migrated into the area in the absence of immigration effects to locate elsewhere instead.

The preceding analysis provides insight into how any relation found in data between immigrant arrivals into an area and native mobility should be interpreted. Negative coefficients are consistent only with immigrant arrivals having a negative effect on native welfare, either through depressing economic conditions or creating disamenities.⁸ Positive coefficients, on the other hand, may be consistent with either a positive or a negative effect of immigrant arrivals on native welfare. The latter is possible only if immigrants and natives initially make locational decisions on the basis of similar factors. Thus, if we accept the evidence discussed below that this is not the case, an unambiguous test of the direction of the effect of immigrant inflows on native utility is provided by the sign of the relation between these two variables.

So far, the discussion has been framed as if all immigrant and native workers were homogeneous within their group. There is no reason that this should be the case. Thus, a native group may find that the arrival of some immigrant groups reduces its members' welfare while the arrival of others enhances their utility. Similarly, the effect of a given immigrant group may be different for different groups of natives. Thus, for example, an influx of a large number of unskilled immigrants may depress wages and employment opportunities for low-skilled Americans, leading to net out-migration of these workers, while raising those of high-skilled complementary workers, creating a positive relation.

Two studies provide evidence that the factors determining immigrants' locational decisions differ substantially from those for natives. Both Bartel

8. In comments on an earlier draft of this paper, Beth Asch pointed out that a negative coefficient could also be consistent with irrationality on the part of natives so that they believe immigrants will lower their welfare even if such a conclusion is not valid. The irony is that such a misperception will be self-fulfilling since any action taken on it by natives will result in their making suboptimal locational decisions, thereby reducing their welfare below what it would have been had there been no immigration.

(1989) and Bean and Lowell (n.d.) found that the most important determinant of immigrants' destination choice was the location of preexisting concentrations of the same national origin group. Furthermore, most immigrants do not seem to settle in high-wage locations, in contrast to native-born workers of the same ethnicity, whose mobility shows a significant response to better wage opportunities (Bartel 1989).

The pattern of cities with high proportions of recent immigrants in their labor markets is strikingly concentrated in coastal states. Although fewer than half of American states touch ocean water, *all* twenty cities with the highest proportion of immigrants in their labor forces in 1980 were in these states. Included among these cities were nine in California, four in Texas, two in New Jersey, and two in Massachusetts. Of the fifty cities with the highest ratios of recent immigrants in their labor forces, forty-five were in coastal states, including sixteen in California, eight in Texas, four in Massachusetts and Connecticut, three in New Jersey, and two in Washington and Florida.⁹

Although a full analysis of the determinants of the locational choices of native workers and immigrants lies beyond the scope of this paper, some evidence has been developed suggesting that these decisions do respond to different influences. When regression results are presented in section 8.4 below, they will be compared with those from a similar equation estimated for immigrant concentrations. Except for a tendency for both natives and immigrants to settle in the Pacific Coast region, there is little overlap in the variables that significantly enter these two predicting equations, and many variables differ in both sign and magnitude between them.

The combination of these findings with the results from earlier studies supports an assertion that immigrants and natives do not choose their location on the basis of the same criteria.¹⁰ This suggests that the sign of the relation between immigrant arrivals and native migratory patterns may be an unambiguous function of the effect of immigrants on native well-being. Of course, if the relation is found to be negative, then no ancillary evidence is needed to support a conclusion that immigrant arrivals reduce the welfare of workers in a local area.

8.2 Data

The sections that follow investigate the relation between the rate of immigration into a local area and the movement of various types of native workers

9. The five cities not in coastal states were, for the curious, Las Vegas and Reno, Nevada; Chicago, Illinois; Columbia, Missouri; and Lafayette, Indiana. These last two are both small cities dominated by giant universities that might attract a large number of foreign students who remain to participate in the local labor market. The Nevada cities probably reflect the domination of their economies by the hotel industry, which attracted large numbers of immigrants from nearby southern California.

10. Indeed, one anonymous reviewer for an earlier draft of this paper claimed "difficulty even entertaining the notion that immigrants respond to labor market conditions the way natives do given who the immigrants are and how long it takes to get a visa."

into or out of that area using data from the 1980 Census. The Public Use Microdata A Sample from this Census contains approximately 2.5 percent¹¹ of all workers in the United States in 1980 who were asked their residence location in 1975 as well as 1980. It is from this sample that native migration patterns can be ascertained.

The Census defines *place of residence* in both 1975 and 1980 on the basis of "county groups." There are approximately 1,140 county groups in the United States. While this definition of local labor market provides the largest possible sample size, many county groups received few, if any, immigrants. In addition, since the entire United States is covered by the county groups, many movements from one county group to another represent short-distance moves involving change of residence but no change of local labor market. These moves are not properly considered *migration* and may serve to mask true patterns.

Since immigration into the United States is largely an urban phenomenon, a more appropriate definition of local labor markets might be the set of SMSAs. However, information concerning place of residence in 1975 was collected on a county group but not an SMSA basis. In order to overcome this problem, a matching of county group codes with SMSAs was undertaken. Place of residence in 1980 was examined to determine the county groups that formed each SMSA. A county group was considered to be part of an SMSA if any person in the A Sample was identified as living in both the county group and the SMSA. This process was the only way to enable a consistency of geographic area between measures of immigrant arrivals and native migration patterns. It resulted in 272 geographic areas being identified for analysis.

Results are presented below using all 272 of these areas.¹² In addition, since immigrant arrivals are highly concentrated in certain metropolitan areas, their effect on natives may be more easily seen by restricting the analysis to those cities. Hence, results will also be discussed for the subsets of observations restricted to either the one hundred largest SMSAs in 1980 or the one hundred SMSAs with the highest concentrations of recent immigrants in their labor forces.¹³

The Census provides information about the year of immigration of non-native workers grouped in five-year intervals.¹⁴ Thus, we know the number of

11. While the A Sample is a 5/100 subsample of the U.S. population, questions concerning residence in 1975 were asked of only half of this group. Thus, the rate of immigration into areas can be based on a 5/100 sample, but domestic migration rates must be based on the smaller 2.5/100 sample.

12. Or, in the case of the regression analyses, excluding a limited number of observations where information on one or more of the independent variables used was not available.

