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Immigration and native migration in New York City, 1985–1990

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Abstract. The 1990 Public Use Micro Sample is used to analyze the relationship between immigration and outmigration of the native born in New York City. The study population is limited to native born males who lived in the five boroughs in 1985. The relationship between immigration and the probability of various kinds of moves is assessed using logistic regression. Results suggest that immigration has an insignificant effect on migratory behavior, with the exception of inter-borough migration. Unlike prior work, this study examines a single metro area, and does not limit itself to inter-state migration. These results are consistent with more recent work (Card 2001; Kritz et al. 2001), which has failed to find a positive labor market level effect of immigration on native migratory behavior. The inter-borough finding is consistent with the occurrence of voluntary residential segregation within the city, in which the native born move away from areas of immigrant concentration but do not leave the labor market, yet there is no direct evidence that this process occurred.

Keywords: Immigration, Metropolitan, Migration, Native born, New York City

1. Introduction

The relationship between immigration and internal migration of prior residents is poorly understood, yet has important implications for our understanding of the effect of immigration on regional labor and housing markets. In New York City, for example, recent population growth has been characterized by an increase in the foreign born population and a decrease in the native born population. Results from the 2000 Census suggest that between 1990 and 2000 the city's population grew to over 8 million, an increase largely fueled by immigration. However it is not clear whether, or how, these population flows are related (Frey 1995).

Previous studies have focussed on the relationship between immigration and inter-state migration, or on net migration from metropolitan areas. The strikingly asymmetrical spatial distribution of immigration increases interest in examining particular metropolitan areas, such as New York City or Los Angeles, separately. Yet it is difficult to design an appropriate empirical test at this level. This study uses the 1990 public use census micro sample and Immigration and Naturalization Service (INS) data on immigration to examine

the relationship between immigration and the probability of migration from a New York City borough between 1985 and 1990. The results suggest that immigration is not positively related to outmigration of native born males from the five boroughs, but is positively related to the probability of inter-borough migration. The next section provides some background information. The theory is described in Section III. The fourth section contains data and methods. Results are presented in Section V. The last section concludes.

2. Background

One interesting question about the location and mobility of immigrants is its possible relationship to the migration patterns among the native born. This issue has been a source of disagreement among researchers, yet potentially has important implications for our understanding of the demographic and economic effects of immigration. There is a wealth of descriptive information that suggests that immigrants tend to locate in areas of declining native population, but it is very difficult to tell whether the underlying process is one of "replacement" or of "displacement".

Several studies of both inter-state and metro area migration have found a statistically significant negative association between immigration and net migration among native born whites and blacks. This perspective is most closely associated with the work of William Frey (Frey 1999, 1995a, b; White & Hunter 1993; Filer 1992). The negative correlation between immigration and net migration, and the tendency for native born outmigrants from high immigration areas to have relatively low levels of educational attainment has led Frey to the conclusion that the relationship between immigration and migration is causal, and that native born whites and blacks with little human capital are essentially being pushed from areas of high immigration. This relationship has been attributed to either labor market competition or a desire for ethnic segregation on the part of the native-born. In either case the result has been described as demographic "balkanization" (Frey 1995).

Yet this point of view has not gone uncontested. Inter-state migration has been criticized as an inappropriate measure in a test of labor market displacement, due to the lack of correspondence between states and labor markets. An analysis of the one hundred largest metropolitan areas found no support for an immigration-migration relationship, in a specification that used the share of the labor market rather than share of the population as the measure of immigration (Wright et al. 1997). Several other studies of metro area patterns similarly found a lack of evidence for labor market displacement (Card 2000, 1997; White & Imai 1998). In a recent study of metro areas Card (2001) found no effect on inter-city mobility, but some evidence that

wages and employment in certain occupations are lower in high immigration cities. A recent analysis of interstate migration using the 1990 public use micro sample similarly found no relationship between immigration and native migration (Kritz & Gurak 2001). Furthermore, the emphasis on the trend toward ethnic segregation, or "balkanization", has been perceived by some to be anti-immigrant in tone (Ellis & Wright 1998).

However, there has been some evidence which suggests that metro areas which are major immigrant destinations, such as New York City and Los Angeles, may constitute exceptions to overall national patterns (Butcher & Card 1991). Wright, Ellis and Reibel find that their results were sensitive to the inclusion or exclusion of New York and Los Angeles. Card (2001) notes that the downward pressure on wages and employment would be experienced primarily in "traditional gateway cities like Miami and Los Angeles". Due to the spatially asymmetrical distribution of immigrants, an analysis of the relationship between immigration and migration in high volume locations would be highly desirable.

