Immigration and African American wages and employment: critically appraising the empirical evidence

Patrick L. Mason
Professor of Economics &
Director, African American Studies Program
266 Bellamy Building
Florida State University
Tallahassee, Florida 32306-2180
(850) 644-9146
(850) 644 – 4535 (fax)
pmason@fsu.edu

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Abstract

This paper critically assesses the empirical evidence on the relationship between immigration and African American employment. Studies using various methodologies and data are reviewed: natural experiments, time series, and cross-sectional studies of local labor markets and intertemporal changes in the national labor market. We find that for African Americans as a whole, immigration may have little effect on mean wages and probability of employment. However, there is some evidence that immigration may have had an adverse impact on the labor market outcomes of African Americans belonging to low education-experience groups. However, even this modest conclusion must be qualified: the literature has many unresolved econometric issues that might easily undermine the received wisdom.

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JEL codes: J1, J2, J3, J7, F66

The Immigration and Nationality Act of 1965 was an important victory of the Civil Rights Movement. Both the amount of and the racial and ethnic composition of immigration were substantially changed after the Immigration Act, though large increases in immigration did not begin until the mid-1970s. But, it was during the 1990s that new immigrants began to be dispersed more or less over the entire country. As of 2012, immigrants represent 17 percent of the US working-age population. Mexico is the dominant source country of US immigrants, growing from 29 percent of all working-age immigrants in 1994 to 33 percent of all working-age immigrants in 2010. Asian immigrants represent 26 percent of the immigrant workforce, while Hispanic immigrants from the Caribbean represent 13 percent of working-age immigrants. Africans are an increasing share of US immigrants, moving from 2 percent in the mid-1990s to about 4.5 percent in 2012. Together, working-age Haitian and English speaking Caribbean immigrants have a 6 percent immigrant share.

Some believe there is a casual link between the increase in the percentage of immigrants and adverse employment outcomes for African Americans. In particular, some scholars argue that employers view immigrants and native African Americans as perfectly substitutable groups of workers in the production process. If, for example, Mexican immigrants replace native African Americans without loss of productive efficiency and Mexican immigrants are cheaper to employ, employers have a strong incentive to hire Mexican immigrant workers and layoff native African American workers. Of course, immigrant workers and native African Americans are perfect substitutes only if they have identical skill sets. If immigrants and African Americans are not perfect substitutes, immigration will have more nuanced short- and long-run labor market consequences for African Americans.

The canonical neoclassical theory of labor demand has become the workhorse theory of

the effects of immigration on the labor market outcomes of native workers (Borjas, 2009). This approach has the following core assumptions. One, there is an aggregate production function, which can be represented by a Cobb-Douglass or constant elasticity of substitution technology. More often than not, the production function is characterized by constant returns to scale. Two, capital and labor are complementary factors of production. Three, labor is doubly heterogeneous. Labor is heterogeneous because production requires both skilled and unskilled workers. But, within ability groups labor is heterogeneous because employers hire both native and immigrant workers. Skilled labor and unskilled labor are complementary factors. Native and immigrant labor are substitute factors. Four, perfect competition exists; hence, full employment and full capacity utilization also exists. Native labor is inelastic in the short-run. Four, native and immigrant labor are perfect substitutes.

Without loss of generality, assume production is characterized by capital, skilled labor, native unskilled labor, and immigrant unskilled labor. With these assumptions, canonical neoclassical theory generates both short- and long-run predictions on the wage level, the employment level and labor force participation, wage inequality, and the distribution of employment. In the short-run, when the supply of capital remains fixed, an influx of immigrants must have the following effects: the average wage rate of unskilled workers will decline, the average wage rate of skilled workers will increase, and the rate of interest on capital will increase. Note however that the average wage for all workers will decline. Total employment will expand by exactly the amount equal to the immigrant addition to the labor force. Hence, in the short-run, immigration lowers the average wage rate, especially for unskilled native workers, increases wage inequality among workers, skews the functional distribution of income toward capital, and expands the total volume of employment.

If we continue to assume that the supply of capital is fixed, but permit the labor supply curve to be upward sloping, perfect substitution between unskilled immigrant and native workers implies that the total volume of employment of unskilled workers will be unchanged. Some unskilled native workers will exit the labor market (either moving to another labor market or ceasing to participate) due to lower wages. So, in the short-run it's possible for the labor force participation rate and the employment-population ratio of unskilled workers to decline with an increase in immigration.

When we consider a period of time sufficient for the adjustment of capital, an expansion in the number of unskilled immigrants will have no effect on the wages or employment of native workers. The increase in the supply of capital will raise the wages of unskilled workers and skilled workers and lower the rate of interest on capital. There will be a recovery in the labor force participation rate of unskilled native workers. Once capital has had the opportunity to adjust, the wage rate of skilled and unskilled workers, the rate of interest capital, the employment and labor force participation rate of native workers return to their pre-immigration levels.

If unskilled native and immigrant workers are complementary factors, then there are other forms of wage inequality that will emerge in the shortrun – though they will not hold in the long run. In this case, the average wage of unskilled native workers will increase with an expansion in the supply of unskilled immigrants. Hence, in the short run there will be an expansion in native-immigrant wage inequality. Further, the expansion in the supply of unskilled immigrant workers will have a negative effect on the wages of pre-existing immigrants of the same ancestral groups.

Unraveling the effects of immigration on the labor market outcomes of African Americans has proven to be a formidable and to date an unsettled empirical chore. This paper

critically assesses the empirical evidence on the relationship between immigration and African American labor market outcomes. Section I presents detailed descriptive statistics on changes in immigration and the labor market status of African Americans during 1994 – 2012. Section II presents a review of the literature which empirically examines the relationship between immigration and African American employment. Our conclusions and discussion are presented in Section III. We find that for African Americans as a whole, immigration may have little effect on mean wages and probability of employment. However, there is some evidence that immigration may have had an adverse impact on the labor market outcomes of persons belonging to low education-experience groups.

I. Labor Market Characteristics of Immigrants and Native Workers

The data are taken from the Annual Social & Economic Study, Current Population Survey (March CPS), 1994 – 2012. The CPS is a household survey of civilian, non-institutionalized, adults (persons at least 15 years of age).[1] Our sample includes only working-age persons, that is, individuals 16 – 64 years of age during the year of the survey. Throughout this paper "African American" and "black" are used interchangeably for Non-Hispanic African American. Similarly, "white" is shorthand for Non-Hispanic white. Most Hispanics in the CPS are self-described as white, while some are self-described as black. Per the CPS usage, Hispanics (or Latinos) are an ethnic category rather than a racial category; hence, "Hispanic" will include both blacks and whites.

According to U.S. Census numbers, in 1970 the foreign born population accounted for 4.8 percent of the total population, compared to 12.55 percent in 2009, representing 38.5 million immigrants out of a total population of 307 million persons. Thirty-two percent of these immigrants have arrived since 2000, 28 percent arrived in the 1990s, 20 percent arrived during

the 1980s, and 21 percent before 1980. The regions of origins are Europe (12 percent), Asia (27 percent), Caribbean (10 percent), Mexico and Central America (38 percent), South America (6 percent), rest of the world (7 percent). Clearly, immigration has contributed to national population and labor force growth and to the growth of racial and ethnic minorities within American society.

During any given year, the immigrant share of the US laborforce represents multiple cohorts, having arrived during alternative business cycles or after major institutional or policy changes. Figure 1 presents the immigrant share of the US labor force during 1994 - 2012, for all immigrants and by period of arrival. In 1994 immigrants represented 11 percent of the US labor force and rapidly increased to 15 percent by 2002. Thereafter, the immigrant share continued to increase but at a slower rate, rising to just 16 percent in 2010 and to 17 percent in 2012. The largest group of immigrants arrived during 1982-1991 and 1992-2001. Immigrants arriving during 1980s represented 4.5 percent of the labor force during 1994 – 2007, before slowing declining to about 4 percent of the labor force. Immigrants arriving during the 1990s rapidly increased from 1 percent of the labor force in 1994 to 6.5 percent of the labor force in 2003 and remained at about 6 percent through 2012. Except for immigrants arriving during the mid-2000s, all other immigrants represented a declining share of the US labor force.

[Insert Figure 1]

Because of the Immigration and Nationality Act of 1965, American immigrants come from international regions that previously sent relatively few persons to America, in particular, Africa, Asia, South & Central America, Mexico, and the Caribbean. Table 1 shows the ancestral origin, race, and ethnicity of immigrants. Mexicans were 29 percent of all US immigrants during 1994-2000, but increased to 33 percent during 2008-2012. Canadians and Europeans are an

increasingly smaller share of US immigrants, falling from 2 percent to 1.5 percent and from 14 percent to 10 percent, respectively. Today's immigrants are increasingly additions to America's racial and ethnic minority groups. For example, the black immigrant share rose from 8 percent in 1994-2000 to 10 percent in 2008-2012, while Hispanic immigrant share rose from 46 percent to 50 percent during the same period.

[Table 1]

Much of the literature on the effects of immigration on labor market outcomes of native workers has focused on males. Accordingly, Figures 2 – 4 present important labor market outcomes for native African American males: employment-population ratio, mean weekly workhours, and mean weekly wages for 1994-2012. Each outcome provides a sharp contrast with the long term increase in the immigrant share of the US labor force.

The canonical neoclassical model of immigration predicts a negative relationship between native wages and increases in immigration in the short-run, as well as a negative relationship between native participation and employment and increases in immigration in the short-run. Wages, employment, and participation did not decline in the 1990s as the immigration share of the labor force increased. Instead, the African American male employment-population ratio rose from 64 percent to 71 during 1993 – 1999, while mean weekly workhours increased by 2 hours from 30.6 to 32.6 during the same period – a 6.5 percent increase in weekly workhours. Mean wages of African American males rose from about $702 in 1993 to $866 percent in 2002.

[Insert Figures 2 - 4]

The labor market outcomes of African American males did decrease during the 2000s, but this was a period of much slower immigration than during the 1990s. Rather than immigration, the recessions of 2001-2002 and 2007-2009 appear to the primary factors pulling

down the employment, participation, and wages of African American males.

Table 2 summarizes the data presented in Figures 2 – 4. Each entry is the slope coefficient from a binary regression of a labor market outcome on the aggregate immigrant share and various arrival cohorts. When we consider all arrivals, a one percentage point increase in the share of immigrants is correlated with 0.75 hours reduction in weekly work time, 0.01 percent reduction in the labor force participation of African American males, and 2.15 percent increase in the wage rate. Our data cover a period of 18 years and contains three business cycles: 1994-2001, 2002-2007, 2008-2012. The transition years, that is, 2001-2002 and 2007-2009, represent the onset of recessions and the beginning of recoveries. Investment spending falls rapidly during recessions and rises rapidly during recoveries; hence, the transition years represent periods of rapid capital adjustment and provide a natural demarcation of the short-run versus the long-run. Per the canonical neoclassical model of immigration, we would expect the coefficients of Table 2 to be zero. The "all arrivals" coefficients for employment and participants are not zero, but they are small. The "all arrivals" coefficients for the wage equation are large and have the wrong side.

