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## **Immigration, Labor Market Mobility, and the Earnings of Native-born Workers: An Occupational Segmentation Approach**

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### **Abstract**

This paper seeks to improve on previous estimates of the impact of immigration on native wages by using an occupational segmentation approach that directly controls for regional migration and other shifts in native-born labor supply. The labor market is segmented by occupation in order to determine which, if any, native workers tend to be vulnerable to increased immigrant competition for jobs. The results suggest that native-born workers in the primary sector are the main beneficiaries of increased immigration, while native-born Hispanic females in the secondary sector are the most susceptible to downward wage pressures.

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## **Introduction**

Increased immigration in recent decades has led to concerns over the displacement of native-born workers and the possibility of lower wages for those native-born workers who must compete with this immigrant labor pool. The intensity of competition between native and immigrant workers, however, will not only be a function of the size of immigrant flows, but will also depend on the ability of immigrants to enter occupation segments that are compatible with their human capital characteristics and the extent to which those jobs are occupied by natives.

If immigrant and native labor are highly substitutable in a particular labor market, then an influx of immigrants into that labor market will cause native wages to decrease. On the other hand, if immigrant workers face barriers to entry in particular labor markets or do not have the skills to be competitive, then the wages of natives in that market will not be affected by immigration, except through general equilibrium effects. The question, therefore, is which native workers, if any, tend to be vulnerable to increased immigrant competition for jobs?

Empirical results from previous studies suggest that traditional human capital segmentation based on educational characteristics may not be adequate to identify those native workers that benefit, or those that are hurt, by increased immigration. For example, many have found ambiguous effects of immigration on less-educated blacks and Hispanics who are presumed to be the most substitutable for recent immigrants (Borjas 1994). This does not seem to be theoretically consistent with evidence of larger low-skilled immigration flows unless labor markets are segmented. Also, findings of negative immigration effects on wages of higher-educated Hispanic natives runs counter to the

presumed complementarity (or at least, minimal substitutability) of this labor with low-skilled labor (Pedace 1998).

One response to these unexpected results is that educational characteristics alone are not sufficient to define distinct and meaningful labor market groups. Labor market segments are determined, in addition, by industrial structures, worker organization strategies, and/or technology (Rosenberg 1989). In other words, some individuals in a cohort with identical educational characteristics may find high-paying jobs with good working conditions while others are involuntarily placed in low-paying jobs with poor working conditions and few opportunities for advancement (Leontaridi 1998). Therefore, the significant negative effects of immigration on native Hispanics with a high school education may be reflecting intense competition between these workers in a confined-set of occupations and not competitive pressures faced by the entire group of similarly educated workers.

Occupational segmentation may provide a better framework for addressing the issues of immigrant competition in the labor market by controlling for unique wage setting mechanisms in various occupations (Dickens and Lang 1985) and the possible relegation of workers into labor market sectors independent of their human capital attributes (Castles and Kosack 1973; Piore 1979).<sup>1</sup>

Segmented Labor Market (SLM) theorists have long debated the precise criteria that should be used to segment the labor market. This paper is not an attempt to contribute to those debates (i.e., it is not an attempt to prove the existence of distinct wage setting mechanisms nor does it rely on the existence of mobility barriers), but instead

uses an existing form of labor market segmentation to estimate immigrants' effect on wages for specific occupational groups. In addition, labor mobility controls are included in order to mitigate possible omitted-variable bias resulting from the failure to account for the migratory response of natives to increased immigration (Card 1990; Borjas, Freeman, and Katz 1996). Other studies have controlled for the concentration of immigrants across industries or occupations (e.g., Bailey 1987; DeFreitas 1991; De New and Zimmermann 1994; Marcelli 1996; Roy 1997). The contribution of this paper is to include explicit controls for internal migration and other shifts in native-born labor supply.<sup>2</sup>

Workers who are in direct competition with immigrants will adjust their labor supply, but may not physically move from one area to another. In particular, native workers may respond to increased competition in the labor market by dropping out of the labor force, becoming self-employed, changing occupation segments, and/or physically migrating. Consequently, controlling for "labor market mobility" may be as important as physical migration in addressing possible omitted-variable bias.

### **Immigrants and Occupational Segmentation**

SLM theorists have developed an extensive body of literature that attempts to identify and understand the nature of the occupational hierarchy. SLM theory claims that the labor market is divided into two major sectors, the secondary and primary. The secondary sector is characterized by the absence of job ladders and lower wages, while the primary sector offers well-defined promotional paths, job security, and higher wages

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<sup>1</sup> In fact, estimates from 1990 Census data indicate that 18.2 percent of native women and 30.8 percent of native men with a high school diploma are employed in secondary sector jobs.

<sup>2</sup> Pedace (1998) addresses the issue of native physical migration.