New York City has both high immigration and a declining native population. Between 1980 and 1990, for example, despite the entry of over 850,000 immigrants, net migration was negative. As noted by Frey, between 1990 and 1996 international migration was 634,502 and net domestic migration was – 929,541. While the gross figures are suggestive, this relationship is not well understood (Frey 1995b). Between 1990 and 2000 the non-Hispanic white population declined by approximately ten percent. The New York City Department of City Planning noted that, "Immigration played a crucial role in the population increase over the decade, with nearly 1.2 million immigrants admitted to New York City in the 1990s. This high level of immigration has, to a large extent, countered a substantial net outflow of residents to other parts of the nation" (New York City Department of City Planning 2001). The uniqueness of New York City and the importance of immigration as a component of recent urban development was emphasized by Myers (1999) in a recent comparison of growth in four metro areas.

New York City is unique because of both the volume of immigration in recent years and characteristics of its housing market. Immigrants in New York City must participate in an extremely tight housing market, characterized by low vacancy rates, the presence of rent control, and very little new construction (Schill & Scafidi 1999). Additionally, the level of racial and ethnic segregation in the city is relatively high. In an analysis of data from 1991 to 1996, Rosenbaum and Friedman showed that immigration in New York City had not resulted in a reduction of racial and ethnic segration. While there were few predominantly white neighborhoods, black/white divisions remained strong, and the racial and ethnic composition of neighborhoods

strongly predicted the characteristics of potential in-migrants (Rosenbaum & Friedman 2001a). In another study of immigrant locational attainment in New York, Rosenbaum and Friedman (2001b), found that immigrants' housing and neighborhood quality was lower than average, but that race and ethnicity were more important determinants of quality than was nativity.

One difficulty with analyzing a single metropolitan area is finding a way to introduce sufficient variation into the estimation. One approach is to analyze very small sub-metropolitan geographic areas, so that there are many observations. This was the approach adopted in a prior analysis of New York City, which used zip code level census data from 1980 and 1990 and INS data on legal admissions (Hempstead 2001). While a significant negative relationship was found between immigration and net migration at the zip code level, causality could not be determined. One problem with this approach is that micro-data are not available at the zip code level; aggregate measures of migration must be calculated.

The New York Housing and Vacancy Survey (HVS), a survey of approximately 18,000 households conducted every two to three years for the City by the Census Bureau is another potentially relevant data set . The advantage to this data source is that it is possible to analyze individual level data at the sub-borough level, since the HVS identifies fifty-five sub-borough geographical areas based on New York City's community districts. This allows for analysis at an area that more closely proxies a "neighborhood". However, a major drawback of the HVS is that it only includes data on those living in the five boroughs, making it impossible to study migration to the suburbs or out of the metro area. This is the main reason why these data were not used for this study.

3. Theory

Three general ideas have been advanced to explain the relationship between immigration and migration. These theories suggest different empirical tests, and have quite different implications. The first is the notion of "displacement" resulting from labor market competition. This was the theory investigated by Card (1991) in his initial analysis of the Miami labor market after Mariel. If immigrants compete with prior residents in a given labor market, one might then expect some outmigration from the labor market, which in this case might be proxied by the metropolitan statistical area. Yet under this scenario one would not necessarily expect to find a relationship between immigration and net domestic migration at very small levels of geographical aggregation, although if housing markets were extremely tight this could occur.

This might be modeled as follows:

$$\mathrm{Pm}_{ijt} = \alpha + \beta_1 \mathrm{X}_1 + \beta_2 \mathrm{X}_2 + \beta_3 \mathrm{imm}_{i(t-n)} + \epsilon$$

where Pm_{ijt} is the probability of migration from labor market i to some labor market j in time t where $j \neg i$. The vector X_1 contains labor market characteristics, X_2 contains information about the human capital of the individual, and $\mathrm{imm}_{i(t-n)}$ measures immigration to labor market i at some time $_{t-n}$. This is a theory about migratory behavior among those in the labor force and would be expected to be more powerful among those with human capital characteristics similar to those of arriving immigrants.