[Insert Table 2]

The short-run effects of immigration are associated with the most recent arrivals, while the long-run effects of immigration are associated with the most distant arrivals. Hence, the coefficients should be negative and decreasing in absolute value as we move from 1990s arrivals to pre-1965 arrivals (LaLonde and Topel, 1989). Comparing the coefficients for the arrival cohorts, none of the coefficients have the expected pattern. A one percentage point increase in the share of immigrants who arrived before the Immigration Act of 1965, a minimum of 30 years before the labor market outcomes of 1994 – 2012, is associated with an increase of 3.65 hours of

weekly work for African American males, an increase of 0.06 percentage points in the fraction employed, but a 8.7 percent reduction in weekly wages. Additionally, as we moved forward from pre-1965 to more recent arrival cohorts the coefficients for workhours and fraction employed do increase in absolute value but the coefficients and positive and, hence, are also moving in the wrong direction. For 1990s arrivals, the effect on employment is small and not significant, while the coefficient on wages is positive and large. Collectively considered, these correlations are not completely consistent with the canonical neoclassical theory of immigration. But, Table 2 does establish that the labor market effects of older cohorts (longrun effects) are quite different from the labor market effects of recent cohorts (shortrun effects).

Of course, Table 2 provides only unadjusted correlations and hence cannot be used to provide a definitive analysis of the substitutability of African American and immigrant workers.[2] Competitive substitution in the labor market is in some measure related to whether or not groups have similar regional distributions and similar skills (education and age). Fifty-six percent (1994-2000) – 59 percent (2001-2010) percent of native African American workers ages 16 – 64 reside in the South (Table 3). Thirty percent of working-age native Latinos reside in this region.

However, the Southern fraction of native Hispanics is heavily weighted by the number of Mexican Americans residing in Texas, the second most populous state in the US. Texas is culturally and geographically Southern and Western, but the CPS identifies Texas as a Southern state. African Americans are 12 percent of the population of Texas and mostly live in East Texas and the cities of Houston and Dallas. Mexican Americans are 36 percent of the population of Texas and are predominately residents of Western, Southern, Northern, and Central Texas, and the cities of San Antonio, Dallas, Austin, Houston, and El Paso. In short, after accounting for the idiosyncrasies of Texas, far fewer than 30 percent of native Hispanics live in the South. Both

native and immigrant Hispanics are much more likely to reside in the West, where only 8 percent of African Americans reside but 42 percent – 48 percent of Latinos reside. Moreover, throughout the 1990s and 2000s about ½ of Hispanic immigrants are high school dropouts versus 20 percent of native African Americans. Blacks are twice as likely to be college graduates. These regional and educational differences constrain African American – Hispanic job market competition.

[Insert Table 3]

Immigrant African Americans have increased their presence in the South. During 1994-2000, 34 percent (men) and 31 percent (women) of black immigrants ages 16 – 64 resided in the South. By 2001-2010, 38 percent of black immigrants were Southern residents. Hence, both native and immigrant African Americans are migrating to the South, which may suggest increasing intra-regional competition for employment. However, among males during 1994-2000, 23 percent of immigrant blacks have one or more college degrees versus 11 percent of native blacks; among women, 20 percent of immigrant blacks have one or more college degrees versus 13 percent of native blacks. Native African Americans were not more likely to compete with immigrant blacks for college jobs during the 2000s: 29 percent and 14 percent of immigrant and native black males, respectively, had at least one college degree, while 23 percent and 17 percent of immigrant and native black women, respectively, had at least one college degree. So, although both native and immigrant blacks are increasingly living in the South, they are not perfect substitutes with respect to their levels of education.

Asian immigrants are 1.5 to 2 years older than native African Americans, predominately Western residents (41 percent – 47 percent), and about 3 – 4 times as likely to have at least one college degree. All of which suggests prima facie evidence of limited job market competition between native African Americans and immigrant Asians.

The Northeast is America's most densely populated region. Native whites are the only group whose Northeastern representation did not decline during 1994 – 2010 and they are also the only group whose Southern representation declined during 1994 – 2010. All other groups, especially black immigrants, experienced decreases in Northeastern residential location and increases in Southern residential location. Indeed, immigrant blacks also had large increases in their Northcentral location.

Table 4 presents immigrant shares of the workforce by age, education, and workyear. The maximum immigrant share occurs for dropouts (persons with less than 12 years of education) who are 31 to 50 years of age. The immigrant share rose from 32 percent in 1994 (the highest share for any age-education group in that year) to 53 percent in 2010 (also, the highest share for any age-education group in that year). For all workers with less than 12 years of education, the immigrant share rose from 22 percent in 1994 to 30 percent in 2010. About 1 in 5 African American workers are in this education group (Table 3).

[Insert Table 4]

For senior workers, that is, persons 51 to 64 years of age, immigrants are less than or equal to 10 percent of the labor force for persons with at least 12 years of education. For young and middle age workers, the immigrant share is about 10 percent to 16 percent for high school graduates and is 13 percent for persons with a graduate degree. The pattern of immigrant shares suggests that to the extent that immigration has a significant effect on employment and wages, the effects will be greatest for high school dropouts and high school graduates (persons with only 12 years of education), especially for prime-age workers. For 2001-2010, we note then that Table 1 shows that 59 percent of native African American male workers and 54 percent of native African American female workers are within the education groups facing the highest

immigration shares.

II. Immigration and African American workers

All other things equal, a large influx of low-skill immigrants will put downward pressure on the wages and employment opportunities of low-skill native workers. But, with a large influx of immigrants all other things are not equal. A large influx of immigrants also represents an increase in both the nation's productive capacity and aggregate demand. Some of the immigrants and their children will enroll in schools and colleges and thus increase the demand for education services. As an expansion in population, immigrants will also increase the demand for housing and thereby raise the income and wealth of native land owners, landlords, and construction companies. Immigrants also increase the demand for food and retail services, thereby increasing the demand for workers in these industries. Immigrants bring detailed knowledge of foreign market needs and opportunities and thus may have a positive effect on exports. A large expansion in immigrants will increase the demand for public services and expand tax revenue (Kerr and Kerr, 2011). In short, establishing the short- and long-term labor market effects on low-skill native workers due to a large-scale expansion in the supply of low-skill immigrants is an empirical question: there is a negative substitution effect and a positive aggregate demand effect. (See Friedberg and Hunt 1995 and Borjas 2009 for summaries of the theory of immigration on domestic factors of production).

Grossman (1982), using data drawn from the 1970 Census, concluded that the effects of immigration on native employment and wages "do not pose serious economic threats to natives, although the effects are not negligible." Friedberg and Hunt (1995) conclude that in most empirical studies "a 10 percent increase in the fraction of immigrants in the population reduces native wages by at most 1 percent." Furthermore, they conclude, "There is no evidence of

economically significant reductions in native employment (Friedberg and Hunt, 1995:42)."

Longhi, Nijkamp, and Poot (2009) perform a meta-analysis using 165 estimates collected from 9 empirical works (3 US and 6 European) that estimate the employment effects of immigration. Longhi, et al. (2009) find that for a 1 percent increase in the number of immigrants in the local labor market native employment will decline by 0.024 percent. Confining their analysis to the US, Longhi, et al. (2009) find that for a 1 percent increase in the number of immigrants in the local labor market native employment will decline by 0.005 percent. The elasticities are larger for women (-0.050 percent) than men (-0.034 percent), larger for low-skill workers (-0.041 percent), and larger for previous immigrants (-0.047) than natives (-0.017). Longhi, Nijkamp, and Poot (2011), perform a meta-analysis using 344 estimates collected from 18 empirical works that estimate the elasticity of native wages with respect to the immigrant-to-native worker ratio and conclude that a 1 percentage point increase in the proportion of immigrants in the labor force reduces the wages in the studies of choice by 0.12 percent, with a range of -5.4 percent to 4.5 percent Their meta regression shows that a 1 percentage point increase in the immigrant share of the labor market will lower native wages -0.21 percent in the U.S. and -1.61 percent in Europe. For a one percentage point increase in the immigrant share, Longhi, et al. (2011) report an employment effect of -0.24 percent with a range of -3.9 percent to +6.2 percent. For their meta regression, they find that a 1 percentage point increase in immigrant share of the workforce will raise employment of native US workers by 0.03% but lower the employment of native workers by 0.06% in countries other than the U.S. Moreover, Longhi, et al. conclude that there is greater competition among immigrants with other immigrants than there is with natives. Their conclusion that the effects of immigration on native wages are "statistically significant but quantitatively small" is reflective of the majority of the studies that examine this

issue.

Natural and policy experiments

Card (1990) provides an influential analysis of an important natural experiment. During May – September 1980 about 125,000 Cuban immigrants arrived in Miami. Without advanced notification, on April 20, 1980 Cuban President Fidel Castro announced that anyone who wanted to leave Cuba for the US was free to leave. Most of the privately owned boats departed Cuba from the city of Mariel; hence, the incident is referred to as the Mariel boatlift. Fifty percent of Marielitos remained in Miami and the remainder departed for the rest of the country. This was roughly the same geographical distribution as that found in the pre-existing Cuban American population. Marielitos increased Miami's labor force by 7 percent and represented a 20 percent increase in the Cuban American labor force. For the working-age population, which Card defines as persons 16 – 61 years of age, 57 percent of Marielitos had no high school education versus 25.4 of the pre-existing Cuban American population. African Americans averaged 11.8 years of education, while Cuban Americans (excluding Marielitos) averaged 11.3 years of age. However, 18.1 percent of Marielitos were college graduates, versus 15.8 percent of pre-existing Cuban Americans.

Observing hourly wage and unemployment rate trends for Miami-Dade County during 1979 – 1984, Card found no Mariel effect on the wage and unemployment rates of African Americans, Non-Hispanic whites, Cuban Americans, or other Hispanic workers. Further, there was no wage effect on low wage individuals; specifically, there was no Mariel effect on the wage rate of workers in the lowest quartile. Separately examining the employment-population ratio for all blacks and low-education African Americans, Card found that the Mariel expansion of the Miami-Dade labor market did not alter the employment trends for 1979-1985.

Card's results are counter-intuitive. The Mariel boatlift (May 1980 – September 1980) occurred during a mild recession and a very deep recession followed soon thereafter. Recessions hurt employment and wages and provide the incentive and opportunity to replace domestic workers with presumably cheaper immigrant workers. [3]

Card asks, "How is it possible that a 7 percent exogenous increase in the labor supply has no effect on the wages, participation, and employment of both Cubans and Non-Cubans?" Card provides two possible answers. One, Marielitos displaced other natives and immigrants who might have otherwise migrated to Miami. Card does present evidence of a slowdown in net migration to Miami by natives and other immigrants during the period after the Mariel boatlift. Second, Marielitos may have replaced other Cubans in immigrant-intensive industries in Miami. For example, as other Cuban workers were separating from textile and apparel manufacturing the workers hired to replace them may have been disproportionately members of the Mariel boatlift. Card presents no evidence to confirm this particular speculation, only that it is consistent with the absence of a Mariel effect on wages, participation, and employment rates of blacks, whites, Cubans, and other Latinos.