(Gordon, Edwards, and Reich 1982). Each sector, therefore, has a unique wage-setting mechanism accompanied by an institutional structure that appears to constrain movement from the secondary to the primary sector (Dickens and Lang 1985).<sup>3</sup>

Dickens and Lang (1985) show that two distinct sectors with unique wage setting mechanisms exist. However, the existence of a unique wage setting process is not a sufficient condition for the existence of segmented labor markets. Labor mobility barriers and, more specifically, the rationing of primary sector jobs is a necessary condition (Boston 1990). Dickens and Lang (1985) and Boston (1990) provide evidence that occupational mobility barriers are significant, especially for minority workers.

Since secondary sector jobs are associated with lower social status and greater cyclical unemployment fluctuations, the native workers, to the extent possible, will tend to remove themselves from those labor markets. On the other hand, it has been argued that immigrant workers will, in general, be relegated to the secondary sector. As Piore (1980, 50) says,

...the labor force for secondary jobs tends to rely heavily, although not exclusively, upon preindustrial groups and classes...the migrants (foreign and domestic), the rural workers, and the women are attractive precisely because they belong to another socioeconomic structure and view industrial employment as a temporary adjunct to their primary roles.

Piore's (1979) earlier work also stressed the importance of immigrants' ethnic, cultural, and economic backgrounds in their willingness to accept employment in the secondary tier. With this view, immigration could be seen as causing lower wages and native-born job displacement in the secondary sector, but perhaps simultaneously increasing wages and

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<sup>3</sup> More recent work, however, shows that there is a significant amount of mobility from the secondary to the primary sector for whites, but much less mobility for minorities (Rosenberg 1989).

employment for workers in primary sector jobs by serving as complements in production and/or creating additional demand for the goods and services produced in that sector.

Estimates of immigrant distributions (see Tables 1 and 2) support Piore's (1979, 1980) view that immigrants are likely to be concentrated in secondary sector jobs. An examination of recent immigrant concentrations by labor market segment reveals that the average concentration of immigrants is more than three times as large in the secondary sector as compared to the primary sector. Therefore, special attention must be given to this if research in this area is to accurately determine which natives are harmed by increased immigration and which natives benefit.<sup>4</sup>

DeFreitas (1991) attempts to determine the impact of immigration on native workers in specific occupational segments. Three unique segmentation schemes are used: Oster's (1979) peripheral/core industries, immigrant intensive/non-intensive industries, and low-skilled/high-skilled workers. The latter defines workers employed in operative, fabrication, laborer, food preparation and service, and cleaning and building occupations as low-skilled. The results for the low-skilled sector indicate that, in general, recent immigration does not exert downward pressures on wages and employment of natives. In fact, for native-born white workers there is a strong positive effect on wages associated with increased immigration. The results for workers in the peripheral and immigrant intensive industries are similar to those in the low-skilled sector.

Marcelli (1996) also segments the labor market into two sectors. In this study, lower-skilled occupations consist of sales, administrative support, service, farming, forestry, fishing, precision production, craft and repair, operators, fabricators, and

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<sup>4</sup> The procedure used for segmenting the labor market is discussed later in the paper.

laborers; and higher-skilled occupations consist of executive, administrative, managerial, professional specialty, and technicians and related support. The study focuses on the impact of illegal immigration (most of which are likely to be recent arrivals) on the wages and employment of native workers in these labor market segments. The findings suggest that illegal immigration has, for the most part, a positive effect on earnings and employment for lower-skilled native-born males across all racial groups; females, on the other hand, experience some negative effects (especially Hispanics) but these tend to be small. For those in higher-skilled occupations, the positive effects on earnings and employment tend to be larger for males, but females are negatively affected to a larger extent than lower-skilled females.

The results, according to Marcelli (1996), are consistent with the SLMs view, except for the negative impacts found on higher-skilled females. They suggest that females in the secondary sector face downward wage pressures due to increased foreign-born competition, while males in the primary sector are the principal beneficiaries of larger concentrations of immigrants.

The hypothesis of this paper is that the DeFreitas (1991) and Marcelli (1996) studies have underestimated the negative and positive impacts of recent immigration on workers in the secondary and primary sector, respectively. The reason for this is that there has been a failure to adequately control for shifts in native-born labor supply when immigrants enter a local labor market. DeFreitas (1991) controls for recent in-migration of natives into a particular region and Marcelli (1996) employs a similar technique in controlling for recent out-migration. However, both overlook the effect of net migration.

Since labor market supply is a function of net migration, and not merely in- or out-migration, those variables may not provide an accurate estimate of the net labor supply shift in any specific region. A region that is characterized by large in-migration may, at the same time, also experience a significant amount of out-migration.<sup>5</sup> Similarly, a region with minimal in-migration may experience even smaller levels of out-migration.

In either case, measures of net migration will provide a more accurate representation of labor supply conditions in a given region. For example, suppose that some local labor markets that have large flows of in-migration have an even larger flow of out-migration. The expectation is that the net reduction in labor supply will increase earnings, *ceteris paribus*. This does not imply, however, that larger flows of in-migration are associated with higher earnings. Nevertheless, without simultaneously controlling for in- and out-migration, the empirical results will tend to underestimate the negative effects associated with in-migration. These measurement errors may provide an explanation for the insignificant and unexpected (i.e., positive) signs of the migration coefficients in the DeFreitas (1991) and Marcelli (1996) studies.