A second possible explanation for a relationship between immigration and displacement could be described as ethnic displacement, or native born "avoidance". If the relationship between immigration and the net migration of prior residents is based on the unwillingness of the latter to co-reside with the former, one then might expect to see a negative relationship between immigration and net domestic migration at smaller levels of geographical aggregation – i.e., zip codes or census tracts, rather than at the level of labor market, since domestic out migrants would not necessarily leave the metro area. Under this version of events the primary motivation for moving is not competition from new arrivals in the labor market.

This scenario would look much the same:

$$\mathrm{Pm}_{ikt} = \alpha + \beta_1 \mathrm{X}_1 + \beta_2 \mathrm{X}_2 + \beta_3 \mathrm{imm}_{i(t-n)} + \epsilon$$

although the migration measured in the dependent variable in this model is the probability of migration from some small residential area or neighborhood i to some other neighborhood k at time t, in which k may be either inside or outside of labor market j but where $k \neg i$. In this specification the vector X_1 measures characteristics of the neighborhood, the vector X_2 represents socioeconomic or demographic characteristics of the native born population while $\mathrm{imm}_{i(t-n)}$ measures immigration to neighborhood i at some time $t - n$. The immigration term could be made more subtle, if one theorizes that it is not the volume of immigration per se, but rather the number of immigrants from particular countries of origin, or with particular age, gender and race which would trigger outmigration motivated by a desire to avoid contact.

Finally, if the relationship between immigration and net migration of prior residents is one of replacement, in which immigrants move into neighborhoods that prior residents have already vacated for some other reason, such as population aging, one may find a relationship between immigration and net migration at small geographical levels, such as zip codes or census tracts. However, unlike the previous case, the true relationship is between immigration and lagged domestic outmigration, where immigration is the dependent variable.

This situation could be represented by:

$$\text{imm}_{it} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 \text{nmig}_{i(t-n)} + \epsilon$$

where imm_{it} measures immigration into neighborhood i at time t. The vector X_1 contains characteristics of neighborhood i, while X2 measures characteristics of immigrants. In this specification $\text{nmig}_{i(t-n)}$ measures net migration for neighborhood i by the native born at some time $t - n$.

The dependent variable for the first two models was represented as a probability, but depending on the specification, microdata on individuals or aggregate data in the form of rates may be used to measure native migration, or migration of prior residents. In the third model, net migration rates for small areas would be used as a regressor, and immigration would be the dependent variable. Immigration is measured in the aggregate in all of these models. While these three theories have been described separately, they are not necessarily mutually exclusive. "Replacement", for example, can precede "native born avoidance", as immigrants can move into a neighborhood which has been vacated by some segment of the native born population (who may be retiring), and this influx in turn leads to the exodus of others. Meanwhile native born residents in another section of the metropolitan area may be choosing to exit because of labor market competition with these same immigrants, who do not happen to be their neighbors. Theories about simultaneous processes are more complex to test empirically.

The different separate scenarios are summarized in the table below.

Theory	Dependent variable	Independent variable	Possible to analyze single for Metro area	Estimating equation
Labor market displacement	Migration from labor market	Immigration into labor market	No	$\text{Pm}_{ijt} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 \text{imm}_{i(t-n)} + \epsilon$
Native born avoidance	Migration from neighborhood	Immigration into neighborhood	Yes	$\text{Pm}_{ikt} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 \text{imm}_{i(t-n)} + \epsilon$
Replacement	Immigration into neighborhood	Migration out of neighborhood	Yes, in theory	$\text{imm}_{it} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 \text{nmig}_{i(t-n)} + \epsilon$

There are constraints which make it very difficult to estimate either the first or third model in a single metropolitan area. For example, in a study of one metro area it is not really possible to test the labor market displacement theory, since there would be only one measure of immigration to the New York City metropolitan area, which would be a proxy for one labor market. Similarly, the third model is hard to estimate due to the lack of high quality small area

migration estimates, although the zip code level work by Hempstead (2002) represents one crude attempt to create such estimates.

This study will attempt to test the second hypothesis, whether immigration is significantly related to outmigration among the native born from particular areas of New York City. For the city as a whole, it is known that net internal migration has been negative while net international migration has been positive. Results from a preliminary zip code level analysis suggests that some type of negative relationship between immigration and net migration exists at a smaller geographic level, but it is not possible to separate the second and third explanations (Hempstead 2001). However, micro data from the public use micro sample (PUMS) provides the opportunity to make a more refined test.