Card does not discuss a third possibility: a large influx of immigrants represents both an increase in labor supply and an expansion in demand, via private consumption and investment spending as well as governmental purchases of goods and services. Marielitos' demand for food, housing, clothing, medical care, education, etc. represented an expansion in the size of local economy. As refugees, Marielitos were entitled to federal assistance in education, housing, health care, food stamps, other general welfare assistance, and a multitude of services of local, federal, and state employees. During the midst of a recessionary period, the exogenous increase in the labor supply was accompanied by an exogenous (and very large) increase in local

spending and that had positive effect on employment. By contrast, low income immigrants – especially undocumented immigrants, from countries other than Cuba are unlikely to have similar spending capacity.

The state of Alabama is currently 30 months after the initiation of a policy experiment via major changes in the state's policies regarding undocumented workers. In particular, Alabama has adopted a legal regime that makes it exceptionally difficult for undocumented persons to reside, work, attend school, or engage in business in the state. On June 9, 2011 Alabama Governor Robert J. Bentley signed into law HB 56, the Hammon-Beason Alabama Taxpayer and Citizen Protection Act.

Immediately upon signing, the law authorized the state to hire additional personnel to train police officers for implementing this act and for interacting with federal authorities.[4] Per section 9 of Hammon-Beason, as of January 1, 2012, it is illegal for contractors and sub-contractors doing business with the state to employ undocumented workers. State contractors and sub-contractors must be enrolled in the E-Verify program. These provisions cover all employers with 1 or more workers and infractions carry severe penalties. Starting April 1, 2012, section 15 of the Act makes it a criminal penalty for any business to hire an undocumented person.

Most provisions of the Act and the associated criminal penalties went into effect September 1, 2011. These provisions include the following items: undocumented persons cannot enroll, attend, or receive any benefit from a public postsecondary education institution; it is unlawful for undocumented workers to apply for work at a public or private employer or work as an independent contractor; it is unlawful to pick up for hire workers on a street; "where reasonable suspicion exists," law enforcement officers may inquire of the citizenship and immigration status of persons that have been legally stopped, detained, or arrested; it is unlawful

for individuals or institutions to assist undocumented persons in avoiding detection by law enforcement officers and it is illegal to encourage undocumented persons to enter Alabama, where the penalties for violating this provision may include forfeiture of property; it is unlawful to rent to an undocumented person; compensation of any kind paid to undocumented workers are not allowed as a deductible business expense; businesses or other organizations hiring an undocumented worker over legal workers are guilty of discrimination or businesses laying off a legal workers and keeping an undocumented worker are guilty of discrimination; contracts signed with undocumented workers are not valid; every public elementary and secondary school in Alabama (PK through grade 12) must ascertain the nativity and citizenship status of every student.

As intended, the law has driven undocumented workers out of Alabama. Addy (2012) estimates that the law has encouraged an exodus of 40,000 – 80,000 undocumented workers from the state of Alabama. The law also has had severe unintended consequences, as the Alabama legislators ignored the state-level effects of a major reduction in aggregate demand.

Addy assumes that these workers would have annual earnings of $15,000 - $35,000 and most of these workers are employed in four industries: agriculture - crop and animal production (13.9 percent); construction (40.9 percent); accommodation (4.8 percent); and, food services and drinking places (40.5 percent). Next, Addy uses multipliers from the Regional Input-Output Modeling System (RIMS II), U.S. Department of Commerce Bureau of Economic Analysis, to derive income and employment effects associated with the flight of undocumented workers. Assuming remittances of 20 percent, Addy estimates the mass exodus of undocumented workers had reduced Alabama employment by 69,768 – 139,536 direct and indirect jobs. Direct earnings fell by $1.2 billion - $5.8 billion, leading to a statewide GDP reduction of $2.3 billion - $10.8

billion, that is, 1.3 percent – 6.2 percent reduction in Alabama's GDP. Further, Addy estimates that state sales and income taxes have declined by $56.7 million - $264.5 million, while city and county sales taxes declined by $20 million - $93.1 million.

Addy does not provide a racial breakdown of job and income losses. But, if African American job and income losses are proportional to their representation in the labor force, 26 percent, then black employment has declined by 18,139 – 36,279 jobs and black income has declined by $598 million - $2.81 billion. These numbers represent 2 – 5 percent of black employment in Alabama.[5] These are crude estimates of the effects of Alabama's undocumented workers mass departure on black employment and income. But, the substantive point is that there are both wage substitution and aggregate demand multiplier effects associated with large-scale immigration. Most studies ignore the aggregate demand effects of immigration. Concluding, Card finds no short-run effects for the Marielito natural experiment, while Addy finds short- and long-run effects for the Alabama policy experiment that are counter to the predictions of the canonical neoclassical model of the effects of immigration on the labor market outcomes of native workers. Notably, neither experiment is bedeviled by cohort effects and a host of other issues that we discuss below in relation to the national market approach to estimating the effects of immigration.

Time Series

Stevans (2009) examines the interrelationships among African American male earnings, employment, incarceration, and immigration. He estimates a vector error correction model of 9 variables.[6] Stevans tests the null hypotheses that in long-run equilibrium, the incarceration rate and immigration rate are jointly insignificant determinants of black employment. His data cover 1961 – 2008. Stevans is unable to reject the null hypotheses that, in long run equilibrium, the

black incarceration rate and the national immigration rate do not have statistically significant effects on African American employment. These results are consistent the long-run predictions of the canonical neoclassical model.

Local labor market

Altonji and Card (1991) present a local market analysis of the impact of immigration on less-skilled workers, where the standard metropolitan statistical area (SMSA) is defined as the local market. An influx of immigrants into a city represents an expansion of the local labor supply. Native and immigrant workers are not separate factors of production; rather, workers are either unskilled or skilled and there is a down-sloping demand curve for each skill group of workers. At least some locally produced output is sold locally. New immigrants will increase the demand for local output, along with the derived demand for skilled and unskilled labor. If all locally produced output is locally sold and immigrants have the same unskilled-skill proportion as natives, the wage rates will be constant, but output, employment, and consumption will be higher in the local market. In the Altonji and Card theoretical model, the net impact of immigration depends upon a complex balance of forces: elasticity of labor supply, elasticity of labor demand in response to changes in own and other skill group's wage, the proportion of skilled and unskilled native workers, the proportion of skill and unskilled workers in the influx of immigrants, and the fraction of local output sold in the local labor.

Altonji and Card estimate a multi-stage econometric model. First, per equation (1), for each race-gender low-skill group, individual labor market outcomes are regressed against polynomials in individual age, individual years of education, interactions between individual age and individual education, and a series of binary variables for 120 cities (standard metropolitan statistical areas, SMSAs). The sample consists of low education native persons: white males with

less than 12 years of education, African American males and females with less than 13 years of education, white females with less than 13 years of education. The data are taken from the 1 percent Public Use Sample of the 1970 Census and a 5 percent "A" sample of the 1980 Census.

(1) $Y_i = \beta_0 + f(age_i) + g(education_i) + h(age_i*education_i) + \sum_{j=1}^{119} \alpha_j SMSA_j + u_i$, where i = 1, …, n

individuals and f(…), g(…), and h(…) are polynomial operators.

The estimate of the mean age and education adjusted labor market outcome for each SMSA (α_j) is saved and regressed against the SMSA's immigrant population share (M/P), the natural logarithm of the SMSA's population (lnP), mean age of race-sex group N in SMSA j, and mean education of race-sex group N in SMSA j.

(2) $\hat{\alpha}_i = \gamma_0 + \gamma_1(M/P)_j + \gamma_2 lnP_j + \gamma_3 Age_{Nj} + \gamma_1 Education_{Nj} + v$

To eliminate SMSA unobserved fixed effects, Altonji and Card also estimate a difference model,

(3) $\Delta\hat{\alpha}_i = \gamma_0 + \gamma_1\Delta(M/P) + \gamma_2\Delta lnP + \gamma_3\Delta SMSA\_age + \gamma_1\Delta SMSA\_education + e.$

Further, it may be the case that $E(e|\Delta(M/P)) \neq 0$. Specifically, immigrants may be attracted to cities where there is already an enclave of members of their own ethnic group and to cities with favorable labor market conditions. Hence, they instrument the immigrant share by regressing $\Delta(M/P)$ against the fraction of immigrants in the SMSA in 1970 and obtain $\Delta(\hat{M/P})$.

(4) $\Delta\hat{\alpha}_i = \gamma_0 + \gamma_1 \Delta(\hat{M/P}) + \gamma_2\Delta lnP + \gamma_3\Delta SMSA\_age + \gamma_1\Delta SMSA\_education + e$

Equation (4) is Altonji and Card's preferred model and γ_1 is the coefficient of interest. For the pool data model, Altonji and Card find that a 10 percent increase in the immigrant share of an SMSA's population has the following effects:

a negative but insignificant effect on the labor force participation rate;

a positive but insignificant effect on the employment-population ratio;

a positive and significant effect on the employment rate (2.31 percent);

a negative and significant effect on the fraction of workers who worked at any time during the previous year (-2.46);

a positive but insignificant effect on the natural log of weeks work; and,

a large negative and significant effect on weekly earnings (0.94 percent).[7]

The pattern of results more or less holds across each of the sub-groups.

For low education African American males, Altonji and Card find that a 10 percent increase in the immigrant share of an SMSA's population has a positive and significant effect on the employment rate (6.23 percent) and a large negative and significant effect on natural log of weekly earnings (-1.49 percent). These results are consistent with immigration spurring an expansion in the labor supply of low education African American males, rather than a reduction in labor supply that is typically assumed. For white males, a 10 percent increase in the immigrant share of an SMSA's population has a negative and significant effect on the fraction of workers who worked at any time during the previous year (-6.09 percent) and a large negative and significant effect on weekly earnings (-0.86 percent). There are no statistically significant effects for low education African American women. For white women, a 10 percent increase in the immigrant share of an SMSA's population has a large negative and significant effect on weekly earnings (-0.07 percent). Finally, a 10 percent increase in the immigrant share of an SMSA's population has a large negative and significant effect on weekly earnings (-1.16 percent) of immigrant workers already living within the SMSA.

Altonji and Card find that controlling for the fraction of African Americans within the SMSA does not change their results. Notably, the most direct competitors with low skill native workers are not "all immigrants," but low skill immigrants. A 10 percent increase in the low skill

immigrant share of an SMSA's population has a negative, significant, but relatively smaller effects on weekly earnings of African American males (-0.55 percent) and white males (-0.37 percent), but larger effects on black females (-1.01 percent) and white females (-0.96 percent). Using the fraction of white males ages 13 – 64 with 13 or more years of education as a control for a SMSA's skilled labor force does not alter the results. Finally, we note the Altonji and Card model provides only short-run effects of immigration.

Reed and Danziger (2007) utilize an estimation strategy similar to Altonji and Card. They focus on the wage and employment outcomes of native workers who are 25 – 62 years of age. They also focus on the census data for the 1989 and 1999 work-years, a period when large numbers of low skill immigrants began to move into SMSAs all across the country. The immigrant share or workforce penetration rate is the fraction of workers age 16 and above who arrived in the US in 1990 or later. Long term immigrants, those who arrive prior to 1990, are considered native workers.