### **Natives and Labor Market Mobility: A Model of Labor Market Outcomes**

In addition to physical migration, any analysis that attempts to determine the impact of immigration on wages and employment should be concerned with other shifts in labor supply. It is expected that workers in direct competition with immigrants will adjust their labor supply, but may, or may not, physically move from one area to another. In

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<sup>5</sup> Frey (1995), for example, finds that Los Angeles and San Francisco, between 1985 and 1990, were among the top ten metros with the greatest gains from internal migration of Asians while simultaneously among the ten metros with the greatest losses from internal migration of whites and blacks.



particular, native workers may respond to increased competition in the labor market by dropping out of the labor force, becoming self-employed, changing occupation segments, and/or physically migrating. Since immigration and native labor supply in a given labor market segment are expected to be negatively correlated, if any of these movements are ignored, empirical estimates of the impact of immigration are likely to be understated.

The importance of capturing different types of labor market mobility is highlighted by Heckman's (1993) empirical work, which shows that labor force participation decisions are largely affected by wages. In other words, if the labor force participation decision is elastic with respect to wages, then many native workers may simply drop out of the labor force in response to increased immigration and subsequently lower wages.

Occupational mobility may be equally important. Eck (1984), for example, finds that approximately 17 percent of men and 24 percent of women who were employed in 1980 and also living in the same residence in 1981 were not working in the same occupations by then. In addition, empirical studies on labor market segmentation find more upward occupational mobility than was initially suggested by the dual labor market view, especially for whites (Rosenberg 1989).<sup>6</sup>

It is expected, therefore, that labor market movements out of the secondary sector will be negatively correlated with increases in immigration. If wages in the secondary sector fall as a result of immigration, then workers will be attracted to relatively higher wages in the primary sector. This may be followed by an increased movement into the primary sector by those secondary sector workers who are most mobile. Other workers that are not attracted by the relatively higher rewards in the primary sector or cannot find

employment in that sector may opt for self-employment or simply drop out of the labor force. Consequently, an empirical model that does not control for these factors will generate coefficients on the impact of immigration that are biased down.

There are three sources of migration that can affect native workers' labor market outcomes in a given segment and metropolitan area; resident native-born migrants, resident foreign-born migrants, and recent foreign-born workers. The net flow of resident native and resident foreign-born migrants may be positive or negative. The magnitude of the two together between 1980 and 1990 can be estimated as follows:

$$SR_x = \frac{POP_{x+10,1990}}{POP_{x,1980}} \quad (1)$$

$$\sum_{x=26}^{64} E[S_{xjs,1990}^n + S_{xjs,1990}^{f(pre-1980)}] = \sum_{x=16}^{54} [(S_{xjs,1980}^n + S_{xjs,1980}^{f(pre-1980)})SR_x] \quad (2)$$

$$M_{js} = \sum_{x=26}^{64} [S_{xjs,1990}^n + S_{xjs,1990}^{f(pre-1980)}] - \sum_{x=26}^{64} E[S_{xjs,1990}^n + S_{xjs,1990}^{f(pre-1980)}] \quad (3)$$

where the  $x$ ,  $j$ , and  $s$  subscripts represent age, MSA, and labor market segment (i.e., primary or secondary sector), respectively; the  $n$  and  $f$  superscripts represent native and foreign-born;  $POP$  is a measure of the total size of the population,  $SR$  is the survival ratio,  $S$  is a measure of labor supply (i.e., those in the labor force),  $E$  indicates the measure is an

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<sup>6</sup> Blacks, on the other hand, have been found to be more likely to begin their career in the secondary sector and experience significantly less upward mobility (Leontaridi 1998).

expectation (without any migration), and  $M$  is an estimate of net labor migration.<sup>7</sup> It should be noted that this measure of migration is broader than the usual one since the expected number of individuals in a given labor market segment and MSA in 1990 (calculated in equation 2) may differ from the actual number (used in equation 3) if individuals migrate from one MSA to another, change labor market segments, change their labor force status, or change their self-employed/wage and salary status.<sup>8</sup>

Another shortcoming of previous work addressed with this structure is the ability to measure differences in migration by skill group. It is expected that native migration will be greater for those in high-skill occupations since those labor markets tend to be regional or national while low-skill labor markets tend to be localized (Ehrenberg and Smith 1997). The method employed in this paper provides estimates of net labor mobility for each sector of the labor market.

One limitation of these migration estimates, however, is that it is not possible to distinguish between the different types of mobility. In other words, if the expected number of individuals in an MSA and occupation segment differ from the actual number, then it can only be said that one of the above mentioned forms of migration has taken place. It is not possible to determine whether these individuals physically migrated, changed occupations, turned to/from self-employment, or dropped out/entered the labor force. Any or all of these movements will be captured by this method of measuring net migration.