13. There is only a moderate degree of overlap between these two sets. Forty-nine cities are among both the one hundred largest SMSAs and the one hundred SMSAs with the highest rate of immigration between 1975 and 1980.

14. In theory, the Census does not distinguish between legal and illegal immigrants, and both groups should be included in the data. In practice, illegal immigrants are likely to have been undercounted. If legal and illegal immigrants make similar choices of residence location, the result of the undercount of illegal immigrants is to bias upward estimated effects of immigrant

immigrants in any geographic area who arrived in the United States between 1975 and the date of the Census. By definition, these immigrants must also have arrived in the geographic area since 1974. Unfortunately, it is not possible to specify the arrival rates of immigrants more precisely. The number of workers in a local labor market who came to the United States between 1975 and 1980 is converted to a rate by dividing by the size of the area's labor force in 1975. However, migratory adjustments by native workers to immigrant arrivals may happen over a considerable length of time. While the use of five-year intervals should enable much of this lag to be "internalized" into the apparently contemporaneous relation between immigrant arrivals between 1975 and 1980 and native migration patterns during the same period, there is no reason to suppose that the periods imposed by Census questions exactly capture the lag process. A partial attempt to allow for adjustment lags can be made by relating native migration to immigrant arrivals during the previous five years. By combining information on the year of immigration with information on residence in 1975, we can identify the number of immigrants living in an area in 1975 who arrived in the United States between 1970 and 1974.¹⁵ Some results presented below will make use of these lagged rates rather than the contemporaneous immigration rates.

Native migration is defined as the number of native workers in the local labor market in 1980 who lived elsewhere in 1975 minus the number who lived in the market in 1975 but elsewhere in 1980.¹⁶ Migration rates are obtained by dividing these net flows by the work force in 1975.

For both immigrants and native workers, the sample analyzed was limited to adult (over age 24) male workers.¹⁷ Immigration and migration rates for the entire adult male work force and for subgroups of that work force defined on the basis of race, educational level, and one-digit occupation were analyzed in order to shed light on the dynamics of the responses found.

Across all the cities in the sample, the average fraction of the adult male labor force who arrived as immigrants between 1975 and 1980 was 1 percent (with a standard deviation of 1.1 percent). There was, however, a great deal of variation in the importance of immigrants in local labor markets. Recent

location on native migration. In other words, any observed native migration will be in response to a larger amount of immigration than appears in the data.

15. As with immigration between 1975 and 1980, the conversion to rates used the size of the labor force in 1975. It is impossible to identify from Census data the size of the labor force in the area in 1970 owing to changes in the number and boundaries of areas between the Censuses.

16. Only native-born workers are included. Thus, we do not consider the response of previous immigrants to the arrival of new immigrants. These patterns are likely to be complex interactions of ethnic attraction, economic effects, and the relation introduced by intertemporal correlation of arrival points coupled with natural diffusion over time.

17. It is certainly the case that an analysis of female as well as male workers would be of interest. Immigration may frequently be led by female members of a family. In addition, recently arrived immigrants may be closer substitutes for, and therefore have a greater effect on, native female workers. However, since women are more frequently secondary or "trailing" workers than men in American society, analysis of their migratory patterns is far more complex than can be undertaken within the scope and framework of the current research.

immigrants ranged from a high of 7.3 percent of the labor force in Los Angeles to a low of 0 percent (at least as captured in the 5/100 Census sample) in Eau Claire, Wisconsin, and Monroe, Louisiana.¹⁸

There was also considerable variation in the mobility patterns of natives across cities. Overall, metropolitan areas in the United States gained workers through native migration during the period 1975–80. The mean increase in the adult male labor force from this source was 0.95 percent of its 1975 level. This represents in part flows from outside SMSAs and in part migration from larger to smaller SMSAs. The large flux in the U.S. labor force can be seen in the fact that this mean net in-migration resulted from the combination of mean inflows equal to 20 percent of the work force combined with mean outflows equal to 19 percent of the work force. Most of the SMSAs with the largest net gain of native workers during the years 1975–80 were smaller cities in the Sunbelt or the Pacific Northwest. Large SMSAs with a net inflow greater than 10 percent of their 1975 work force were Houston (13.3%), Orlando (11.4%), Tampa–St. Petersburg (11.4%), Portland, Ore. (10.9%), and Seattle (10.4%). Metropolitan areas that lost a significant portion of their work force through net native out-migration between 1975 and 1980 included Honolulu (–10.4%), Louisville (–6.8%), Providence (–6.7%), Omaha (–6.5%), Buffalo (–6.5%), Jersey City (–5.5%), Boston (–5.3%), New York (–4.9%), Newark (–3.7%), Cleveland (–3.6%), Los Angeles (–3.5%), Pittsburgh (–3.4%), Washington, D.C. (–2.5%), Chicago (–2.4%), Philadelphia (–2.2%), and Milwaukee (–2.1%).¹⁹ It is interesting that SMSAs

18. The twenty-five metropolitan areas with the largest fraction of recent immigrants (those who arrived between 1975 and 1980) in their labor forces were Los Angeles (7.3%), Miami (6.1%), Salinas, Calif. (5.5%), Jersey City, N.J. (5.2%), El Paso, Tex. (5.0%), New York City (4.6%), Honolulu (4.2%), San Jose, Calif. (4.2%), Anaheim, Calif. (4.2%), McAllen, Tex. (4.1%), Houston (4.0%), Brownsville, Tex. (3.9%), Fall River, Mass. (3.8%), San Francisco (3.8%), Visalia, Calif. (3.5%), Modesto, Calif. (3.4%), San Diego (3.4%), New Bedford, Mass. (3.2%), Fresno, Calif. (3.1%), Patterson, N.J. (3.1%), Chicago (2.8%), Reno, Nev. (2.7%), Bakersfield, Calif. (2.7%), Washington, D.C. (2.7%), and Santa Barbara, Calif. (2.6%).