4. Data and methods

The public use micro sample (1%) of the 1990 census is the primary dataset used in this analysis. These data include information about residence in both 1990 and 1985. Residence information is provided to the geographical level of a census variable called a PUMA (public use micro area). Unfortunately, detail about the 1985 PUMA is quite limited; only the county of former residence is known. The study was restricted to native born males aged 18–64 who resided in one of the 5 boroughs of New York City in 1985. These males did not necessarily live in New York City in 1990. There were approximately 18,000 males with these residency and age characteristics in the 1990 PUMS.

Data on immigrants comes from two major sources. The census provides information on the "stock" of foreign born residents, with information about country of origin, year of arrival, educational attainment and occupation. While the Census data theoretically includes both legal and illegal immigrants, as well as those who are in this country temporarily, it is known to under-measure illegal immigrants in particular, and immigrants from Latin America and Asia in general, due in part to the inadequacies of the Census Bureau's address list in certain high immigration places such as New York City.

The Immigration and Naturalization Service provides annual data on legal immigrants and their intended residence. Data from the INS provide a measure of the annual flow of immigrants. These data have their shortcomings as well. Unlike the Census, the INS only collects data on those who are given legal permanent status, and recent backlogs in the legalization process have made this a somewhat inaccurate measure of annual flow, since many of the immigrants who have "adjusted" their status in a given year have actually been residing in the country for some time. Yet despite these inconsistencies,

the INS data are almost certainly highly correlated with the actual flow of immigration. Additionally they are an important source of information about visa status and intended residence. While the INS publishes annual statistics showing intended residence by metropolitan area and state, the microdata file includes data on zip code of intended residence. These data are available to researchers, and additionally the New York City Department of City Planning has published several reports on the "Newest New Yorkers" based on an analysis of the INS zip code data (Department of City Planning 1994, 1996).

Due to the lack of sub-borough information about residence of the native born in 1985, it was necessary to find another way to introduce variation in immigration into the model. Despite the existence of zip code level immigration data, the Census data provides only five possible locations (the five foroughs) for native born males residing in 1985. This would result in only be five different aggregate measures of immigration corresponding to these five boroughs.

To compensate for the lack of detail about place of prior residence, the measurement of immigration is calculated as a ratio that varies by borough, age, and race. Each native born male in the sample is assigned to a relatively broad demographic category based on his age and race. The aggregate population of these different demographics brackets in 1985 by borough, age, race, and nativity was obtained from intercensal population estimates from the Census Bureau. Unfortunately, these data are broken down into only three racial groups (white, black and other), with no separate figures available for Hispanics. Since little is known about the ethnic and racial characteristics of those reporting "other" race, the measure is calculated for blacks and whites only. These two racial groups, three age groups, and five boroughs thus create thirty distinct demographic brackets.

The average number of male immigrants between 1983 and 1989 by age and borough is then calculated. The source for this information is the INS data described above. These data are aggregated at the borough level but disaggregated by age and sex. The race item on the INS is not reliable enough to be used. There are five borough and three age groups of immigrants, creating 15 distinct categories.

These disaggregated numbers of immigrants are divided by the demographic "brackets" created for the native born population. These calculated measures are referred to as the immigrant-native ratio, or INR. The INR is the ratio of the recent flow of immigrants in a certain age group to the stock of white or black native-born males of the same age, in a given borough. This ratio provides a measure of the intensity of immigration to particular demographic groups. It is reasonable to assume that the effect of immigration on migratory behavior might depend on the relative size of critical aspects

Table 1. Type of move between 1985 and 1990, males aged 18–64 years residing in New York City in 1985

Type of move	No.	%
Did not move	9,736	54.50
Moved within borough	3,638	20.36
Moved to different borough	1,067	5.67
Moved out of city, within MSA	1,380	7.73
Moved out of MSA	2,043	11.44
Total	17,864	100.00

Source: 1990 Public use microdata, 1% sample, Bureau of the Census.

of the immigrant population – a native born male of working age might be expected to have less of a reaction to a very elderly immigrant population with whom he would have little or no interaction than to a population of his own age with whom he may compete for public space, housing and potentially jobs.

Since there are five New York City boroughs, three age groups, and two native born race groups used in this model, there are ultimately 30 different values of the INR. The measure ranges from 0.015 to 3.35, with a mean of 0.428.