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<sup>7</sup> See Pedace (1998) for a discussion of the survival ratio.

## **The Data**

This paper uses two Integrated Public Use Micro-data (IPUMS) samples of U.S. census data: the 1980 “B” sample and the 1990 “1%” sample. Both have sample densities of 1/100 (Ruggles and Sobek 1995). These data samples, together, are used to obtain estimates of native-born labor supply shifts. The latter is also used for the regression analysis.

The samples for the migration calculation of equation (3) include males and females aged 26-64 who were living in MSAs identified on both the 1980 and 1990 Public Use Samples.<sup>9</sup> The age restrictions are such because those aged 16-25 in the 1990 census were not in the labor force in 1980 and, thus, no migration calculation of this type is possible for those individuals. Those aged 16-25 reporting themselves in the labor force in 1990 are simply counted as net in-migrants in their corresponding labor market segment. In addition, the regression samples were restricted to native-born individuals aged 16-64 who reported all the necessary personal and employment information and were civilian, non-student, wage and salary workers.

### **Measuring the Impact of Immigration by Labor Market Segment**

Boston’s (1990) classification scheme is used as a model for the occupational segments created for this analysis. Although Boston (1990) uses the 1983 Current Population Survey to cluster occupations into a primary and secondary sector, the

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<sup>8</sup> This method has also been used to measure other forms of migration (Carter and Sutch, 1996). A general description of the census survival method can be found in Sutch (1975) and Shryock, Siegel, and Associates (1976).

occupations are matched with compatible IPUMS codes. Tables 3 and 4 provide a detailed description of the primary and secondary sector segments.

Once labor market segments are created and estimates of native labor market migration are obtained, an augmented human capital equation is estimated separately for the primary and secondary sector:

$$\begin{aligned} \log w_{ijs} = & \mathbf{b}_0 + \mathbf{b}_1(EDUC)_i + \mathbf{b}_2(AGE)_i + \mathbf{b}_3(AGE)_i^2 + \\ & \mathbf{b}_4(REG)_i + \mathbf{b}_5(MARRIED)_i + \mathbf{b}_6(HEALTH)_i + \\ & \mathbf{b}_7(IND)_i + \mathbf{b}_8(I/N)_{js} + \mathbf{b}_9(M/N)_{js} + \mathbf{e}_{ijs} \end{aligned} \quad (4)$$

where the  $i$ ,  $j$ , and  $s$  subscripts represent individual, MSA, and labor market segment, respectively,  $\log w$  is the natural logarithm of the weekly wage (annual earnings/number of weeks worked),  $EDUC$  is a vector of categorical variables representing education groups (e.g., high school graduate, some college, etc.),  $AGE$  represents the respondent's age,  $AGE^2$  is  $AGE$  squared,  $REG$  is a vector of categorical variables representing region of residence,  $MARRIED$  is a marital status dummy,  $HEALTH$  is a health status dummy, and  $IND$  is a vector of categorical variables representing industry (e.g., manufacturing, construction, etc.).

The variables of interest are  $I/N$  and  $M/N$  which are the percent of recent immigrants and the percent of net native and earlier immigrant (pre-1980 arrivals) labor migration. Both of these are by labor market segment and MSA, so this raises the issue of

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<sup>9</sup> The geographic regions of metropolitan areas were matched across the 1980 and 1990 samples using a procedure similar to that adopted by Bound, Jaeger, Loeb, and Turner (1997). Out of 132 MSAs, 126 are

group effects, which has been largely overlooked in this literature. Since the immigration and labor mobility variables are at a higher level of aggregation than the dependent variable, the residuals will no longer be independent across all individual observations. Instead, the error term will contain a component that is common to all individuals belonging to the same group (i.e., MSA). The consequence is that standard errors will tend to be understated and the likelihood of finding statistically significant coefficients will increase (Moulton 1986). The wage equation, therefore, is estimated with unadjusted and group effects adjusted standard errors.

### **Endogeneity Issues**

Before proceeding with the estimation of the parameters in equation (4), the possibility of endogeneity bias must be explored and, if necessary, remedied. The possible endogeneity bias results from the expectation that immigration and labor market migration flows will be at least partially determined by wages, and therefore, not exogenously-determined variables.

If variations in the concentration of immigrants and net labor migration cause variations in wages and not the reverse, then the corresponding parameters in equation (4) will provide an estimate of that relationship (keeping all other factors constant). However, standard OLS estimates will be biased if these labor movements are responding to variations in wages. If workers tend to locate (or relocate) in MSAs or labor market segments that offer the greatest rewards for their skills, as we might expect, the immigration and net migration variables ( $I/N$  and  $M/N$ ) will be endogenous in the wage

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matched and included in the sample.

equations. Consequently, these variables may be correlated with determinants of labor market outcomes that have been relegated to the error term, thereby generating estimates of their coefficients that are biased up.