19. There was also a significant net outflow of native workers from a number of SMSAs where the local labor market is dominated by military bases such as Jacksonville, N.C., Norfolk, Va., and Biloxi, Miss. This is not surprising given that this period marked the end of the Viet Nam–era demobilization. The data also show net out-migration of natives from a number of college-dominated SMSAs such as State College, Pa., Lafayette, In., Charlottesville, Va., and Ann Arbor, Mich. In theory, this should not occur unless the size of these colleges was shrinking since Census instructions are very explicit in attempting to ensure that college students are enumerated where they attend school (dormitory residents live in group quarters at the college). In practice, however, college students living in dorms are unusually likely to have been undercounted by the Census. Hence, out-migration of students who worked in their college town in 1975 and elsewhere in 1980 would be accurately reflected, but in-migration into the college town would be biased downward by the extent that college students are undercounted. This would create an artificially inflated rate of out-migration of natives from college towns in Census data. Such measurement error may pose a problem for the current study since college towns are likely to attract a large number of immigrants who come to the United States for higher education. Thus, a spurious negative correlation might be created between immigration arrivals and net native migration for these towns. Fortunately, repeating the analyses presented below for a subsample that excludes SMSAs where university students constitute a large fraction of the population does not alter the results significantly.

that are growing through net native in-migration are located in geographic regions that have also attracted the highest rates of immigration. Thus, regional considerations alone might create a positive relation between immigrant arrival rates and net native migration.

8.3 Correlation Results

Examining simple correlations, a clear picture of the relation between immigrant arrivals into a local labor market and native migration patterns emerges. Table 8.1 shows own-group correlations (e.g., white immigrant arrivals correlated with net migration rates of white natives) for all 272 SMSAs and the two subgroups consisting of the one hundred largest SMSAs and the one hundred SMSAs with the highest rates of immigration between 1975 and 1980. For each group, both contemporaneous and lagged correlations are presented. In all cases, the contribution of each SMSA to the correlation coefficient was weighted by the size of that SMSA.

Table 8.1 **Relation between Immigration and Native Migration Rates**

	All 272 SMSAs		100 Largest SMSAs		100 Highest Immigration Rates	
	No Lag	Lagged	No Lag	Lagged	No Lag	Lagged
All workers	-.12**	-.21***	-.16*	-.27***	-.37***	-.35***
Whites	-.25***	-.28***	-.31***	-.36***	-.50***	-.41***
Blacks	-.08	-.12**	-.21**	-.30***	-.15	-.17*
Hispanics	-.10	-.10*	-.13	-.14	-.21**	-.31***
Asians	-.06	-.05	-.06	-.06	-.06	-.04
Other ethnic group	-.01	-.03	.01	-.01	-.05	-.08
Less than high school	-.30***	-.34***	-.35***	-.38***	-.50***	-.43***
High school grad	-.19***	-.30***	-.25**	-.37***	-.42***	-.41***
Some college	-.03	-.14**	-.07	-.23**	-.26***	-.29***
College grad	-.02	-.06	-.04	-.07	-.24**	-.17*
Post-college	-.17***	-.16**	-.13	-.15	-.45***	-.31***
Managers	-.04	-.12*	-.08	-.18*	-.27***	-.26***
Professionals	-.11*	-.14**	-.08	-.16	-.36***	-.32***
Technical workers	.14**	.00	.17*	-.02	-.01	-.11
Salespersons	-.10*	-.19***	-.14	-.17*	-.29***	-.30***
Clerical workers	-.04	-.10*	-.10	-.17*	-.29***	-.24**
Service workers	-.13**	-.21***	-.22**	-.28***	-.31***	-.31***
Agricultural	.16***	.16***	.17*	.21**	.31***	.27***
Craftspersons	-.22***	-.27***	-.26***	-.31***	-.37***	-.34***
Operatives	-.15**	-.21***	-.20**	-.27***	-.24**	-.26***
Laborers	-.13**	-.20***	-.13	-.23**	-.22**	-.23**

* Significant at the 10 percent level.

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

It should be emphasized that this section specifically focuses on *partial* or “zero-order” relations between immigrant arrivals and native migratory patterns. There is no attempt here to predict what SMSAs will attract immigrants, nor to focus on variations around the general correlation between the two migratory patterns under study. Both immigrants and native migrants will determine their location of settlement based on many factors other than the locational decisions of the other group. Thus, the correlation coefficient between immigrant arrivals and net native flows should be expected to be considerably less than unity.

Of the 126 correlation coefficients presented in table 8.1, the vast majority (71 percent) are statistically significant at the 10 percent or better confidence level. Fifty-four of the coefficients are significant at a better than 1 percent confidence level. There is obviously a strong relation between the arrival of immigrants and native migration patterns. The direction of this relation is also clear. Of the significant correlations, almost all are *negative* in sign. This suggests that, when immigrants move into a local labor market, similar native workers may find that labor market to be relatively less attractive.²⁰ The only significant positive relations are found among the two most highly specialized occupations in the various groups analyzed, technical and agricultural workers. In these two cases, it appears that immigrants and native workers are responding to similar labor market signals and are being attracted to (or shying away from) the same local labor markets.

Further insight into the process at work can be obtained from examination of the correlations for both the largest SMSAs and the SMSAs with the highest rates of immigration. Relations for the one hundred largest SMSAs mirror closely those for the full set. Thus, it does not seem that immigrant effects are felt differentially in major metropolitan areas. However, when the analysis is restricted to the one hundred cities with the highest immigration rates,²¹ the results are even stronger than those for the nation as a whole. In almost every case, the correlation coefficients in columns 5 and 6 of table 8.1 are larger in absolute value and more statistically significant (even though the sample size has been reduced considerably). Whether one looks at the concurrent or the lagged results, except for smaller ethnic groups and certain specialized occupations, the arrival of immigrants in a local labor market appears to reduce the attractiveness of that market to similar native workers.

20. Since overall net migration into urban areas in the United States was positive during the period under study, a negative correlation does not mean that native flows were out of areas with high immigrant arrival rates. Inflows may simply have been lower than they were in cities with lower immigration rates. However, it is interesting to note that, while the mean net migration rate of natives was positive for the SMSAs in the sample, the ten SMSAs with the highest rates of immigration *lost* an average of slightly over 2 percent of their native adult male work force during the period 1975–80.

21. The city with the lowest immigration rate included in this sample was Fayetteville, Ark., where 0.88 percent of the adult male labor force in 1980 arrived in the United States between 1975 and the date of the Census.

Examining differences in the strength of the relation between current immigration and lagged immigration with native mobility, in almost every case the correlation between immigrant arrivals in the early 1970s and native migration in the latter half of the decade is substantially *higher* than the contemporaneous correlation. This suggests that there may be lags in the migratory adaptation of native workers to changes in local markets induced by immigrant arrivals.