5. Results

Table 1 provides some descriptive information about mobility among men aged 18–64 years in 1990. As can be seen in these unweighted frequencies, nearly 18,000 males from the PUMS sample lived in one of the five boroughs in 1985. Of these, nearly one-half had moved by 1990, but about forty percent of all moves were to another location within the same borough. About fifteen percent of movers moved to a different borough, nearly twenty percent moved to a suburban location within the New York City MSA, and the rest (approximately 25% of movers) relocated to some location outside the MSA. As can be seen in Table 2, mobility differed for native and foreign-born men, with the latter group being more likely to move, but less likely to leave the city.

Among native born males, age and educational attainment are related to mobility, as can be seen in Table 3. The effect of age is not surprising. Although retirement migration was explicitly excluded from this model, it can be seen that while the oldest age group are less likely to move, when they do

Table 2. Type of move by nativity, males aged 18–64 years residing in New York City in 1985

Type of move	Foreign born (%)	Native born (%)
Did not move	50.52	56.81
Moved within borough	28.17	20.01
Moved to different borough	7.73	6.51
Moved out of city, within MSA	5.04	6.40
Moved out of MSA	8.53	10.26
Total	100.00	100.00

Source: 1990 Public use microdata, 1% sample, Bureau of the Census.

Table 3. Mobility by age group and educational attainment, native born males, 1990

Type of move since 1985	Age (years)			Educational attainment				
	18–34	35–44	35–64	<H.S.	H.S.	<B.A.	B.A.	>B.A.
None	46.50	57.99	77.96	60.38	60.48	54.46	51.72	52.39
Intra-borough	23.96	20.21	10.79	21.07	20.08	19.94	19.37	18.47
Inter-borough	8.14	6.30	3.24	7.22	5.26	6.37	7.33	6.91
Suburbs of MSA	7.21	7.35	2.96	2.57	5.01	7.66	10.11	10.57
Out of MSA	8.53	8.16	5.05	8.77	4.05	11.57	11.48	11.66

Source: Public use micro sample (1%) of 1990 Census, native-born males living in NYC in 1985.

move they are more likely to leave the MSA. Similarly, the youngest group is relatively more likely to move around within the five boroughs. The effect of educational attainment on mobility is also interesting. The most educated groups are most likely to move, and are most likely to move relatively far. Those with a high school degree or less are less likely to move, but if they do move those without a high school degree are more likely to leave the MSA than are those with a high school degree.

The overarching question was whether, after controlling for these important individual characteristics, immigration had a significant effect on migratory behavior. We used logistic regression to estimate the probability of moving in a model which included individual-level characteristics, the INR, and fixed effects for boroughs. While there surely are other neighborhood level characteristics that would be desirable to include, there is no sub-borough information about prior residence. Aside from the INR, other neighborhood effects are incorporated into the model through the use of

borough dummies. Another variable representing the rest of the immigrant population (i.e., exclusive of the particular age group measured in the INR) relative to the subject's demographic bracket is also included in most specifications and labeled RINR. The ratio of the entire immigrant population to the demographic bracket was also used in some models. Results were quite similar for models that used two measures of immigration versus models using only one.

Since there is no sub-borough information about prior residence available for this study, it seems appropriate to only model mobility at the inter-borough or greater level. Separate logistic regressions estimated the probability of moving to another borough, to the suburbs, or out of the metro area altogether. The overall finding was that the INR and RINR were positively and significantly related to the probability of moving to another borough, but did not have a significant effect on the probability of moving further. The effect of the INR was greater than was that of the RINR.

Results from a logistic regression are presented in Table 4, where, in addition to the coefficient and standard error, the upper and lower bounds of the odds ratios calculated from the exponentiated coefficient are shown as measures of both significance and magnitude of the effect. The dependent variable in this case is the probability of moving to another borough or beyond and the excluded categories are the youngest age group, the highest educational attainment group, the "white" race group, and 1985 residence in Queens. The human capital variables perform as expected. Age is negatively and significantly related to mobility, while the effect of educational attainment is positive. Blacks were significantly less likely to move than were whites. Home ownership and marriage were positively related to the probability of having moved during the past 5 years. State of birth was included in some specifications, to see if being born in New York or a neighboring state affected the probability of making various kinds of moves. Yet being of "local" origins had no statistically significant effect on mobility. Not surprisingly, those who lived in Manhattan in 1985 were the most likely to have moved. The measure of immigration is positive and significant, suggesting that the ratio of immigrants in the subject's age group to their own race and age group increases the probability of native born migration. The next set of results decomposes that aggregate category into several component parts.