If there are higher wages in the primary sector of an MSA, workers may leave self-employment for work in the primary sector or may migrate from the primary sector of other MSAs. Conversely, if there are lower wages in the primary sector of an MSA, workers may opt for self-employment or migrate to other MSAs. This implies that the rate of net migration and immigration for the primary sector of an MSA may be a function of the wage in that sector.

Similarly, if there are higher wages in the secondary sector of an MSA, workers may enter the labor force, leave self-employment, or migrate from secondary sector jobs in other MSAs. On the other hand, if there are lower wages in the secondary sector of an MSA, workers may drop out of the labor force, attempt self-employment, or migrate to secondary sector jobs in other MSAs. This indicates that the ratio of net migration and immigration in the secondary sector may be endogenous in the wage equations for that sector.

The immigration and net migration variables may be purged of their correlation with the error term by utilizing an instrumental variable (IV) procedure. A vector of instruments (or variables) that independently influence immigration and net migration (but not wages) is used in the first-stage regressions to obtain predicted values of the migration variables. For each MSA, the concentration of immigrants in 1980, the unemployment rate in 1980, and the average yearly income from public assistance in 1980 are used as instruments.

The use of these instruments can be justified on the following grounds. First, Bartel and Koch (1991) find that the concentration of countrymen is an important determinant in the migration decision of the foreign-born. Also, the migration of native-born individuals is responsive to the size of the foreign-born population (Bartel and Koch 1991; Filer 1992; Frey 1995). Second, the unemployment rate is a measure of economic opportunities and the risks associated with migration. High unemployment rates should discourage workers from relocating to those areas, while low unemployment rates are likely to signal greater labor market opportunities. Finally, the average yearly income from public assistance is also used as a proxy for the incentive (or disincentive) to risk job search in a new area. The lower the available public assistance, the lower the incentive to risk job search (DeFreitas 1991). In all regressions, a generalized method of moments (GMM) specification test is used to ensure the validity of the instruments. The test regresses the residuals from IV estimation on the set of instrumental variables and examines their relationship.<sup>10</sup> In all cases, the null hypothesis of no misspecification bias fails to be rejected.

## **Econometric Results**

### ***Primary Sector Wages***

Table 5 contains the estimated coefficients from the primary sector weekly wage regressions. In general, larger concentrations of recent immigrants in the primary sector are associated with higher wages for native primary sector workers. Prior to controlling

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<sup>10</sup> Hausman (1983, 433) and Newey (1985) provide a detailed description of this test.



for labor migration, positive effects on native weekly wages are found for both males and females of all races. Surprisingly, even after controlling for labor mobility, many of these results do not change significantly. A 1 percent-point increase in the concentration of immigrants in the primary sector is associated with a 2.9, 1.6, 3.0, 2.7, and 2.0 percent increase in weekly wages for white males, black males, white females, black females, and Hispanic females, respectively. For Hispanic males, however, a positive and significant effect of immigration on wages becomes insignificant after controlling for labor migration in the primary sector.

In addition, the native labor mobility variable for the primary sector appears with the anticipated negative sign and is significant in all regressions except those for black females. The results suggest that a 1 percent-point increase in the rate of net labor mobility to the primary sector is associated with a 0.5, 1.0, and 2.1 percent decrease in weekly wages for white, black, and Hispanic males, respectively. Similarly, there is a 0.5 percent decrease in weekly wages associated with increased native labor mobility for Hispanic females.

### *Secondary Sector Wages*

Table 6 presents the regression results for secondary sector weekly wages. Although relatively smaller, some secondary sector workers' weekly wages are also positively associated with increases in immigration. The exceptions are the insignificant

coefficients in the black male, Hispanic male and black female regressions, and the negative coefficient in the Hispanic female regression.

A 1 percent-point increase in the concentration of secondary sector immigrants results in a 0.8 and 1.1 percent increase in weekly wages for white males and white females, respectively. On the other hand, a 1 percent-point increase in the concentration of recent secondary sector immigrants is associated with a 0.8 percent decrease in weekly wages for Hispanic females.

Similar to the primary sector results, the labor mobility coefficients are, for the most part, statistically significant and of the expected sign. This implies that migration and labor mobility are perhaps more important determinants of the wage-setting process in the secondary sector than was originally believed. A 1 percent-point increase in the rate of labor mobility is associated with a 0.5 and 1.1 percent decrease in weekly wages for white and black males, respectively. In addition, an identical increase in the rate of labor mobility results in a 1.3 percent decrease in weekly wages for Hispanic males and females.

The importance of controlling for labor mobility dynamics in obtaining unbiased estimates of the impact of immigration is also evident in the secondary sector regressions. For black and Hispanic males, a positive and significant immigration effect becomes insignificant after incorporating labor mobility controls. Similarly, a positive, but insignificant immigration effect for Hispanic females becomes negative and significant after including labor mobility in the wage equation.