The underlying dynamics of the relation between immigrant arrivals and native migratory patterns may be better understood from an examination of correlations across ethnic, educational, or occupational groups as well as the within-group correlations presented in table 8.1. Tables 8.2 and 8.3 present the correlations across ethnic and educational groups for the cities with the highest lagged immigration rates.²²

It is clear from table 8.2 that *white* native workers respond differentially to the arrival of immigrants. No matter what the arriving immigrant group, white native workers are less likely than other ethnic groups also to find the cities where the immigrants settle attractive. The second most consistent pattern occurs for Hispanics. This may, however, be largely a statistical artifact rather than a true response to the arrival of immigrants. Recall that immigrants differentially settled in coastal regions, particularly California and Texas. These are areas of heavy native Hispanic concentration. Since there are few Hispanics in the interior of the country who might move into these areas, the natural diffusion process of second- and third-generation Americans, almost by definition, creates a net migration of Hispanics away from areas where new immigrants are settling.

Turning to educational level (table 8.3), it is clear that less educated native workers respond more to the arrival of immigrants than natives with more education do. The significant correlations between the migratory pattern of less educated natives and the arrival of highly educated immigrants may, in part, result from more highly educated immigrants being forced to take jobs not commensurate with their training on arrival in the United States. Thus, even educated immigrants may be substitutes in the labor market for less educated Americans. This result, however, may also be a statistical artifact created by the high degree of correlation between the locations that attract highly educated immigrants and those that attract less educated immigrants, who clearly are close substitutes for less educated natives.

There is also a pattern of stronger response among less skilled occupations (craftspersons, operatives, and laborers) to the arrival of immigrants into a local labor market. Although almost all native groups tend to avoid areas where large numbers of immigrants are arriving, the effect is consistently greater for native service workers, craftspersons, operatives, and laborers than

22. Results for the other subsamples of cities, contemporaneous time, and occupational groups are similar and are available from the author on request.

Table 8.2 Immigration–Native Migration Correlation by Ethnic Group (100 SMSAs with highest lagged immigration rates)

Native Group	Immigrant Group					
	All Workers	Whites	Blacks	Hispanics	Asians	Other Ethnic Groups
All workers	-.35***	-.42***	-.31***	-.15	-.39***	-.24**
Whites	-.37***	-.41***	-.29***	-.17*	-.47***	-.35***
Blacks	-.12	-.20**	-.17*	-.02	-.16	-.12
Hispanics	-.40***	-.20**	-.19*	-.31***	-.42***	-.30***
Asians	-.08	-.05	-.03	-.07	-.04	-.02
Other ethnic	-.13	-.21**	-.10	-.04	-.18*	-.08

* Significant at the better than 10 percent level.

** Significant at the better than 5 percent level.

***Significant at the better than 1 percent level.

Table 8.3 Immigrant–Native Migration Correlation by Educational Level (100 SMSAs with highest lagged immigration rates)

Native Group	Immigrant Group					
	All Workers	Less than High School	High School Graduates	Some College	College Graduates	Post-College
All workers	-.35***	-.38***	-.31***	-.36***	-.33***	-.43***
Less than high school	-.44***	-.43***	-.39***	-.48***	-.42***	-.48***
High school graduates	-.41***	-.45***	-.40***	-.45***	-.37***	-.44***
Some college	-.29***	-.33***	-.27***	-.29***	-.26***	-.38***
College graduates	-.18*	-.23**	-.14	-.19*	-.17*	-.31***
Post-college degree	-.18*	-.23**	-.15	-.19*	-.19*	-.31***

* Significant at the better than 10 percent level.

** Significant at the better than 5 percent level.

***Significant at the better than 1 percent level.

it is for native professionals, technicians, and clerical workers. This is not a surprising finding since it can be assumed that recently arrived immigrants are typically closer substitutes for less skilled native workers.

The results presented here showing a strong effect of immigrant arrivals on the local labor market for native workers, with this effect concentrated among less skilled and less educated white workers, stand in stark contrast with earlier work that has focused on the effect of immigrant arrivals on wages and unemployment rates in local labor markets. In particular, papers by LaLonde and Topel (1991) and Altonji and Card (1991) study the effect of an increase in either the flow of immigrants into a local labor market or the stock of immigrants in that market on levels and/or growth rates of wages for native workers who might be close substitutes for the immigrants (typically, minori-

ties or less educated workers). In general, the results are not particularly strong. Altonji and Card report ambiguous findings that change sign depending on the techniques and specifications used, while LaLonde and Topel claim that the effects they find are "not large." Where wage or unemployment effects are found, they tend to be concentrated among black and other minority workers.

The failure of these studies to say anything definitive about the effect of immigrants on native workers may be because they attempt to interpret inherently disequilibrium differences in wages or employment rates as long-run equilibria. Should an influx of immigrants into a given area depress wages in that area, native workers will have an incentive to move out of that area (or avoid moving into it) until wage equilibrium has been restored. The strong negative correlations found between immigrant arrivals and native migration patterns even when the analysis is performed using the same five-year period suggest that this equilibrium-restoring response occurs very rapidly. Thus, it is not difficult to believe that any transitory effect on wages or unemployment rates will be difficult to detect.²³

8.4 Regression Results

The results in the previous section establish that, in general, the higher the fraction of recent immigrants in a city's labor force, the less attractive that city is for native workers. Thus, they offer support to the thesis that the effects of immigrants on local area labor markets are quickly offset by reequilibrating migration on the part of native workers. However, the correlation results cannot distinguish between this hypothesis and an alternative holding that some factor other than immigrant arrivals makes an area attractive to immigrants while at the same time rendering it unattractive for natives. For example, immigrants might be heavily influenced by cheap, available housing in depressed areas or may be especially attracted to or attracted for declining industries.²⁴ Some indication that the relation is causal is contained in the fact that the correlations reported in the previous section were higher between native mi-

23. Confounding this effect even further is the fact that the eventual labor market equilibrium may involve the simultaneous presence of high-wage, high-unemployment and low-wage, low-unemployment areas as well as compensating differentials for such factors as climate. Thus, even a permanent relation between the proportion of an area's workers born outside the United States and native wages may reflect simply a difference in risk aversion or other aspects of the utility function between the typical immigrant and the typical native worker. Such a difference in preferences is highly likely given the differences in mean asset wealth and other characteristics between the typical immigrant and the typical native worker. On this basis alone, one might predict that immigrants will differentially opt for those areas with low wages but high probabilities of employment along with native workers who are particularly risk averse, thus creating a statistical relation between immigration and native wages even if there were no causal link.