In Table 5, odds ratios are presented from several models of more particular types of moves. The first model represents the probability of making an inter-borough move. The second estimates the probability of moving out of the city, but remaining within the metro area. This category consists moves to the suburbs of the New York City MSA, which may be in located in New York, New Jersey or Connecticut. The dependent variable in the final model

Table 4. Determinants of mobility, native born males aged 18–64 residing in New York City in 1985

Variable	Probability of moving to another borough or beyond				
	Coefficient	Standard error	Odds ratio Point estimate	95% confidence limits Lower bound	Upper bound
Age 35–44 years	–0.4210	0.0690***	0.656	0.573	0.752
Age 45–64 years	–1.0502	0.0912***	0.350	0.293	0.418
< H.S.	–0.4077	0.0797***	0.665	0.569	0.778
H.S.	–0.5177	0.0767***	0.596	0.513	0.693
H.S. < B.A.	–0.2492	0.0736***	0.779	0.675	0.900
B.A.	–0.0686	0.0762	0.934	0.804	1.084
Black	–0.2854	0.0963**	0.752	0.622	0.908
Public assistance	–0.0820	0.1206	0.921	0.727	1.167
Married	0.2162	0.0471***	1.241	1.132	1.361
Owns home	0.0947	0.0463*	1.099	1.004	1.204
Bronx	0.2092	0.0850*	1.233	1.043	1.456
Manhattan	0.2876	0.0656***	1.333	1.172	1.516
Staten Island	0.0127	0.1088	1.013	0.818	1.254
Brooklyn	–0.0328	0.0619	0.968	0.857	1.093
INR	0.7310	0.2748**	2.077	1.212	3.560
RINR	0.0420	0.0354	1.043	0.973	1.118

*** = <0.001; ** = <0.01; * = <0.05.

is the probability of a move out of the MSA, to either a location within New York State or to another state. The measure of immigration is significantly related to the probability of an inter-borough move but not to the others. The marginal effect of a one-standard-deviation increase in the INR measure increases the predicted probability of moving to another borough from approximately 0.054 to approximately 0.066, an increase of a little more than one percentage point in absolute terms, but nearly twenty percent relatively. This compares favorably with the marginal effects of any of the other significant variables.

This general finding is repeated in a variety of specifications, with slightly different measurements of the INR, and the inclusion of different variables. When estimated separately by borough of residence in 1985, however, results varied significantly. For those living in the Bronx or Brooklyn in 1985, the effect of the INR on the probability of migration to another borough was positive and significant, while for Manhattan the situation was reversed. For

Table 5. Determinants of mobility, native born males aged 18–64 residing in New York City in 1985

	Probability of moving:		
	to another borough	to the suburbs	out of metro area
Variable	Odds ratio	Odds ratio	Odds ratio
Age 35–44 years	0.824	0.749*	0.605***
Age 45–64 years	0.534***	0.276***	0.456***
<H.S.	0.872	0.454***	0.738***
H.S.	0.641**	0.664***	0.669***
H.S. < B.A.	0.746*	0.919	0.820
B.A.	0.997	1.071	0.844
Black	0.674*	0.441***	1.036
Public assistance	1.718***	0.374*	0.539*
Married	0.902	2.489***	0.857*
Owns home	0.637***	2.473***	0.846*
Bronx	1.668***	1.328*	0.986
Manhattan	1.587***	0.906	1.356***
Staten Island	1.084	0.787	1.134
Brooklyn	1.565***	0.667***	0.944
INR	3.897**	1.485	1.614
RINR	1.149*	1.071	0.962

*** = <0.001; ** = <0.01; * = <0.05.

Queens the immigration coefficient was not significant, and for Staten Island there were too few cases to estimate.