Concentrating on the employment ratio of men with less than a high school diploma, Reed and Danziger find that a 1 percentage point increase in a SMSA's recent immigrant share reduces white male employment by 0.25 percentage points (significant at 1 percent) and lowers African American male employment by 0.15 percentage points (significant at 10 percent). Latino employment falls by 0.08 percentage points but it is insignificant. For white males without a high school diploma, the recent immigrant share is 0.046; hence, their employment would have been 1.15 percentage points higher (0.25*0.046*100) in 1999 without recent immigration. For African Americans, the employment ratio would have been 0.89 percentage points higher (0.15*0.059*100).

Including native workers with a high school diploma lowers the absolute value of the

immigrant share coefficients. Reed and Danziger find that a 1 percentage point increase in a SMSA's recent immigrant share reduces white male employment by 0.22 percentage points (significant at 1 percent) and lowers African American male employment by 0.12 percentage points (significant at 10 percent). Latino employment falls by 0.07 percentage points but it is insignificant.

For white males, African American males, and Latinos without a high school diploma, a 1 percentage point increase in recent immigrant share of the workforce will lower wages by 0.60 percentage points. For white males wages would be 2.76 percentage points higher (0.60*0.046*100), 3.54 percentage points higher (0.60*0.059*100) for African American males, 5 percentage points higher (0.6*0.083*100) for Latinos. Reed and Danziger explain,

> For a full-time worker with an hourly wage of $10, this amounts to annual earnings losses of about $700 for blacks, $525 for whites, and $1,025 for Latinos. Differences by race result mainly from the higher metro area ratios of immigrants to natives faced by Latinos and blacks relative to whites, as estimated wage effects do not differ statistically by race. When workers with a high-school diploma are included, the magnitudes of the estimated coefficients fall [-0.31 for whites, -0.49 for African Americans, and -0.38 for Latinos] but remain statistically significant (page 376).

Stewart and Hyclak (1986) provide an important demonstration of why it is necessary to decompose the immigration ratio into separate racial components. Stewart and Hyclak are interested in the variation in mean earnings for black males across central cities. The data are from 1970. Central cities are low-wage labor markets and housing segregation further reduces the earnings options of African American residents. The immigration variable of interest is male

labor force participation after 1960. The total is subdivided into labor force penetration rates of immigrants from Mexico, West Indies, Cuba, and all other areas. Stewart and Hyclak find that a 10 percentage point increase in the Cuban labor force penetration ratio will *raise* the relative annual earnings of inner city African American males by 0.074 percent, indicating that Cuban immigrants and African American males are complements – not substitutes. Further, a 10 percentage point increase in the West Indian labor force penetration ratio will *raise* the relative annual earnings of inner city African American males by 2.07 percent. West Indian immigrants are English-speaking blacks of West African origin who lived in countries with a history of slavery, colonialism, and anti-black racism; hence, they are physically and culturally similar to native African Americans. The Mexican immigrant penetration effect is positive but statistically insignificant. However, a 10 percentage increase in the labor force penetration rate for all other immigrants will lower African American annual earnings 0.23 percent.

Stewart and Hyclak (1986) is now a dated study that needs to be replicated, but it provides important evidence that the substitutability of immigrants for African American workers may depend on the race of the immigrant group.[8]

LaLonde and Topel (1989) do not account for the issues raised by Stewart and Hyclak, but their local labor analysis does control for national origin and cohort differences among workers. LaLonde and Topel argued that immigrant cohorts may differ by quality and degrees of assimilation into US labor market. Recent immigrants are not substitutes for native workers or for long term immigrants who are fully integrated in the US labor market. New immigrants are strong substitutes for other recent immigrants of their own group. Hence, black wages and employment should decline with an influx of black immigrants rather than white immigrants. Further, new black immigrants should have larger effects on the labor market outcomes of more

recent black immigrants than either native blacks or longterm black immigrants. For the 1970s, LaLonde and Topel find that if there is a 100 percent increase in the size of all immigrant cohorts the wages of young black males (persons 16 – 34 years of age) would decline by a statistically insignificant 2.4 percent. (The effect for Hispanic males is a statistically insignificant 1 percent).

National labor market

Borjas (2003) and Aydemir and Borjas (2011) provide evidence that large scale immigration has lowered the wages and employment of native workers. The former study assumes that workers with similar levels of education but varying levels of experience are imperfect substitutes. Exploiting those differences, Borjas (2003) finds that a 10 percent increase in labor supply arising from immigration reduces the wage and employment rates (measured as mean fraction of weeks worked) and increases the incarceration rate of competing native African American workers by 2.5 percent, 5.9 percentage points, and 1.3 percentage points, respectively. For native white workers, the immigration effects are 3.2 percent reduction in wages, 2.1 percent point reduction in employment, and 0.2 percentage point increase in incarceration. Immigration effects differ across education-experience skill groups. Aydemir and Borjas (2011) examine the issue of sampling error and find that this error may lead to attenuated estimates of the wage effects in previous studies.

Borjas, Grogger, and Hanson (2010), BGH hereafter, present an integrated theory of the effect of immigration on changes in native workers' wages, market employment, and participation in criminal activity. In their model, immigration reduces market employment and increases criminal sector employment. Per Figure 5, prior to an influx of immigrants African Americans have wage w_0, employment AE_0, crime participation BE_0, with residual leisure time $L_0 = T - AE_0 - BE_0$, where T is total available time. Leisure time includes pure leisure

("entertainment"), as well as household production and human capital accumulation. BGH assume that native African Americans and immigrants are perfect substitutes in production; hence, a large influx of immigrants will reduce the civilian formal sector demand for black workers from D_f to D'_f. The reduction in formal sector or market employment will lower the market wage rate, thereby increasing the demand for crime (D_c shifts D'_c) and leisure. Post-immigration, African Americans have wage $w_1 < w_0$, employment $AE_1 < AE_0$, crime participation $BE_1 > BE_0$, and leisure time (non-participation) $L_1 = T - AE_1 - BE_1 > L_0$.

The increase in criminal employment is not sufficient to absorb all of the decline in market employment. BGH do not examine the detailed allocation of leisure time, which in their framework would be the consumption of pure leisure, an increase in home production (for example, unemployed parents using the reduction in market time to assist their children in school work), increases in human capital production, or military enlistment. In any case, the BGH model predicts that an increase in immigrant labor supply will increase criminality, but reduce the wages, employment, and labor force participation of native African Americans.

The elasticity of substitution for native black and immigrant ($\sigma_{nb,f}$) workers is the crucial empirical datum for determining the impact of immigration on native black labor market outcomes. BGH assume that $\sigma_{nb,f} = \infty$, native black workers and immigrants are perfect substitutes.[9]

[Insert Figure 5]

For Altonji and Card, immigrant share of the SMSA is an instrumental variable established by the immigrant share of the SMSA population, that is, for Altonji and Card $p = \frac{M_t}{N_t + M_t} = \frac{1}{m_t + 1}$; thus, immigrant share is unadjusted for skill group. BGH construct a

different variable to identify the effect on immigration on wages, employment, and crime, viz.,

$p_{ext} = \frac{M_{ext}}{N_{ext} + M_{ext}} = \frac{1}{m_{ext} + 1} \equiv$ immigrant share per skill (education and experience) group

during time t.

Given p_{ext}, BGH estimate the following empirical model,

$y_{ext} = \theta p_{ext} + E + X + T + (E \times T) + (X \times T) + (E \times X) + \varphi_{ext}$,

where for each social group (native black males and native white males) y_{ext} is alternatively the employment rate, natural logarithm of earnings, and the incarceration rate for a given education-experience group, E is a vector of binary variables representing different levels of education (dropout, high school graduate, some college, and college graduate), X is a vector of binary variables representing alternative potential experience groups (0-5 years, 6-10 years, …, 35-40 years), T is vector of binary time variables, and X x T and E x X are a full set of interaction terms. All persons are 18 to 64 years of age and the data are samples from the 1960 – 2000 census.

For a given skill group during time t, the ratio of immigrant workers to native workers = m. Hence, the percentage increase in the wage rate for a percentage increase in the immigrant rate is defined as $\frac{\delta \ln w_{ext}}{\delta m_{ext}} = \theta(1 - p_{ext})^2$. Table 5 contains the BGH employment, wage, and incarceration effects associated with a unit change in the immigration rate. The BGH empirical results indicate that immigration has had its strongest effects on the labor market outcomes of the least educated men, especially African American males. Specifically, Table 5 shows that the 1980-2000 increase in the immigration rate reduced the weekly wage of African American male high school dropouts by 5.3 percent, reduced their employment rate by 12.6 percent, and increased their incarceration rate by 2.8 percent. The actual changes for this period were -14.2

percent, -16.7 percent, and 15.6 percent. So, per BGH, for 1980 – 2000 immigration accounts for more than 1/3 of the wage decrease and nearly 90 percent of the employment decline of African American male high school dropouts; however, immigration has had only a modest effect on the incarceration rate of African American male high school dropouts. Similarly, for African American males with only a high school diploma, immigration can explain 2 percentage points of the 7.6 percentage point decline in weekly wages and 5 percentage points of the 10 percentage point decline in the employment rate, but none of the increase in the incarceration rate.

[Insert Table 5]

By comparison, immigration has little or no labor market or incarceration effects on African American males with some college or a college degree. Indeed, the labor market and incarceration effects for these groups have the wrong sign. For white males with some college, the BGH results show that immigration explains more than 82 percent of the decline in weekly wages. By comparison, immigration explains about 1/3 of the wage reduction of white male dropouts. Taken literally, immigrants are about equal substitutes for African American and white male dropouts and high school graduates, but immigrants are complements for African American males with some college and substitutes for white males with some college. This may be correct, but it requires additional empirical exploration and explanation.

III. Summary and discussion

What do we know? There is a consensus that highly educated immigrants tend to have a positive impact on the wages and employment of nearly all native workers. Therefore, the empirical literature is often interested in the impact of less educated immigrants on less educated native workers. For African Americans with some college or more education immigrants have either no labor effects or maybe positive labor market effects. The literature also appears to have

formed a consensus that there are no long run effects on wage and employment levels. But, immigration may affect the distribution of wages and employment in both the long-run and the short-run. For African Americans with 12 years or less education the evidence is contradictory: there may be no effects, small or large positive effects, or small or large negative effects.

Among African Americans 16 – 64 years of age, 20 percent of men and 17 percent of women have fewer than 12 years of education, while 39 percent of men and 35 percent of women have exactly 12 years of education. If we ignore the Borjas, Grogger, and Hanson (2010), immigrants have at most substantively small negative labor market effects on native African American males with 12 or fewer years of education. Yet, we cannot dismiss the results of Borjas, Grogger, and Hanson; in an area of empirical research that has a minefield of potential econometric problems and poor data, Borjas, Grogger, and Hanson is an imaginative study that weaves its way through the minefield of problems and poor data better than most studies in the extant literature.