24. Orr (1988), e.g., finds that almost 10 percent of workers in twenty industries that have had the most severe negative shifts in terms of trade over the past few years are immigrants as compared with slightly less than 7 percent of the entire work force. It should be noted that these figures are for all immigrants rather than for recent arrivals.

gration and lagged immigration than contemporaneous immigration. However, this pattern is only suggestive. A conclusion that high levels of immigration into a local area lower the welfare of natives would be more strongly supported if other factors that might explain mobility patterns were controlled for. Regression estimates have the additional benefit of clearly indicating the extent of the "displacement" effect on native migration from higher levels of recent immigration into a local area.

Table 8.4 contains the coefficients for equations predicting native migration into and out of local areas as well as net migration (in-migration minus out-migration). These estimates were obtained using weighted least squares with weights based on SMSA work force size. Results from unweighted regressions are, however, almost identical. Because many of the exogenous variables of interest are available only for 1980, the results reported in table 8.4 use immigrant arrival rates between 1975 and 1980 rather than the perhaps more appropriate lagged rates. If the lagged rates are used instead, there is almost no effect on the coefficients of interest (the coefficient on immigrant arrival rates changes by less than 10 percent in every equation).

In addition to immigrant arrival rates, controls are included for a number of possible determinants of the attractiveness of areas for native workers.²⁵ Among these are region of the country, the proportion of native-born blacks and Hispanics in the local labor market, two housing market variables (the ratio of rental units to total housing stock and the fraction of dwelling units constructed before 1940), measures of the expected growth of employment due to two types of nonmigrants entering the labor force,²⁶ the local tax burden,²⁷ the average commute to work in the SMSA, the SMSA's air pollution levels,²⁸ and measures of the attractiveness of the area's climate, arts facilities,

25. Numerous previous studies have analyzed net migration into or out of local areas as a function of the characteristics of that area. The conventional interpretation has been that significant measured effects indicate aspects that potential migrants find attractive. As Mueser (1989) has pointed out, because unmeasured fixed effects can introduce specification biases into cross-sectional estimates, a more appropriate interpretation is that significant coefficients represent characteristics that have changed with respect to how they are valued by migrants considering potential locations. With respect to the key variable for the current paper, recent immigrant arrivals can be viewed as a change in the level of immigrants in a local economy, and interpretation is straightforward and conventional.

26. These were derived by calculating the number of youths (under age 23) and adult women (23 or over) who lived in the SMSA in 1975 and were not working in 1975 but who were working in 1980 no matter where they lived. These were converted into percentage terms by dividing by the adult labor force in the area in 1975. They were included in order to capture the expected growth of the labor force in an area net of migration decisions. Their exclusion does not affect the coefficients of interest.

27. Measured as household taxes consisting of the sum of mean state and local income taxes and sales taxes for families in the metropolitan area. Not included are real estate taxes. These are in large measure proxied by the variable "educational effort," which measures how much the community spends on education relative to national averages as a function its school enrollment relative to the national average.

28. Measured as the number of different pollutants that exceed EPA "primary standards" in their mean annual levels.

Table 8.4 **Determinants of Native Migration Rates**

	Native Net Migration	Native Out-Migration	Native In-Migration
Immigration rate	-.1223 (3.60)	.390 (1.28)	-.832 (2.23)
Growth in adult women	.842 (3.03)	-.071 (.28)	.771 (2.52)
Growth in young workers	-1.154 (14.19)	.638 (8.72)	-.517 (5.77)
Northeast	-.064 (4.11)	.018 (1.31)	-.046 (2.67)
Mid-Atlantic	-.058 (4.45)	-.015 (1.32)	-.073 (5.12)
South Atlantic	-.041 (3.17)	.001 (.10)	-.040 (2.82)
East South Central	-.077 (4.64)	-.014 (.91)	-.090 (4.96)
West South Central	-.033 (2.31)	-.016 (1.27)	-.050 (3.14)
East North Central	-.071 (6.02)	-.021 (1.99)	-.092 (7.10)
West North Central	-.082 (5.63)	-.009 (.65)	-.090 (5.65)
Mountain	.014 (.98)	.021 (1.71)	.035 (2.29)
Proportion black	-.161 (2.88)	-.124 (2.46)	-.284 (4.63)
Proportion Hispanic	-.026 (.60)	-.143 (3.69)	-.169 (3.56)
Climate ranking	.0001 (3.29)	-.00003 (1.02)	.00008 (2.16)
% of housing stock apartments	-.001 (2.26)	.003 (8.00)	.002 (4.48)
% of housing built before 1940	-.001 (4.36)	-.002 (6.39)	-.003 (9.19)
No. of pollutants	-.002 (.95)	-.007 (3.09)	-.009 (3.39)
Average commute	-.002 (4.60)	-.002 (5.16)	-.00002 (.03)
Educational effort	-.014 (.79)	.039 (2.46)	.025 (1.29)
Arts ranking	.00007 (1.54)	.00004 (.90)	.0001 (2.14)
Recreation ranking	.00003 (.90)	.00006 (1.80)	.00009 (2.30)
Household taxes (thousands)	-.033 (5.30)	.003 (.52)	-.030 (4.39)
Constant	.216 (5.45)	.108 (3.01)	.324 (7.42)
Adjusted R^2	.74	.69	.80

Note: *t*-statistics are given in parentheses. Observations are weighted by SMSA population.

and recreation resources.²⁹ A number of other local conditions with considerable intuitive appeal were considered in preliminary estimations, but none had a significant effect on net native migration rates.³⁰

Immigrant arrivals have a statistically significant effect on native migration that is consistent with the correlation results reported earlier. An increase of 1 percent in the fraction of an SMSA's labor force who arrived in the United States between 1975 and 1980 results in a decrease in net native migration into that labor market equal to about 1¼ percent of its work force. In other words, not only does the arrival of immigrants decrease the attractiveness of local areas for natives, but it does so to such an extent that it more than completely offsets the number of arriving immigrants. These results are consistent with the assertion by Card (1990) that the huge influx of Cuban refugees into Miami following the Mariel Boatlift did not have a long-run effect on that city's population. Taken at face value, these results imply that cities that attract a large number of immigrants will actually shrink slightly in size. Such a result is theoretically plausible. For example, if immigrants and natives were perfect substitutes in production, the implied coefficient would be minus one. Any disamenities for natives created by living near immigrants would then increase the size of this coefficient. However, the magnitude of the estimated coefficient may also be affected by any undercount of illegal immigrants in the 1980 Census.