## Discussion and Conclusions

This paper has investigated the impact of immigration on the wages of native-born workers using an occupational segmentation approach. In particular, the objective of this study was to address the ambiguity generated by some of the results from previous work. For example, Pedace (1998) finds that there are no significant negative effects of immigration on the wages of less-educated natives (those commonly assumed to be the most substitutable for immigrants), but there is a significant negative effect on the earnings of higher-educated native Hispanics which are assumed to be less substitutable for immigrants than less-educated workers. The problem, however, is that these studies have failed to capture changes in native labor force status and occupational mobility which may have labor supply and, consequently, wage effects without any form of physical migration (or change in residence). Furthermore, by treating immigrants with similar human capital characteristics as a homogeneous group, previous studies may have failed to adequately capture the extent of immigrant competition for jobs faced by more meaningful labor market groupings of native workers.<sup>11</sup>

This study segmented the labor market into a primary and secondary sector in order to see whether this would provide better estimates of the competition resident natives face in the labor market from recent immigrants and migrants (both native and foreign-born). In addition, if some natives with a high school education have secondary sector jobs, this type of segmentation will provide a better understanding of the

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<sup>11</sup> The exceptions are Bailey (1987), DeFreitas (1991), De New and Zimmermann (1994), Marcelli (1996), and Roy (1997).

competitive forces in the labor market.<sup>12</sup> The adopted segmentation approach by extending the survival ratio method of estimating migration to include other forms of labor mobility would also mitigate various forms of existing omitted-variable bias.

Some results support prior expectations, but anomalies are also present. Results consistent with expectations include the considerably larger positive effects of immigration for primary sector workers. This may suggest that primary sector workers are in a better position to take advantage of supervising and managerial opportunities when new immigrants enter that sector. The existence of job ladders in the primary sector suggests that such opportunities may be present in those occupations.<sup>13</sup>

Another possibility is that immigrants boost aggregate demand and serve as complements to native workers in the primary sector. Simon (1989, 186), for example, claims that

Immigrants influence productivity both in their special roles as immigrants and in their general roles as additional persons. As immigrants, they bring new and different ideas from their old societies to their new society which may lead to useful improvements. As additional persons they increase both directly as additional ingenious minds, and also indirectly by the impetus that their increased demand and consequent increased production volume gives to productivity by way of learning by doing.

Other results consistent with expectations are the smaller positive, and sometimes insignificant, effects of immigration on wages in the secondary sector. Since job ladders

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<sup>12</sup> Perhaps different results would be obtained by changing the labor market segmentation scheme, but occupation distributions using Boston's (1990) method are nearly identical to other dual labor market definitions (e.g., Gordon 1986). Others have argued for occupational and industrial criteria to define 4 or more segments, but reliable immigration and labor mobility rates cannot be obtained for these smaller labor market groups with the available data. Therefore, this type of analysis is left for future work.

are virtually non-existent in the secondary sector, workers are not likely to have opportunities to take advantage of supervisory roles. Even if some movement is possible within the secondary sector, the rewards are not likely to be as great as upward occupational mobility within the primary sector. For example, the transition from farm laborer to farm foreman, or from waiter to bartender, are not likely to be as rewarding as the movement from bank teller to manager. Therefore, the largest benefits of increased immigration will accrue to those that hold primary sector jobs and those that successfully transition from secondary to primary sector employment.

One anomaly, however, is that some Hispanics do not seem to benefit in a similar fashion. Recent immigration does not have a significant effect on Hispanic male wages, and in the secondary sector, Hispanic females are negatively affected by increases in recent immigration. So, why are the experiences of Hispanics different from other groups? Is this the result of an institutional structure that acts to maintain the existing ethnic composition in the occupational hierarchy? Are Hispanics in the lowest positions in the occupational hierarchy both between and within sectors? These questions must be addressed before any negative effects on the labor market outcomes for these groups can be attributed solely to immigration.

Some evidence, however, implies that the answer to these questions may be in the affirmative. Tienda and Guhleman (1985), for example, find that only 27 to 57 percent of the gap in occupational status between Hispanic and non-Hispanic women would be closed if they had the same human capital characteristics. They also find that the average status level within occupation strata (e.g., operative and laborer; clerical and retail sales;

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<sup>13</sup> In order to determine whether immigrants create those opportunities for native-born workers would

services and crafts) is lower for Hispanic women compared to their non-Hispanic counterparts. Hispanic women, therefore, are disadvantaged because they tend to hold positions that are the lowest on the promotional ladder and are likely to be the most accessible to recent immigrants. The significant negative effects of immigration on wages of secondary sector Hispanic females suggests that they may indeed face increased competition in the labor market.

The positive effects of immigration in the secondary sector for other native workers (e.g., white males and females) may seem puzzling, but one possible explanation is that any initial immigration effect has simply been offset by a virtually simultaneous increase in demand for labor in these occupations. Assuming that the demand for labor in secondary sector occupations is relatively elastic (i.e.,  $e_{D_L} > 1$ ), an increase in immigration will initially reduce wages and employment levels for natives, but the increase in total employment will outweigh the reduction in wages. The wage bill will therefore increase, which may create a series of demand effects that cause equilibrium wages to rise. Future research, however, should attempt to determine how these effects are propagated through the economy, since this explanation implicitly assumes that these positive demand effects disproportionately affect high-immigration areas.