Borjas, Grogger, and Hanson find that during 1980 - 2000 immigration reduced the wage and employment rates by 1/3 and 3/4, respectively, for African American male high school dropouts. They also found that immigration reduced the wage and employment rates by 1/4 and 1/2, respectively, for African American male high school graduates. Stevans' (2009) time series of data for 1961 – 2008 suggests that in longrun equilibrium immigration has no statistically significant on the wages and employment of black males. This is consistent with theoretical predictions of the canonical neoclassical theory of labor demand. For the 1970s, LaLonde and Topel (1989) find there that if there is a 100 percent increase in the size of all immigrant cohorts the wages of young black males (persons 16 – 34 years of age) would decline by a statistically insignificant 2.4 percent. Card's (1990) analysis of the labor market effects of the 1980 Mariel

boatlift finds no immigrants effects on the wages and employment of native African American workers, neither low wage native workers nor all workers. Addy (2012) finds evidence of large positive wage and employment effects associated with the state of Alabama's 2011 – 2012 decision to push 10s of thousands of undocumented workers out of the state, viz., the mass exodus of immigrants from Alabama substantially decreased black employment. In their examination of 1970 and 1980 local labor markets, Altonji and Card (1991) find that a 10 percent increase in the immigrant share of an SMSA's population has no statistically significant effects on the earnings and employment of low education African American women. But, the employment rate of low education African American men will increase by 6.23 percent and weekly earnings will decline by 1.49 percent. Focusing on the 1990s and less educated male workers between the ages of 25 and 62, Reed and Danziger (2007) find that for a 1 percentage point increase in recent immigrant share in the SMSA, African American male employment ratio, for persons without a high school diploma, will decline by 0.89 percentage points, while wages declined by 3.54 percent. The wage effect is equivalent to a $700 per year reduction in earnings for fulltime workers among persons without a high school diploma. These effects decline by 20 percent when analysis includes native workers with a high school education. Concluding, Borjas, Grogger, and Hanson likely have established an upper bound, with the lower bound being that immigration has no effects on the wages and employment of less-educated African American workers.

Clearly, most empirical studies have focused on men. The impact of immigration on the labor market outcomes of women needs much more research. For much of the period from 1974 to 2001, weekly wages, weeks worked, weekly workhours, and labor force participation were increasing for African American women with at least 12 years of education. There was not as

much progress for African American with less than 12 years of education. We were unable to locate research that has reconciled changes in the labor market status of African American women with the growth in the immigrant share of the labor force.

Microeconometric concerns

Thus far, the empirical literature seeking to establish the impact of immigrant workers on the labor market outcomes of native African Americans has not incorporated an important element of heterogeneity among native workers; namely, labor market "movers" and "stayers" have different unobserved characteristics. To the extent that movers into labor markets are more positively selected than stayers, then movers will have superior labor market outcomes. The movers may be migrants or immigrants. For example, both Butcher (1994) and Model (2008) find that Afro-Caribbean immigrants have higher earnings than native stayers, but there are no wage or employment differences for recent immigrants and recent native movers.

Failure to account for unobserved heterogeneity among movers and stayers creates two problems: error-in-variables for the dependent variable and omitted variable bias. The former will increase standard errors and thereby reduce the likelihood of rejecting the null hypothesis, while the latter yields incorrect standard errors and biases upward the coefficient on the immigrant share variable (assuming that there is a positive correlation between immigrant share and the fraction of movers in a market). Hence, the dependent variable has to calculate native wages and employment for a given education-skill group, for time t, and for mover-stayer status. Alternatively, a mover-stayer variable with appropriate interactions should be included among the explanatory variables.

There is a second specification problem. Except for Stewart and Hyclak (1986), immigrant employment percentage is not separated by race, though wage, employment, and

participation effects are separated by race – so which groups of immigrants are substitutes for black workers? If only white immigrants are substitutes, then BGH may have found a source of employment discrimination. If only black immigrants are substitutes, then wage, participation, and employment effects may reflect unobserved heterogeneity. If only Mexican immigrants are substitutes, then this too may involve discrimination.

By not decomposing the immigrant share variable, BGH assume a differential labor market process for native black workers but an undifferentiated labor market process for foreign-born black workers. Consider a modified version of BGH's empirical model.

$$y_{ext,r} = \theta_b p_{ext,b} + \theta_w p_{ext,w} + \theta_h p_{ext,h} + \theta_a p_{ext,a} + E + X + T + (E \times T) + (X \times T) + (E \times X) + \varphi_{ext},$$

where the subscripts indicate black (b), white (w), Hispanic (h), and Asian (a). If this is the correct specification, BGH implicitly assume $\theta_b = \theta_w = \theta_h = \theta_a$, which assumes a racially undifferentiated labor market process for all immigrants. In the absence of a racially differentiated labor market process, there is no need to run separate equations for black and whites. Also, blacks should be Non-Hispanic blacks and whites should be Non-Hispanic whites.[10] In any case, the immigrant employment share variable must match the race of the outcome variables.

Third, BGH's empirical results do not match the long-run predictions of the canonical neoclassical model. The theory indicates that there are no long-run immigration effects on the wage and employment levels of native workers. Immigration effects are confined to changes in the distribution of wages and employment: the negative impact of immigration on low education workers has to be matched by a positive impact on high education workers.

Four, both Card (2001) and LaLonde and Topel (1989) demonstrate the importance of cohort differences among immigrants. Older immigrant cohorts have had time to assimilate to

the US labor market. The theoretical framework of the canonical neoclassical model assumes that capital fully adjusts in the long-run and the economy is at full employment. By assumption, capital has not had time to adjust to recent immigrant cohorts and recent immigrants have not had time to fully assimilate to the US labor market. Hence, both Card and LaLonde find differential impacts associated with recent and older cohorts. BGH do not account for cohort differences.

Five, production is both a technical activity and a social activity (Mason, 1995 and 1999). Immigrants and natives who are perfect technical (skill) substitutes are not necessarily perfect social substitutes. Whether or not natives and immigrants are social substitutes depends on the managerial strategy of firms, which is not homogeneous across firms. Firms may care about the social composition of their labor force, e.g., the racial, ethnic, nativity, gender composition, for a variety of reasons other than skill that are related to the profitability of operations. For example, some firms have a managerial strategy based on low wage costs and poor working conditions (to compensate for inferior technology or other non-competitive conditions). Such firms rely on close management practices to extract effort from workers. Other firms have a managerial strategy based on high wages and excellent working conditions to extract effort from workers. Such firms do not rely on close management of workers. For both types of firms, changes in the social composition of the workforce may have an actual or perceived impact on the efficiency of a particular managerial strategy. We are unaware of any immigration study that has sought to examine the empirical significance of the social composition of the workfoce.

Macroeconomic concerns

It is an open question as to whether the empirical models measuring the relationship between native worker labor market outcomes and immigrant share have truly captured a causal

relationship. Immigrant share of the labor force has been rising along with an increasing globalization of the US economy. Import penetration of national goods and services, off-shoring of employment, and a rising immigrant share of employment may be causally connected series. If so, it is not clear that a statistically significant relationship between immigrant share of the workforce and native worker employment ratio is sufficient to establish a causal relationship.

Immigration studies by labor economists usually assume a single output and fixed output price; hence, an increase in relative factor supplies (relative increase of unskilled labor because of immigration) forces adjustment through relative factor prices (relative wages). By construction, this sort of model does not allow changes in relative output (or relative output prices) as a source of adjustment to changes in relative factor quantities, i.e., producing more of the unskilled labor intensive good and relatively less of skill intensive good, because there is only one good. (See Gaston and Nelson, 2007 for an extensive discussion of this issue). If the relative output quantities or prices are a source of adjustment to changes in relative factor supplies, the standard labor economics approach will overestimate the wage and employment effects of immigration.

Increases in the employment of immigrants in the US may be correlated with decreases in the employment of native workers due to loss of market share to trading partners. For example, an increase in the employment of Mexican immigrants in one US industry may be matched by a reduction in employment of native workers in another industry due to increasing competitiveness of trading partners. Yet, it also seems reasonable that when we simultaneously consider both trade and labor market approaches to understanding the wage and employment effects of immigration, immigration will keep the labor market "pretensions of [native] workers in check."[11] Large scale immigration does represent an expansion in labor supply and neither the

law of one price nor the law of demand has been repudiated. But, the lower wage trend presumably stimulates the growth rate of production, which picks up more workers than it would otherwise. Immigration may inhibit technological change, which would reduce the displacement of all workers. So, native workers would face more slowly growing real wages and more slowly growing employment, while immigrants will get higher wages than at home and also higher employment. It is however theoretically and empirically unclear whether the new relative extent of joblessness is higher or lower.

Import penetration is the production equivalent of immigration. Immigrants may be substitutes or complements for native workers, just as foreign products may be substitutes or equivalents for native products. Similarly, firms may transfer both the production of goods and services away from the US to another country, i.e., engaging in off-shoring. Hence, the effects of import penetration (or an increase in off-shoring) are likely analogous to the effects of immigration. From a policy perspective, placing a fence and guards at the border to stop immigration will not protect the labor market wellbeing of low wage workers – unless we are also simultaneously willing to reduce imports that are made by skill-equivalent workers and place capital controls on goods and services produced by low-wage workers. Closing the economy in the labor market creates greater pressure for openness in product and the capital markets; closing the economy in all markets creates unemployment.

Notes

[1] Persons living in group quarters, for example, rooming houses, military barracks, college dormitories, hospitals, rest homes, law enforcement facilities, and other institutions are not within the sample universe. This produces an undercount of military personnel since the sample includes only military persons living off-base or persons living in family housing on base. It also undercounts black non-participation because it omits the inmate population.

[2] See LaLonde and Topel (1989) and Card (2001) for analyses of cohort effects.

[3] The National Bureau of Economic Research reports that there was a 6-month recession from January 1980 to July 1980, with a one-year recovery from July 1980 to July 1981. Shortly thereafter, there was a 16 month recession during July 1981 – November 1982. The one-year "recovery" of 1980-81 – the shortest recovery of the post World War II era – was only a brief respite in a long period of stagnation from December 31, 1979 to December 31, 1982. See the NBER web page at http://www.nber.org/cycles.html.

[4] See sections 22 and 23 of Beason-Hammon Alabama Taxpayer and Citizen Protection Act (http://latindispatch.com/2011/06/09/text-of-alabama-immigration-law-hb-56/).

[5] The Alabama population for 2011 was 4,802,740. (See http://quickfacts.census.gov/qfd/states/01000.html). The population over age 18 was 3,664,491, while the population over age 65 was 662,778, suggesting a workforce of 3,001,713. African Americans were 26.2 percent of the population; hence, crudely, the African American workforce was 786,449. The immigration effects then are 18,139/786,449 = 0.02 to 36,279/786,449 = 0.05.

[6] The variables are real median weekly earnings of black male full-time wage and salary workers, employment-population ratio black males, black incarceration rate, U.S. immigration, percentage of black males age 25 and over who have completed high school or college, federal

and state real social expenditures (transfer payments), real gross domestic product, real minimum wage, wage and salary workers who are union members as percent of civilian employment.