Results examining in-migration and out-migration of natives separately are

29. These consist of the area's rank score with respect to these aspects of local life as reported in the 1985 Rand McNally *Places Rated Almanac*. As such, they are composed of a number of different measures and contain some arbitrary weighting schemes. They are likely, however, to be highly correlated with any true measure of the attractiveness of the city in these areas. It is probable that, while arts facilities are not important per se in inducing locational decisions, they do serve to proxy other, unmeasured, characteristics of the area such as its income distribution.

30. Among these were local area unemployment rates, projected population growth and projected income growth between 1970 and 1980 (unfortunately, projections of growth rates are available only for this longer period and at the state level, while actual measures would be inappropriate because of contamination by the migration process), population density, mean annual heating degree days, mean annual air-conditioning demand, both violent and property crime rates, public school pupil/teacher ratios and expenditures per pupil, and measures of housing, food, and other living costs relative to national averages. None of these variables proved to have substantial explanatory power, and their inclusion did not substantially change the estimated effect of immigrant arrival rates on native migration, so, following Ockham's razor, they were excluded from the reported results. Technically, the exclusion rule was as follows. A preliminary regression was estimated using the full set of available variables to explain net migration of natives. Where several variables measured the same concept (such as the climate ranking and the combination of heating degree days and air-conditioning needs), variants were estimated using each alternative, and the alternative with the greatest explanatory power was retained for the final equation. Other variables were retained if, in the preliminary equation, their estimated coefficient exceeded its variance. The only exceptions to this rule were in the case of the regional dummies (all of which were retained since they were jointly significant) and the proportion of Hispanics in the local labor market (which was retained even though it never met the inclusion rule owing to its intrinsic interest for the topic under discussion and as a contrast with the measure of the proportion of blacks in the area). For consistency's sake, the variables selected using this process for the net migration equation were also used in estimating the separate in- and out-migration equations reported in cols. 2 and 3 of table 8.4.

consistent with the overall results and serve to further support the conclusion that immigrant arrivals must reduce the welfare of native workers. In particular, an increase in the proportion of recent immigrants in a local labor market increases movement of natives out of that labor market while at the same time reducing the movement of nonresident natives into that area, all else held constant. As might be expected, this effect is stronger with respect to in-migration than out-migration. There is likely to be a pool of people who will be relocating at any given time. Given that these workers are going to relocate, there is no additional mobility cost involved in avoiding any particular labor market. When it comes to out-migration, however, the effect from an increase in immigrant arrivals will have to be large enough to overcome fixed costs involved in deciding to move.³¹

As with the correlation results, there is a somewhat stronger relation between immigrant arrivals and native mobility when lagged immigration rates are considered. The coefficient of -1.22 obtained when contemporaneous immigration rates are used to predict net native migration becomes approximately 10 percent larger (increasing to -1.36) when prior-period immigrant arrivals are substituted. In separate regressions predicting in- and out-migration of natives, lagged immigrant arrival rates have a larger effect in reducing native in-migration and a smaller effect in encouraging native out-migration than contemporaneous immigrant arrivals.³² Coefficients on the other right-hand-side variables are not affected if lagged immigration rates are used instead of contemporaneous ones.

The correlation coefficients presented above contained evidence that the effect on native migratory patterns of the arrival of less skilled immigrants was greater than that of more skilled immigrants. Confirmation of this result from the regression equations was sought by substituting sets of education-, race-, and occupation-specific immigrant arrival rates for the overall arrival rate, but

31. Although a full study of the determinants of native locational decisions other than immigrant arrivals is beyond the scope of this paper, some of the results for other variables reported in table 8.4 are worth noting. Higher state and local taxes appeared to have discouraged native males from locating in an area, as did an atypically large cohort of youths about to enter the labor force. Areas with higher concentrations of black residents tended, all else being equal, to attract fewer natives. Native workers appeared to be attracted to areas with newer, owner-occupied houses. They also favored areas in the Pacific Coast region and where there were a large number of non-working adult women about to enter the labor force. Since the "rank" variables are coded with the most attractive area being given a rank of one, the positive coefficient on local climate conditions indicates that, the *worse* the climate in an area, the more attractive it was for native workers, all else constant. It should be noted, however, that region has been controlled for in this finding and that, following Mueser (1989), the result is best interpreted as meaning that a favorable climate was less important than in the past as a determinant of migratory patterns rather than that such a climate was unattractive to potential migrants.

32. It is beyond the ability of the current research to establish why this pattern may differ. It is possible that current residents, driven away by immigrants, respond to changes that are more rapidly apparent than potential in-migrants who avoid the area. For example, one group may respond more to changes in amenity values in neighborhoods, while the other is more sensitive to changing economic conditions. The sequencing of the effects of immigrant arrivals is a promising area for future research.

the arrival rates within each set were so highly correlated that the resulting coefficients provided no consistent or interpretable pattern.

The estimation of regression equations to predict the effect of immigrant arrivals on the mobility of specific subgroups of workers was much more successful. As opposed to the correlations reported above where native migration by a group was expressed as a fraction of the number of members of that group in the local labor market, in the regression equations the dependent variable was defined as the net migration of adult male workers in a racial, educational, or occupational group divided by the total adult male labor force in the local area. This definition imposes an adding-up constraint that provides an easy way of seeing the relative effect of immigrant arrivals on various groups. Recall that overall estimates indicated that an inflow of immigrants equal to 1 percent of the local labor force is predicted to reduce net native migration into the area by about 1.2 percent of the local labor force. If the population is decomposed into a set of mutually exclusive and exhaustive categories, then the total effect on net native migration should be equal to the sum of the effects on the separate subgroups.³³ Each subgroup's share of the total effect, then, is simply the coefficient from its equation divided by the overall coefficient. This "effect share" can be compared with the subgroup's share of the adult male labor force. If immigrant arrivals affect all groups equally, each group's share of the effect should be equal to its share of the labor force. However, if immigration has a particularly large effect on one group, the share of this group in the total effect should exceed its share in the labor force. Table 8.5 presents these shares for racial, educational, and occupational subgroups.