An examination of the pattern of inter-borough migration among the native born reveals that much of it originated from Brooklyn and Queens and was directed to Staten Island and the Bronx. This can be seen in Table 6. For example, there were negative net exchanges between Brooklyn and all of the other boroughs. Queens only gained migrants from Brooklyn. Manhattan gained from Brooklyn and Queens, and lost to the Bronx and Staten Island, while the Bronx only lost residents to Staten Island. Staten Island gained from all boroughs. The pattern for whites looks much like this overall pattern. For blacks, Manhattan plays the role of Brooklyn, in that it loses residents to all of the other boroughs, while the Bronx plays the role of Staten Island, and gains from all boroughs. But it is the case for both blacks and whites that boroughs with relatively few immigrants (the Bronx, Staten Island) gained inter-borough native born migrants from boroughs with more immigrants (Brooklyn, Queens, Manhattan). However, it is also the case that Brooklyn,

Table 6. Inter-borough migration among the native born, 1985–1990

Borough of residence	*1990*				
1985	**Bronx**	**Manhattan**	**Staten Island**	**Brooklyn**	**Queens**
Bronx		7616	**588**	2758	4242
Manhattan	**10402**		**1330**	9478	8344
Staten Island	532	966		1680	672
Brooklyn	**3458**	**11116**	**9072**		**12502**
Queens	**5026**	**9058**	**1442**	5908	

Note: Weighted frequencies, 1990 public use micro sample, boldface indicates net gain for borough listed in column.

Queens and Manhattan are the three most populous boroughs, making it relatively unsurprising that their net exchanges with Bronx and Staten Island would be negative. This is particularly true in the case of Staten Island, which had fewer than 400,000 residents in 1990, next to more than 1,200,000 in the Bronx, the second smallest borough. However, the overall attraction of Staten Island is real; between 1990 and 2000 Staten Island grew by 17%, a considerably greater percentage increase than that experienced by any other borough.

Inter-borough migration among foreign born residents who moved somewhere within New York City between 1985 and 1990 was quite different than that described here for native born whites and blacks. While the majority of foreign born residents of all boroughs who moved somewhere within the city stayed in their borough of residence in 1985, it is clear that when inter-borough migration occurred, the majority of it went to Queens. Nearly half of those moving out of Manhattan, for example, moved to Queens. Additionally, nearly three-quarters of inter-borough moves by foreign born residents of Brooklyn in 1985 were to Queens. Bronx residents also tended to go to Queens if they moved out of the Bronx. INS data on intended residence of new entrants also show disproportionately heavy settlement in Queens. So while it does seem clear that the native born and foreign born are not moving to the same boroughs in New York City, there is insufficient evidence of a conscious attempt at "balkanization".

Another way to think about the relationship between immigration and inter-borough migration is to consider the ratio of the INR in the borough of residence in 1985 to that in the borough of residence in 1990. This number will be greater than one for moves to places with fewer immigrants, and will be less than one for moves to boroughs with more immigrants. A move from Staten Island to Brooklyn, for example, would certainly yield an INR ratio of

less than one. For all native born inter-borough moves, the average INR ratio is 1.6, suggesting that moves away from immigrants outnumbered moves towards immigrants. The median was approximately 1.2.

These results suggest that for native born black and white males living in one of the five boroughs in 1985, the ratio of the number of male immigrants their own age to the number of native born males their own race and age positively and significantly affects the probability that they will move to another borough by 1990, but does not significantly affect their likelihood of leaving the city altogether. In the context of the theories of immigration-native migration relationships discussed previously, this finding suggests perhaps a desire on the part of these native born males to avoid co-residing closely with immigrants rather than a labor market competition scenario.

6. Conclusions

The basic result of this study is consistent with several other recent analyses of immigration and migration, in that overall, no significant relationship is found between immigration and outmigration among the native born, with the exception of a move to another borough. The fact that immigration does not seem to have any effect on the probability of moving to the suburbs or out of the metro area supports recent studies which have found no evidence of a labor market "push" effect (Card 2001; Walker et al. 1997).

The significance of inter-borough migration is not clear. It may reflect an attempt at achieving some physical separation from immigrants on the part of the native born (Frey 1999). Yet without knowing more about the actual proximity to immigrants in origin and destination locations this is far from certain. The inter-borough moves may reflect life cycle patterns of mobility that have nothing to do with immigration. These moves may herald the purchase of a home, marriage, the birth of a child, or an increase in income. The relationship with immigration under this scenario is more one of replacement than displacement.

This work represents the difficulties as well as the desirability of looking intensely at a single metropolitan area. While the value of including local moves and concentrating on one major immigrant host city seems clear, results are difficult to interpret, in part because we lack a context in which to evaluate local moves, and in part because adequate data on destinations and origins are lacking. The analysis of the relationship between immigration and native migration in New York would be enhanced by more finely detailed geographic data. Finding ways to include more such data is a challenge for future work.

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