[7] The estimated sloped coefficient in the ln weekly wage equation is -1.205. So, a 1 percentage point increase will lower wages by 1.21 percent. During 1970 to 1980 the immigrant share rose from 6.0 percent to 9.6 percent, a 3.6 percentage point increase or a 60 percent increase in the immigrant share. Taking 7.8 percent (the midpoint) as the base of comparison, the wage impact of a 10 percent increase in the immigrant share = 0.10*7.8*1.205 = 0.78*1.205 = 0.94.

[8] Stevans (1998) is a partial replication of Stewart and Hyclak (1986), but Stevan's estimation strategy has substantial econometric problems, viz., multicollinearity and endogenous explanatory variables.

[9] They find that σ is very high.

[10] For African and Asian immigrants there may be too few observations of sub-college education groups. For Mexican immigrants, there may be too few immigrants with high levels of education. Moreover, Mexican immigrants with low levels of education will have language skills (reading, writing, and speaking English) that are below low education African Americans.

[11] This discussion is taken from correspondence with Anwar Shaikh, Professor of Economics, New School for Social Research, November 17, 2011.

References

Addy, Samuel. (2012). "A cost-benefit analysis of the new Alabama immigration law," Center for Business and Economic Research, University of Alabama, Tuscaloosa, AL.

Altonji, Joseph G. and David Card. (1991). "The effects of immigration on labor market outcomes of less-skilled natives," In John M. Abowd and Richard B. Freeman, editors. Immigration, Trade and the Labor Market, pages 201-234. Chicago: University of Chicago Press.

Aydemir, Abdurrahman and George Borjas. 2011. "Attenuation Bias in Measuring the Wage Impact of Immigration," *Journal of Labor Economics*, 29: 69-112.
Becker, Gary S. (1965). "A Theory of the Allocation of Time," The Economic Journal, 75(299) (September): 493-517.

Borjas, George J. (2009). "The analytic of the wage effect of immigration," *National Bureau of Economic Research*, Working paper 14796. www.nber.org/papers/w14796.

Borjas, George J. 2003. "The Labor Demand Curve Is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market," *The Quarterly Journal of Economics*, November, 1335-1374.

Borjas, George J., Jeffrey Grogger and Gordon H. Hanson. (2010). "Immigration and the Economic Status of African-American Men," Economica 77 (306) (April): 255–282.

Bowen, William G. and Derek Bok. (1998). The Shape of the River: Long-Term Consequences of Considering Race in College and University Admissions. Princeton: Princeton University Press.

Butcher, Kristin F.1994. "Black Immigrants to United States: A Comparison with Native Blacks and Other Immigrants." *Industrial and Labor Relations Review* 47:265-84

Card, David. (2001). "Immigration inflows, native outflows, and the local labor market immigrants of higher immigration," Journal of Labor Economics, 19(1) (January):22-64.

_____. (1990). "The impact of the Mariel boatlift on the Miami labor market," Industrial and Labor Relations Review, 43(2) (January):245-257.

Friedberg, Rachel M. and Jennifer Hunt, "The Impact of Immigrants on Host Country Wages, Employment and Growth," *The Journal of Economic Perspectives*, 9: 23-44.

Gaston, Noel and Doug Nelson. "The employment and wage effects of immigration: an overview of theory, method and results" *Globalisation and Development Centre* (2007). Available at: http://works.bepress.com/noel_gaston/5

Grossman, Jean Baldwin. 1982. "The Substitutability of Natives and Immigrants in Production," *The Review of Economics and Statistics*, 64: 596-603.

Kerr, Sari Pekkala and William R. Kerr. (2011). "Economic Impacts of Immigration: A Survey," Harvard Business School, January 2011.

LaLonde, Robert J. and Robert H. Topel. (1991). "Labor market adjustments to increased immigration." In John M. Abowd and Richard B. Freeman. (Editors). Immigration, Trade and the Labor Market, Chicago: University of Chicago Press, pages 167-199.

Longhi, Simonetta, Peter Nijkamp, and Jacques Poot. (2011). "The Economic Impact of Immigration on the Labor Market of Host Countries –Meta-Analytic Evidence," Tinbergen Institute Discussion Paper, TI 2011-103/3.

Longhi, Simonetta, Peter Nijkamp, and Jacques Poot. 2009. "The Fallacy of "Job Robbing": A Meta-Analysis of Estimates of the Effect of Immigration on Employment," Tinbergen Institute Discussion Paper.

Longhi, Simonetta, Peter Nijkamp, and Jacques Poot. 2005. "A Meta-Analytic Assessment of the Effect of Immigration on Wages," *Journal of Economic Surveys*, 19: 451-477.

Mason, P. (1999). "Male interracial wage differentials: competing explanations." Cambridge Journal of Economics 23 (May):1-39.

_____. (1995). "Race, Competition and Differential Wages," *Cambridge Journal of Economics,* 19(4) (August):545-568.

Model, Suzanne. (2008). West Indian Immigrants: A Black Success Story? New York: Russell Sage Foundation.

Reed, Deborah and Sheldon Danziger, "The Effects of Immigration on Racial/Ethnic Labor Market Differentials," *The American Economic Review*, 97: 373-377.

Stevans, Lonnie K. (2009). "The Relationship Among African American Male Earnings, Employment, Incarceration and Immigration: A Time Series Approach," *The Review of Black Political Economy*, 36(3) (December): 151-160.

Stevans, Lonnie K. (1998). "Assessing the effect of the occupational crowding of immigrants on the real wages of African American workers," *The Review of Black Political Economy*, 26(2) (Fall): 37-46.

Stewart, James B. and Thomas J. Hyclak. (1986). "The effects of immigrants, women, and teenagers on the relative earnings of black males," Review of Black Political Economy, 15(1) (Summer): 93-101.

U.S. Department of Education. (2011). Institute for Education Sciences, National Center for Education Statistics, "National Assessment of Educational Progress (NAEP)," http://nces.ed.gov/nationsreportcard/about/.