These results (which control for determinants of native locational decisions other than immigrant arrival rates) are similar to those presented above from the simple correlations. With respect to racial groups, the effect of immigrant arrivals is almost exclusively concentrated among white natives. The coefficient in the equation for blacks was approximately zero, indicating that arrival of immigrants into a local area had no effect on the propensity of blacks to move into or out of that area.

The pattern of educational coefficients is somewhat harder to interpret. It is clear from table 8.5 that immigrant arrivals have a disproportionately large effect on those with less than a high school education and a smaller than proportional effect on those who have graduated from college. This is as would be expected. Unexpected was the fact that immigrant arrivals appear to have a greater effect on those who have graduated from high school and gone on to some college than they do on those who stopped their education after high school graduation. In part, this may be because, as is well established, native migration concentrated among younger workers, while there has been a sig-

33. Mathematically this must hold. A cross-equation constraint on coefficients in each set of regression equations was not imposed, however, and each equation was estimated independently. Even so, the sum of the coefficients on immigrant arrival rates for each set of subgroups was never significantly different from the coefficient obtained in the overall estimation.

Table 8.5 Shares of Mobility Effect of Immigration and Local Labor Market

	Share of Workers (%)	Share of Effects (%)		Share of Workers (%)	Share of Effects (%)
Racial group:			Occupational group:		
White (non-Hispanic)	82.8	95.0	Managerial	13.9	12.2
Black	11.3	.0	Professional & technical	14.7	10.2
Hispanic	5.4	3.2	Sales	5.9	13.7
Asian & other	1.5	1.8	Clerical	6.2	4.7
			Service	8.7	3.9
Educational group:			Agricultural	2.4	2.9
Less than high school	33.3 (14.7)	40.6	Crafts	21.1	28.3
High school graduate	32.1 (38.9)	13.9	Operative	17.7	16.1
Some college	14.9 (23.1)	36.1	Laborer	7.6	8.1
College & post graduate	19.7 (23.3)	9.3			

Note: The percentages in the population add to more than one hundred owing to the inclusion of black Hispanics in both categories in U.S. government data but not in the data for this study. The numbers in parentheses represent the share of the male work force age 25–29 when mobility of natives is greatest. All “share of workers” are for the adult male labor force in 1978.

Table 8.6 Determinants of Immigrants' Locational Decisions

	Immigrant Arrivals		Immigrant Arrivals
Net native migration	– .042 (4.09)	Proportion black	– .032 (3.07)
Growth in young workers	– .099 (5.93)	Proportion Hispanic	.067 (9.77)
Northeast	– .007 (2.46)	% of housing stock apartments	.0007 (10.05)
Mid-Atlantic	– .011 (4.57)	% of housing built before 1940	– .0001 (1.86)
South Atlantic	– .016 (6.56)	No. of pollutants	.003 (6.63)
East South Central	– .018 (6.29)	Educational effort	.003 (1.10)
West South Central	– .013 (6.47)	Arts ranking	.00002 (3.10)
East North Central	– .012 (5.83)	1980 unemployment rate	– .0004 (1.85)
West North Central	– .017 (7.25)	In state with Mexican border	.003 (1.85)
Mountain	– .016 (6.78)	Constant	.028 (4.49)
		Adjusted R^2	.90

Note: t -statistics are given in parentheses. Observations are weighted by SMSA population.

nificant shift toward a greater proportion of the population attending at least some college in recent years. Hence, the difference is less pronounced when migration shares are compared with the share of male workers aged 25–29 in each educational category.

Finally, the pattern of coefficients from the occupational equations suggests that particularly large effects from immigrant arrivals are felt by native men engaged in sales and craft occupations, while smaller than average effects are felt by men in professional, technical, and service jobs.

The metropolitan areas where immigrants settled during the period 1975–80 were also investigated. Results are presented in table 8.6 for an equation limited to those variables whose estimated coefficient exceeded its standard error. The most significant predictors of where newly arriving immigrants settled were the proportion of an area's adult male labor force who were of Hispanic origin and the fraction of rental houses in the local housing stock. Also positively related to the propensity of immigrants to choose an area were the relative number of blacks in that area and its level of air pollution (perhaps standing as a proxy for an industrial structure particularly attractive to immigrants). Immigrants, like natives, tended to prefer to settle on the West Coast. Unlike natives, however, higher local tax levels did not deter immigrants from choosing an area.³⁴ Among the variables that did not prove important in predicting native migratory patterns, the most significant additional variable was whether the SMSA was located in a state that shared a border with Mexico.³⁵ Surprisingly, once again local labor market variables (especially the unemployment rate) did not have a significant effect on where immigrants decided to locate.³⁶ Clearly, as was suggested above, immigrants and native workers choose their location of residence based on substantially different criteria.

Native migration itself had only a very slight (although statistically significant) negative effect on immigrant arrivals, with an increase of 1 percent in an area's population due to net native migration being associated with a predicted decrease in immigrant arrivals of 0.04 percent.

8.5 Simultaneous Equations Estimates

Both the theoretical link between immigrants' and natives' locational decisions and the fact that each was significant in the other's OLS regression imply that coefficients from OLS regressions may be biased by simultaneity consid-

34. In fact, the coefficient on this variable was positive, although so imprecise that it did not meet the criteria for inclusion in the specification reported. This may reflect greater levels of services provided in high-tax cities coupled with an assumption on the part of many immigrants that they will pay lower than average taxes.

35. As might be expected, inclusion of this variable substantially reduced the estimated attraction of the Pacific Coast for immigrants. It is California that attracts this group, not Washington or Oregon.

36. The sign of the unemployment rate was negative, with a *t*-statistic slightly in excess of one. Perhaps it did not have a greater effect because of a lack of information on the part of new arrivals to the United States concerning local unemployment rates.