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require a detailed firm-level analysis and is best left for future research.

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**Table 1**

**Twenty MSAs with the Highest Concentration of Recent Immigrants in the Primary Sector**

<u>MSA</u>	<u>Percent of Recent Immigrants</u>
Miami-Fort Lauderdale, FL	12.31
Los Angeles-Anaheim-Riverside, CA	9.43
New York-Northern New Jersey-Long Island, NY/NJ/CT	7.01
San Francisco-Oakland-San Jose, CA	6.80
Washington, DC/MD/VA	6.35
El Paso, TX	4.94
San Diego, CA	4.88
Honolulu, HI	4.67
McAllen-Edinburg-Mission, TX	4.65
Brownsville-Harlingen-San Benito, TX	4.23
Orlando, FL	3.85
Houston-Galveston-Brazoria, TX	3.67
West Palm Beach-Boca Raton-Delray Beach, FL	3.51
Las Vegas, NV	3.27
Santa Barbara-Santa Maria-Lompoc, CA	3.16
Boston-Lawrence-Salem, MA	3.10
Reno, NV	3.02
Atlantic City, NJ	2.95
Chicago-Gary-Lake, IL/IN/WI	2.88
Stockton, CA	2.65
Mean for MSAs in the top twenty	4.87
Mean for MSAs in the entire sample	1.53

**Table 2****Twenty MSAs with the Highest Concentration of Recent Immigrants in the Secondary Sector**

<u>MSA</u>	<u>Percent of Recent Immigrants</u>
Los Angeles-Anaheim-Riverside, CA	26.58
Miami-Fort Lauderdale, FL	26.56
Santa Barbara-Santa Maria-Lompoc, CA	22.49
Visalia-Tulare-Porterville, CA	19.87
Washington, DC/MD/VA	19.51
Fresno, CA	18.86
New York-Northern New Jersey, Long Island, NY/NJ/CT	17.58
San Francisco-Oakland-San Jose, CA	17.10
San Diego, CA	16.04
Honolulu, HI	15.75
McAllen-Edinburg-Mission, TX	14.19
Houston-Galveston-Brazoria, TX	12.99
West Palm Beach-Boca Raton-Delray Beach, FL	12.43
Bakersfield, CA	12.12
Brownsville-Harlingen-San Benito, TX	11.71
El Paso, TX	11.30
Modesto, CA	9.73
Austin, TX	9.73
Stockton, CA	9.26
Chicago-Gary-Lake, IL/IN/WI	9.11
Mean for MSAs in the top twenty	15.65
Mean for MSAs in the entire sample	4.38

**Table 3****Primary Sector Segments**

<u>Occupation</u>	<u>OCC1950 Code</u>
Managers, Officials, and Proprietors	200-290
Professional/Technical	0-99
Sales	
Advertising agents and salesmen	400
Auctioneers	410
Insurance agents and brokers	450
Real estate agents and brokers	470
Stock and bond salesmen	480
Clerical	
Agents, attendants, and assistants	300-302
Baggagemen (transportation)	304
Bank tellers	305
Bookkeepers	310
Cashiers	320
Collectors (bill and account)	321
Dispatchers and starters (vehicle)	322
Office machine operators	341
Shipping and receiving clerks	342
Stenographers, typists, and secretaries	350
Telegraph messengers	360
Telegraph operators	365
Telephone operators	370
Ticket, station, and express agents	380
Miscellaneous clerical and kindred	390
Service	
Attendants (hospital, professional, and personal)	730-731
Barbers, beauticians, and manicurists	740
Firemen, fire protection	762
Guards and doorkeepers	763
Policemen and detectives	773
Sheriffs and bailiffs	782
Watchmen and bridge tenders	785
Midwives	772
Nurses	781
Other, except private household	790
Craftsmen	500-595

**Table 4****Secondary Sector Segments**

<u>Occupation</u>	<u>OCC1950 Code</u>
Sales	
Demonstrators	420
Hucksters and Peddlers	430
Newsboys	460
Salesmen and sales clerks	490
Clerical	
Express messengers and railway mail clerks	325
Mail carriers	335
Messengers and office boys	340
Service	
Housekeepers	700
Laundresses	710
Other private household workers	720
Attendants (recreation and amusement)	732
Bartenders	750
Cooks	754
Counter and fountain workers	760
Bootblacks	751
Boarding and lodging house keepers	752
Charwomen and cleaners	753
Elevator operators	761
Housekeepers and stewards	764
Janitors and sextons	770
Porters	780
Ushers (recreation and amusement)	783
Waiters and waitresses	784
Operatives	600-690
Laborers, not farm	910-970
Farmers and farm laborers	
Farmers and farm managers	100-123
Farm foremen	810
Farm laborers	820-830
Farm service laborers	840