Figure 1. Immigrants in US workforce, by year of arrival: 1994-2012

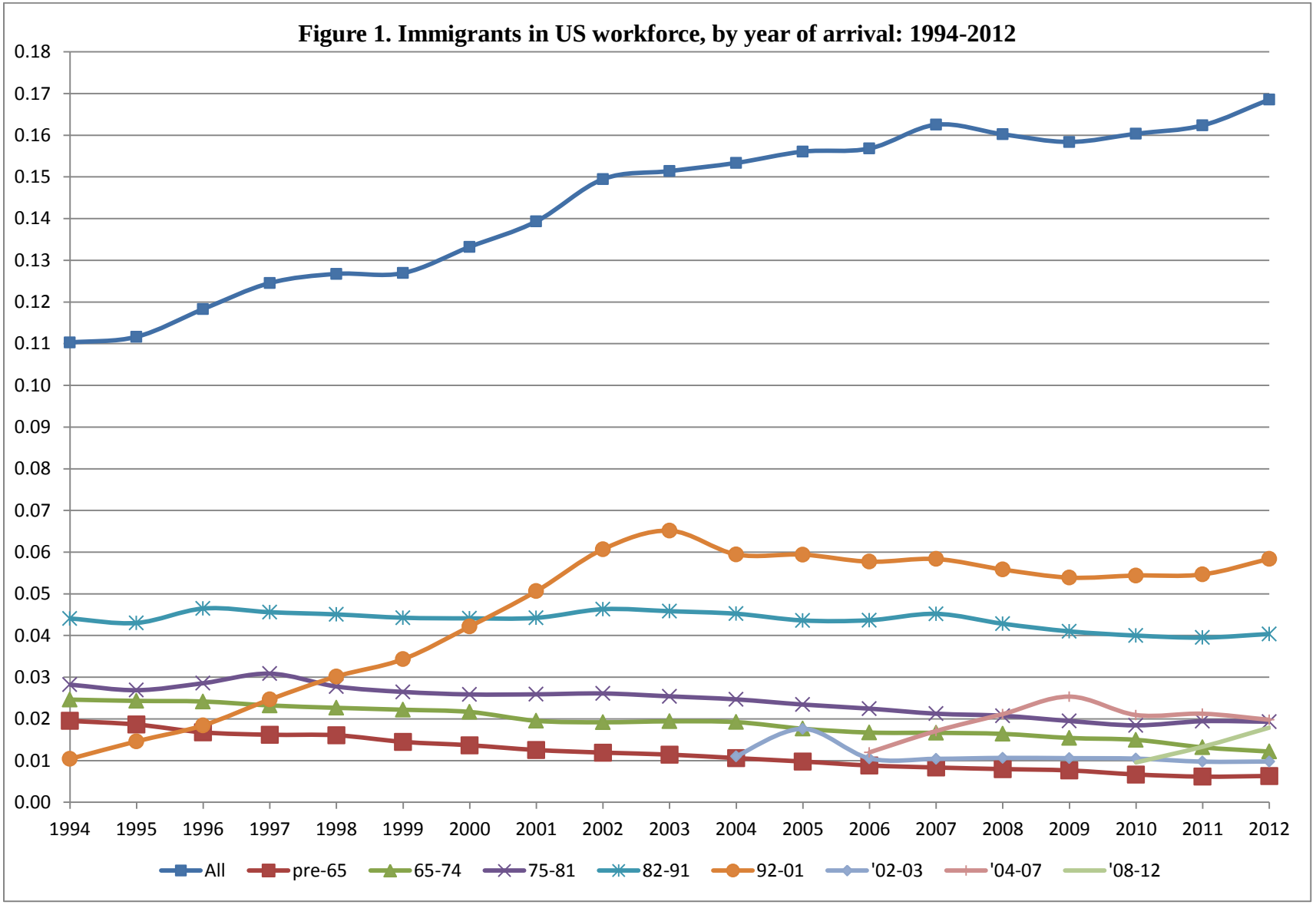


Figure 2. Employment-population ratio, African American males, 1993-2011

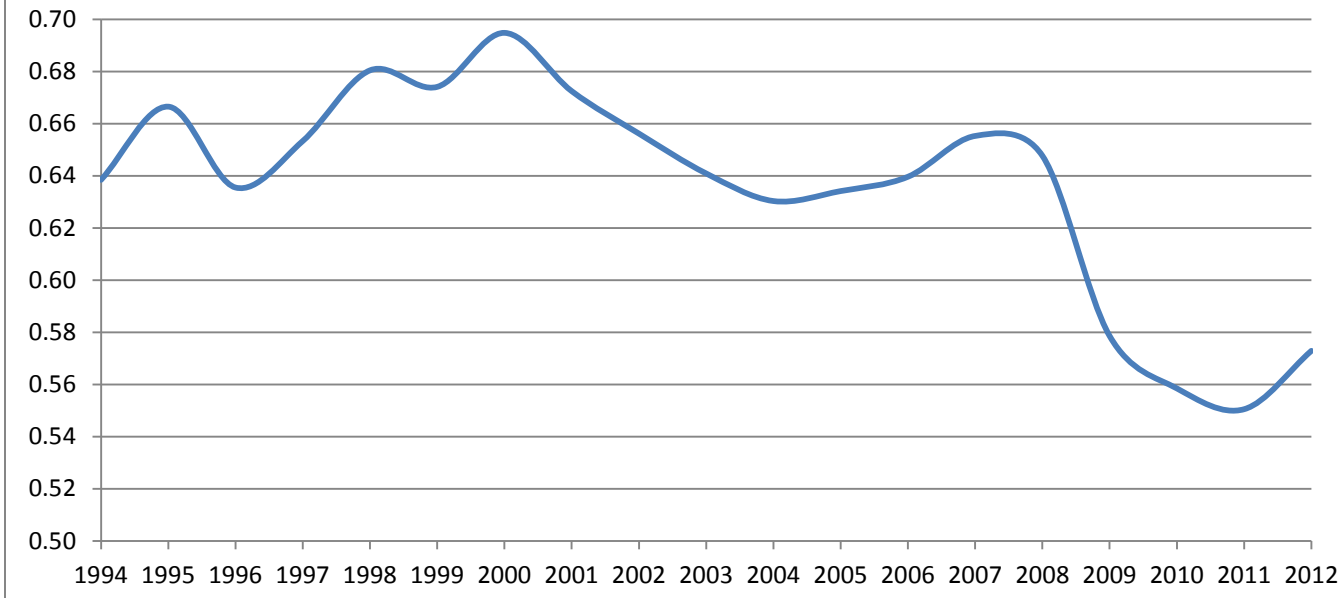
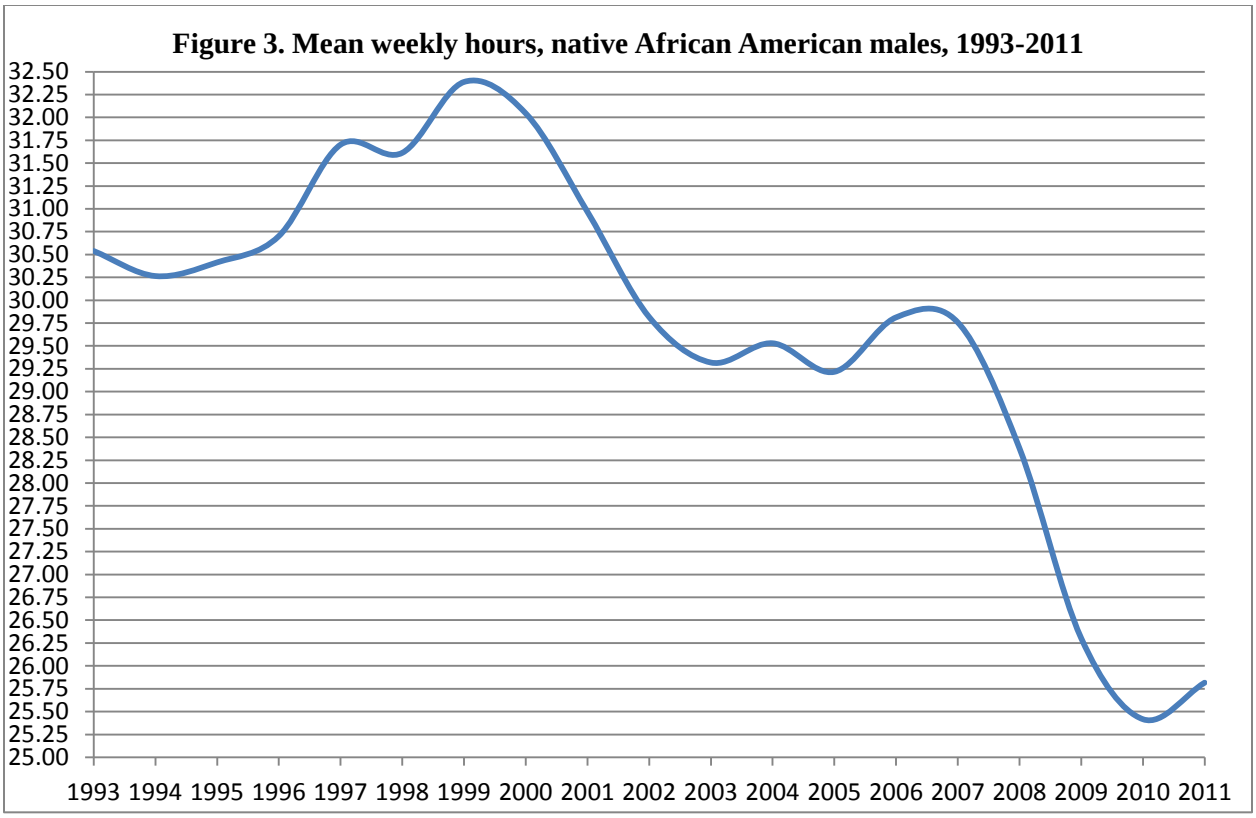


Figure 3. Mean weekly hours, native African American males, 1993-2011



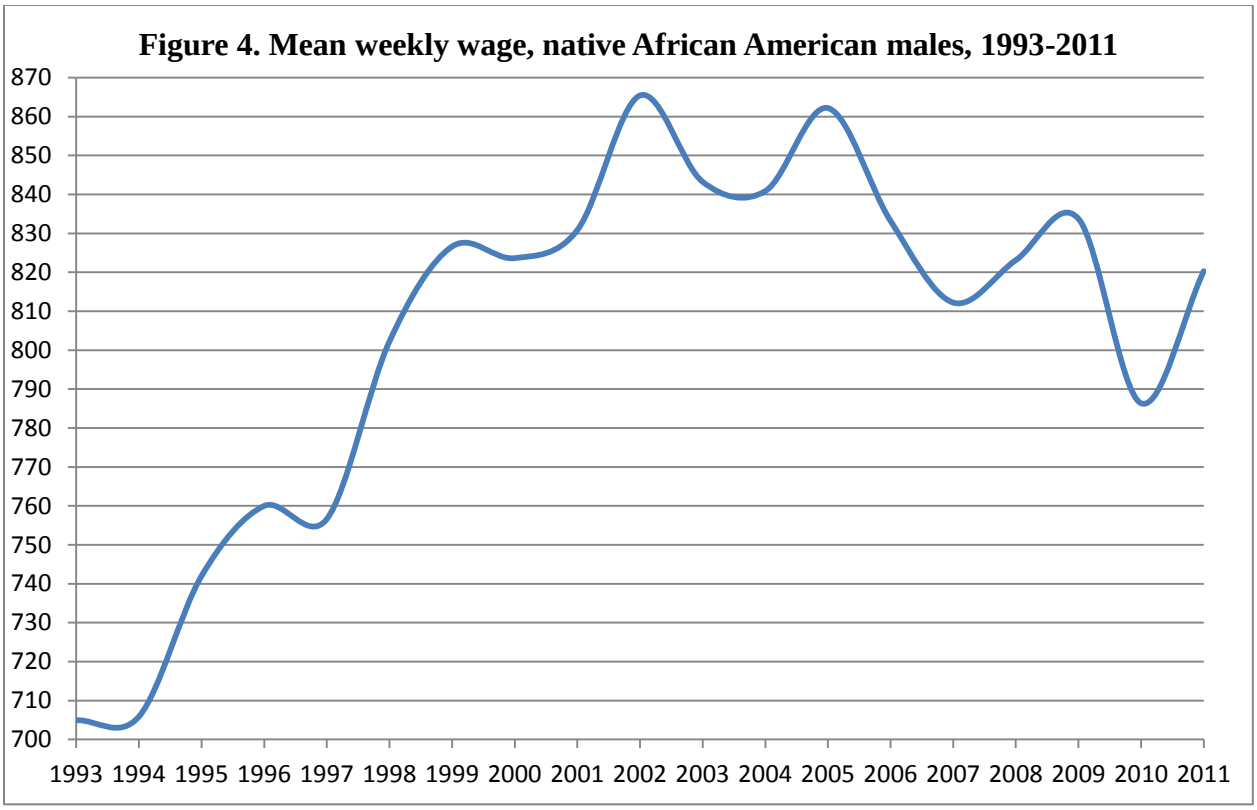


Figure 5. BGH model of immigration and native workers' labor market outcome

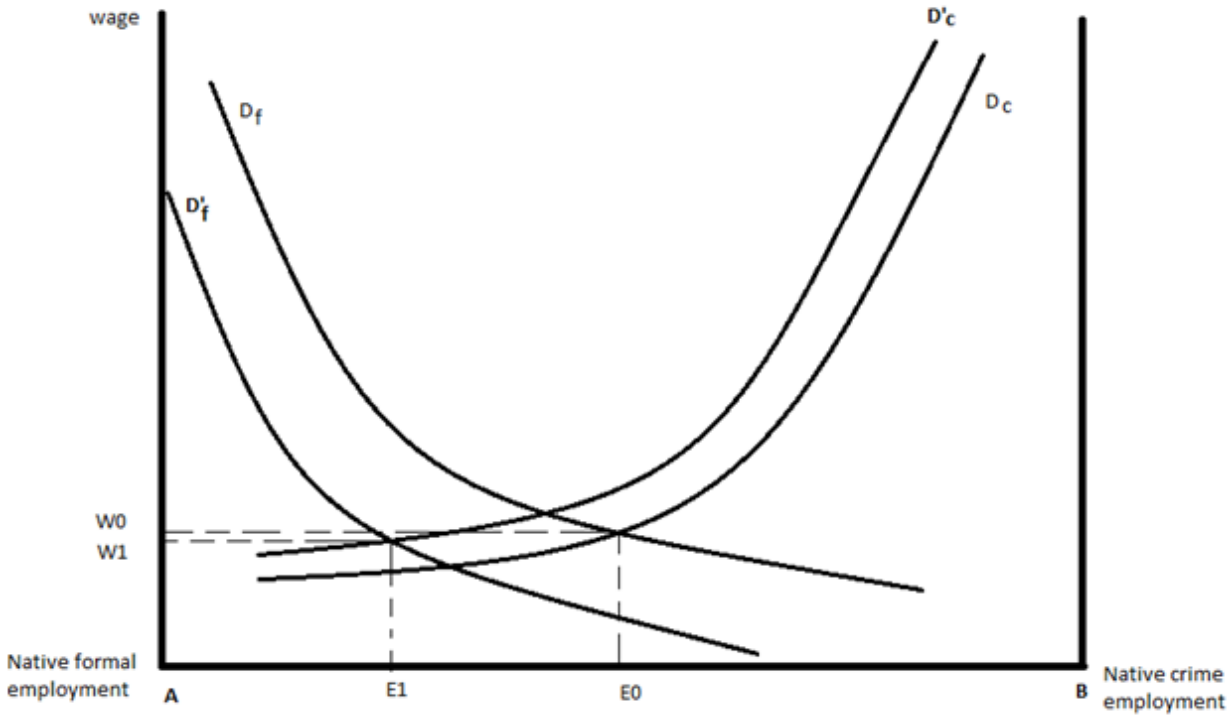


Table 1. Distribution of immigrants by national origin, race, and ethnicity: 1994 - 2012

	1994-2000	2001-2007	2008-2012
Canada	0.0222	0.0173	0.0153
Mexico	0.2885	0.3150	0.3253
Caribbean English	0.0398	0.0406	0.0362
Caribbean Spanish	0.1273	0.1217	0.1254
Haiti	0.0163	0.0155	0.0134
South America	0.0521	0.0588	0.0612
Africa	0.0190	0.0279	0.0423
Oceania	0.0043	0.0047	0.0058
Asia	0.2558	0.2590	0.2686
Europe	0.1376	0.1124	0.1032
Other places	0.0370	0.0271	0.0033
Black immigrants	0.0809	0.0909	0.0971
Hispanic immigrants	0.4648	0.4901	0.4992

Source: Author's calculations, March CPS, various years. Oceania is Australia, Fiji, New Zealand, Tonga, Samoa, Oceania not specified.