Table 8.7 Determinants of Native Migration and Immigration Rates (three-stage least squares)

	Native Net Migration	Immigrant Arrivals		Native Net Migration	Immigrant Arrivals
Immigration rate	-3.340 (6.80)		Proportion black	-.213 (4.10)	
Net native migration		-.040 (2.62)	Proportion Hispanic	.158 (2.62)	.062 (9.39)
Growth in adult women	.555 (2.20)		Climate ranking		-.00001 (1.80)
Growth in young workers	-1.189 (13.63)	-.089 (4.52)	% of housing stock apartments		.0007 (12.68)
Northeast	-.058 (3.59)	-.010 (3.31)	% of housing built before 1940	-.002 (5.96)	
Mid-Atlantic	-.062 (4.54)	-.014 (6.59)	No. of pollutants		.003 (7.31)
South Atlantic	-.058 (4.05)	-.011 (5.67)	Average commute	.003 (6.52)	
East South Central	-.092 (5.07)	-.014 (5.25)	Arts ranking	.0001 (3.46)	.00002 (2.78)
West South Central	-.031 (2.24)	-.008 (3.74)	Household taxes (thousands)	-.020 (3.42)	
East North Central	-.073 (6.17)	-.012 (5.31)	Predicted employment growth (1970-80)		.008 (2.21)
West North Central	-.087 (6.01)	-.015 (5.46)	In state with Mexican border		.004 (2.43)
Mountain	-.013 (.86)	-.014 (5.25)	Constant	.237 (6.80)	.024 (4.08)

Note: *t*-statistics are given in parentheses. Observations are weighted by SMSA population.

erations.³⁷ Table 8.7 presents the results of three-stage least squares estimation of a system of immigration and native locational decision equations that takes into account the possible endogeneity of locational decisions rather than assuming that immigrant arrival rates are exogenous.³⁸ Results are presented for

37. Since the OLS results indicate that immigrant arrivals are negatively affected by native migration, the coefficient on immigrant arrivals in the native migration decision should be biased toward zero.

38. As is often the case in empirical economics, the issue of identification is tricky. On theoretical grounds, it is difficult to establish that any factor cannot influence the locational decision of either group. Perhaps the most convincing case can be made for proximity to Mexico. It is easy to see why (for transportation costs if nothing else) being located near Mexico should increase the number of immigrants who will settle in a city. On the other hand, it is very difficult to see why proximity to Mexico should play a role in the locational decisions of current U.S. residents other than through its effect on immigrant location. Theoretical justification for the exclusion of a variable from the immigrant decision is more problematic. The best candidate is the average commuting time in the city, which may have little relevance for immigrants, who tend to live in concentrated enclaves. It is possible, however, that this variable may also capture other effects (such as city size) that could influence immigrants' decisions. Fortunately, when labor force size was included as an additional explanatory variable, it proved to be insignificant and changed the estimated effect of commuting time only slightly. The estimates in table 8.7 are robust to changes in identifying restrictions.

only those exogenous variables that are statistically significant. Altering the specification to include other variables has essentially no effect on the estimated results.³⁹

The major change between the results from the OLS estimates of native migratory patterns (table 8.4) and those from the simultaneous system (table 8.7) is in the coefficient on immigrant arrival rates. This coefficient increases in magnitude from -1.22 to -3.34 . While the size of this change and the fact that it is in the direction implied by the anticipated simultaneity bias point to the importance of modeling immigrant and native locational decisions jointly, the magnitude of the coefficient in these three-stage estimates is dubious enough to suggest that more work in this area would be fruitful.

8.6 Interpretation and Conclusions

It is clear that there is a strong relation between the arrival of immigrants in a local labor market and the mobility patterns of native workers. The higher the concentration of recent immigrants in an area, the less attractive that area appears to have been for native workers. These results can be seen relating immigrant arrivals and native movements for the same five-year period and relating native movements to immigrant arrivals during the previous five-year period. They exist in both simple correlations and when an extensive set of other factors that might influence where native workers choose to locate are controlled for.

Such a negative relation is consistent only with there being a reduction in the welfare of native workers due to the arrival of immigrants into a local area. The regression results imply that the effect of immigrant arrivals on native workers was so large that natives' migratory responses more than totally offset any arrival of immigrants. If confirmed in further work, this is a startling finding.

Mobility responses of native workers to immigrant arrivals are concentrated among low-skilled and less educated natives. These results are consistent with findings from earlier studies of local area wages and unemployment rates that workers who are closer substitutes for new immigrants bear the brunt of any costs imposed on the domestic economy by their arrival.

Unlike findings with respect to wages in earlier studies, mobility responses by native workers to immigrant arrivals are especially prominent among whites. This raises the possibility that the costs imposed by immigrants on current residents may be heavily psychic. It should also be interpreted in light of findings reported elsewhere that arrival of immigrants into a local labor market depresses the wages of blacks but not whites. It may be that the arrival of immigrants creates incentives for all groups of natives to avoid an area but that only whites respond to these incentives. Possible explanations for this

39. The results presented have restricted the instruments in the first-stage estimates to the exogenous variables present in the final estimates. The results do not change if all available exogenous variables are used to obtain the first-stage estimates.

inconsistency include differential access to capital to finance mobility and greater knowledge about alternatives elsewhere on the part of the majority population. Alternatively, minority groups may be more strongly tied to their current place of residence through either discriminatory barriers to mobility or a desire to remain in ethnic communities where cultural roots can be maintained. The difference in wage and mobility results suggests that the effect of immigrants may not fall differentially on various ethnic groups so much as that the response of these groups differs. Whites may respond by bearing increased mobility costs, while other ethnic groups remain in areas where immigrants settle and bear costs by seeing their labor market conditions at least temporarily worsened.

The policy implications of the current findings must be developed with care. The results were obtained within the context of a particular immigration policy in place during the 1970s. A finding that immigrants admitted under that policy rendered local areas less attractive to native workers does not mean that an alternative set of criteria for admission to the United States could not be devised so that the arrival of immigrants improved the welfare of natives. For example, one can imagine selecting immigrants for the amount of capital they could provide to U.S. industry. In this case, increased productivity from this added capital stock is likely to increase the welfare of current residents of the country. In recent years, the United States has begun to revise its immigration policy to reflect the effect of immigrants on native workers better. "Immigration-effect" reports are required by Congress from the executive branch every three years under the 1986 Immigration Reform and Control Act, and it is likely that the results of this reporting exercise will influence the direction of future immigration policy.

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