Table 5

Estimated Effects of Immigration on Primary Sector Weekly Wages

	<i>unadjusted standard errors:</i>		<i>group effects adjusted standard errors:</i>	
	$(I/N)_{js}$	$(M/N)_{js}$	$(I/N)_{js}$	$(M/N)_{js}$
<i>Males:</i>				
<i>White:</i>				
(1)	.0317*** (.0007)	-----	.0317*** (.0051)	-----
(2)	.0286*** (.0008)	-.0049*** (.0004)	.0286*** (.0052)	-.0049** (.0020)
N	130,297			
<i>Black:</i>				
(1)	.0193*** (.0024)	-----	.0193*** (.0051)	-----
(2)	.0159*** (.0025)	-.0095*** (.0024)	.0159*** (.0044)	-.0095*** (.0028)
N	10,991			
<i>Hispanic:</i>				
(1)	.0199*** (.0029)	-----	.0199*** (.0051)	-----
(2)	.0038 (.0033)	-.0211*** (.0024)	.0038 (.0048)	-.0211*** (.0038)
N	6,078			
<i>Females:</i>				
<i>White:</i>				
(1)	.0303*** (.0008)	-----	.0303*** (.0041)	-----
(2)	.0301*** (.0008)	-.0002 (.0005)	.0301*** (.0044)	-.0002 (.0016)
N	130,887			
<i>Black:</i>				
(1)	.0268*** (.0020)	-----	.0268*** (.0070)	-----
(2)	.0273*** (.0021)	.0022 (.0020)	.0273*** (.0069)	.0022 (.0041)
N	17,563			
<i>Hispanic:</i>				
(1)	.0231*** (.0028)	-----	.0231*** (.0033)	-----
(2)	.0198*** (.0032)	-.0047** (.0019)	.0198*** (.0039)	-.0047* (.0027)
N	6,729			

\* p<.10; \*\* p<.05; \*\*\* p<.01.

Standard errors in parentheses. All equations estimated with the natural log of 1989 weekly wages as the dependent variable. Samples restricted to primary sector, non-student, civilian wage and salary workers reporting the necessary labor market information. The concentration of immigrants in 1980, the unemployment rate in 1980, and the average yearly income from public assistance in 1980 are instruments used to predict the concentration of immigrants and the rate of labor mobility in 1990. The partial F-statistic is significant at the .01 level of significance in all of the first-stage regressions. A Generalized Method of Moments specification test was used to ensure the validity of the instruments.

Table 6

Estimated Effects of Immigration on Secondary Sector Weekly Wages

		<i>unadjusted standard errors:</i>		<i>group effects adjusted standard errors:</i>	
		$(I/N)_{js}$	$(M/N)_{js}$	$(I/N)_{js}$	$(M/N)_{js}$
<i>Males:</i>					
<i>White:</i>					
(1)		.0117*** (.0005)	-----	.0117*** (.0020)	-----
(2)		.0082*** (.0006)	-.0049*** (.0006)	.0082*** (.0023)	-.0049*** (.0016)
<i>N</i>	50,378				
<i>Black:</i>					
(1)		.0075*** (.0012)	-----	.0075*** (.0018)	-----
(2)		.0027* (.0015)	-.0108*** (.0018)	.0027 (.0020)	-.0108*** (.0028)
<i>N</i>	8,863				
<i>Hispanic:</i>					
(1)		.0080*** (.0017)	-----	.0080** (.0030)	-----
(2)		-.0017 (.0023)	-.0131*** (.0022)	-.0017 (.0037)	-.0131*** (.0030)
<i>N</i>	4,175				
<i>Females:</i>					
<i>White:</i>					
(1)		.0112*** (.0008)	-----	.0122*** (.0018)	-----
(2)		.0114*** (.0011)	.0003 (.0010)	.0114*** (.0022)	.0003 (.0015)
<i>N</i>	25,721				
<i>Black:</i>					
(1)		.0042** (.0017)	-----	.0042 (.0025)	-----
(2)		.0025 (.0020)	-.0051* (.0029)	.0025 (.0028)	-.0051 (.0038)
<i>N</i>	5,233				
<i>Hispanic:</i>					
(1)		.0022 (.0025)	-----	.0022 (.0023)	-----
(2)		-.0075** (.0034)	-.0131*** (.0034)	-.0075** (.0028)	-.0131*** (.0027)
<i>N</i>	1,869				

\* p<.10; \*\* p<.05; \*\*\* p<.01.

Standard errors in parentheses. All equations estimated with the natural log of 1989 weekly wages as the dependent variable. Samples restricted to secondary sector, non-student, civilian wage and salary workers reporting the necessary labor market information. The concentration of immigrants in 1980, the unemployment rate in 1980, and the average yearly income from public assistance in 1980 are instruments used to predict the concentration of immigrants and the rate of labor mobility in 1990. The partial F-statistic is significant at the .01 level of significance in all of the first-stage regressions. A Generalized Method of Moments specification test was used to ensure the validity of the instruments.