Table 2. Immigration & African American male labor market outcomes, 1994-2012: a descriptive analysis

	Weekly hours worked	Fraction employed	ln(weekly wage)
All arrivals	-0.7543	-0.0127	0.0215
Year arrived, 1992-2001	-0.5567**	-0.0082++	0.0268
Year arrived, 1982-1991	7.8355	0.1509	-0.0002+
Year arrived, 1975-1981	4.8467	0.0819	-0.06576*
Year arrived, 1965-1974	4.6529	0.0787	-0.0924
Year arrived, pre-1965	3.6515	0.0638	-0.0871

Source: Author's calculations, CPS data, various years. Unless otherwise noted, all coefficients are significant at 1 percent. +Not significant (p-value = 0.998), *(p-value = 0.076), **(p-value = 0.041), and ++(p-value=0.147). Wage and hours data are for 1993-2011.

Table 3. Labor market attributes of natives and immigrants

Men, 1994 – 2000	Native			Immigrant			
	Black	White	Hispanic	Black	White	Hispanic	Asian
Age	36.51	38.78	33.52	37.20	40.25	35.08	37.60
Dropout	0.2451	0.1364	0.3075	0.2140	0.1463	0.5323	0.1323
High school diploma	0.3903	0.3281	0.3420	0.3041	0.2743	0.2636	0.2168
Some College	0.2492	0.2730	0.2496	0.2496	0.2170	0.1276	0.2118
College degree	0.0849	0.1732	0.0730	0.1494	0.2052	0.0507	0.2442
Graduate degree	0.0306	0.0894	0.0279	0.0829	0.1573	0.0257	0.1949
South	0.5593	0.2877	0.3037	0.3359	0.1995	0.2748	0.1780
Northeast	0.1558	0.2236	0.1732	0.5349	0.3905	0.1602	0.2375
Northcentral	0.1918	0.2699	0.0869	0.0583	0.1666	0.0868	0.1345
West	0.0931	0.2188	0.4363	0.0708	0.2434	0.4781	0.4500
Women, 1994 – 2000							
Age	37.11	38.84	34.11	37.73	41.56	36.35	38.13
Dropout	0.2130	0.1215	0.3004	0.1948	0.1388	0.5157	0.1627
High school diploma	0.3699	0.3460	0.3372	0.3406	0.3161	0.2585	0.2483
Some College	0.2871	0.2976	0.2677	0.2684	0.2628	0.1488	0.2181
College degree	0.0929	0.1676	0.0700	0.1459	0.1853	0.0594	0.2724
Graduate degree	0.0371	0.0674	0.0246	0.0503	0.0970	0.0176	0.0986
South	0.5589	0.2908	0.2984	0.3071	0.1969	0.2754	0.1782
Northeast	0.1670	0.2275	0.2017	0.5843	0.3818	0.1886	0.2171
Northcentral	0.1986	0.2692	0.0814	0.0457	0.1702	0.0722	0.1341
West	0.0755	0.2125	0.4185	0.0629	0.2511	0.4638	0.4706

Source: Author's calculations, March CPS, various years.

Table 3. (Continued). Labor market attributes of natives and immigrants

Men, 2001 - 2010	Native			Immigrant			
	Black	White	Hispanic	Black	White	Hispanic	Asian
Age	38.02	39.45	33.38	39.15	40.87	36.33	39.94
Dropout	0.2026	0.1286	0.2628	0.1421	0.1149	0.4975	0.1003
High school diploma	0.3901	0.3114	0.3499	0.3020	0.2654	0.2973	0.2073
Some College	0.2690	0.2762	0.2694	0.2679	0.2260	0.1208	0.1911
College degree	0.0988	0.1876	0.0849	0.1853	0.2206	0.0591	0.2772
Graduate degree	0.0394	0.0962	0.0330	0.1028	0.1732	0.0254	0.2240
South	0.5814	0.2721	0.3004	0.3832	0.2248	0.3280	0.2126
Northeast	0.1231	0.2222	0.1491	0.4100	0.3485	0.1334	0.2195
Northcentral	0.1938	0.2843	0.1003	0.1152	0.1713	0.1077	0.1552
West	0.1017	0.2214	0.4502	0.0917	0.2554	0.4309	0.4127
Women, 2001 – 2010							
Age	38.65	39.36	34.07	38.69	40.91	37.45	40.34
Dropout	0.1702	0.1086	0.2473	0.1700	0.1043	0.4678	0.1173
High school diploma	0.3492	0.2905	0.3214	0.3129	0.2668	0.2924	0.2314
Some College	0.3089	0.3140	0.3003	0.2831	0.2554	0.1420	0.2024
College degree	0.1181	0.1981	0.0952	0.1671	0.2336	0.0736	0.3045
Graduate degree	0.0536	0.0888	0.0359	0.0670	0.1400	0.0242	0.1445
South	0.5907	0.2760	0.2992	0.3841	0.2296	0.3130	0.2069
Northeast	0.1302	0.2250	0.1669	0.4464	0.3405	0.1480	0.2014
Northcentral	0.1925	0.2837	0.0962	0.0933	0.1669	0.0955	0.1419
West	0.0867	0.2153	0.4378	0.0761	0.2630	0.4435	0.4498

Source: Author's calculations, March CPS, various years.

Table 4. Immigrants as a fraction of the labor force, by age and education, 1994 - 2010

	All					16 <= Age <= 30				
Year	Drop-Out	High School	Some College	College Degree	Grad Degree	Drop-out	High School	Some College	College Degree	Grad Degree
1994	0.22	0.08	0.07	0.08	0.09	0.18	0.10	0.08	0.07	0.13
1995	0.22	0.09	0.07	0.08	0.09	0.17	0.10	0.07	0.07	0.13
1996	0.26	0.09	0.08	0.08	0.09	0.20	0.11	0.08	0.07	0.12
1997	0.26	0.10	0.08	0.09	0.10	0.20	0.12	0.09	0.08	0.13
1998	0.27	0.10	0.08	0.09	0.11	0.19	0.13	0.08	0.08	0.14
1999	0.27	0.11	0.08	0.08	0.11	0.19	0.13	0.08	0.08	0.13
2000	0.30	0.12	0.08	0.09	0.10	0.22	0.14	0.09	0.08	0.10
2001	0.31	0.12	0.08	0.09	0.11	0.23	0.15	0.09	0.09	0.14
2002	0.26	0.11	0.07	0.09	0.10	0.17	0.13	0.08	0.09	0.12
2003	0.27	0.11	0.07	0.09	0.10	0.18	0.14	0.08	0.09	0.13
2004	0.27	0.12	0.08	0.09	0.10	0.18	0.14	0.08	0.09	0.13
2005	0.27	0.12	0.08	0.09	0.10	0.17	0.15	0.08	0.10	0.16
2006	0.28	0.12	0.08	0.09	0.11	0.18	0.15	0.08	0.10	0.13
2007	0.29	0.13	0.09	0.10	0.11	0.17	0.15	0.09	0.09	0.12
2008	0.29	0.13	0.08	0.10	0.11	0.16	0.15	0.09	0.09	0.13
2009	0.29	0.13	0.08	0.10	0.11	0.15	0.14	0.08	0.09	0.13
2010	0.30	0.14	0.09	0.10	0.12	0.16	0.14	0.08	0.09	0.13
	31 <= Age <= 50					51 <= Age <= 64				
	Drop-Out	High School	Some College	College Degree	Grad Degree	Drop-out	High School	Some College	College Degree	Grad Degree
1994	0.32	0.08	0.07	0.08	0.09	0.17	0.06	0.06	0.09	0.08
1995	0.32	0.09	0.07	0.08	0.09	0.19	0.06	0.07	0.08	0.08
1996	0.38	0.09	0.08	0.08	0.10	0.21	0.07	0.07	0.07	0.07
1997	0.39	0.09	0.08	0.09	0.10	0.22	0.08	0.07	0.08	0.09
1998	0.43	0.10	0.08	0.09	0.11	0.22	0.08	0.07	0.08	0.09
1999	0.43	0.10	0.08	0.08	0.12	0.24	0.08	0.06	0.08	0.08
2000	0.45	0.12	0.08	0.09	0.11	0.26	0.08	0.06	0.07	0.08
2001	0.48	0.12	0.09	0.10	0.11	0.28	0.08	0.06	0.08	0.10
2002	0.43	0.11	0.08	0.09	0.11	0.26	0.08	0.06	0.07	0.08
2003	0.45	0.11	0.08	0.10	0.11	0.29	0.08	0.06	0.07	0.08
2004	0.47	0.12	0.08	0.10	0.11	0.29	0.08	0.06	0.08	0.07
2005	0.48	0.12	0.08	0.09	0.12	0.27	0.07	0.06	0.07	0.07
2006	0.49	0.13	0.09	0.10	0.13	0.29	0.08	0.06	0.07	0.08
2007	0.51	0.14	0.10	0.10	0.12	0.32	0.09	0.07	0.08	0.08
2008	0.52	0.15	0.09	0.10	0.13	0.35	0.09	0.07	0.08	0.08
2009	0.52	0.15	0.09	0.10	0.12	0.37	0.09	0.07	0.09	0.08
2010	0.53	0.16	0.10	0.11	0.13	0.39	0.10	0.07	0.09	0.09

Source: Author's calculations, March CPS, various years.

Table 5. Impact of the 1980-2000 immigrant influx

	Black men		White men	
	Actual change (1980-2000)	Predicated impact	Actual change (1980-2000)	Predicated impact
Log weekly wage				
High school dropouts	-0.142	-0.053	-0.205	-0.068
High school graduates	-0.076	-0.020	-0.133	-0.025
Some college	0.018	-0.022	-0.034	-0.028
College graduates	0.131	-0.029	0.114	-0.037
Employment rate				
High school dropouts	-0.167	-0.126	-0.11	-0.046
High school graduates	-0.098	-0.046	-0.048	-0.017
Some college	0.001	-0.051	0.00	-0.018
College graduates	0.01	-0.069	-0.003	-0.025
Incarceration rate				
High school dropouts	0.156	0.028	0.032	0.005
High school graduates	0.065	0.010	0.014	0.002
Some college	0.031	0.011	0.005	0.002
College graduates	0.005	0.015	0.001	0.003

Source: Table 3, Borjas, Grogger, and Hanson, 2010.