

Institutionalist Review and Analysis of Immigration Effects on U.S. Jobs Markets

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Section 1. Introduction: How Employers Use Lack of Documents as a Business Strategy

After nearly a year of investigation, Maria Perez (2017), a local journalist in Naples, Florida, reported that local businesses knowingly hired undocumented immigrants to do dangerous, high-risk work. When the workers inevitably injured themselves and became a liability, the businesses reported their undocumented status. A 2003 change in Florida law forfeits protection from worker compensation if a worker uses fraudulent Social Security numbers or identification to get a job. The workers were not awarded workers' compensation and the businesses did not have their workers compensation rates increased. These employers used their workers' undocumented status to escape the expensive tradeoff of having to make the work safer or paying higher worker compensation rates.

Businesses' strategies to lower labor costs and maximize profits by exploiting workers is not a new phenomenon, but is rarely considered when understanding the economic effects of immigration. Too often, the issue is framed as immigration – and immigration alone – hurting American workers, with no reference to the role of employers in the jobs market nor to the larger social policy framework. Consider that many recent Somali refugees wind up working in meat packing. Meat packing was once blue-collar work, but once employers learned they could break strikes with cheaper foreign labor, refugee communities have been forced to accept this unfavorable job for nearly half a century (Harlan 2016). Immigration interactions with domestic jobs markets are central to this review of the disputes within labor economic theory and empirical research on the effects of immigration.

Many authors have reviewed the literature on immigration economics, but we have not encountered any that include an institutional framework. Because of this gap, we have organized the paper to introduce and emphasize structural power and policy. Section 2 reviews the institutional dynamics of immigration and interactions with the structure of the U.S. jobs market. This review serves as a foil to the simplistic neoclassical model of the jobs market where firms are small and passively accept the market wage. In Section 3 we analyze the key literature (Borjas, Card, Peri, and Dustmann) for the consensus on jobs market effects of immigration and review their different methodologies and treatment of institutions. Section 4 concludes with policy recommendations.

Section 2. How Jobs Markets Work

This section describes how jobs markets work before we review how labor economic models treat immigration because the literature often ignores the role of institutions and assumes a perfect competition in the market. The institutional structure and dynamics of the American jobs market are important elements in any model measuring the impact of immigration on the domestic jobs market. The structure of the jobs market, social policy, and the agency of both employers and workers impact each other and inform how different agents can impact each other. A comprehensive analysis explains how political and economic factors shape the effects of immigration on jobs markets.

Structure of the jobs market. The jobs market is a system of primary and secondary market jobs where employers effectively take a high-road or low-road approach to setting wages, hiring, and working conditions (Osterman 1975). Primary market workers have higher wages, better amenities, and internal jobs markets (Doeringer & Piore 1971). In a primary market job,

workers are more likely to be unionized to help maintain the protections and benefits of these jobs. Primary market jobs are often at firms in non-competitive markets; these are the types of employers that are likely to engage in rent-sharing with workers. Employers create job ladders and hire from within, maintaining the internal jobs market, so benefits to workers are maintained within a small subset of the population.

In contrast to primary markets, workers struggle with low wages and few amenities, leading to high quit rates in secondary markets. In secondary markets, employers hire from an external market of candidates or, worse, on the spot market, leading to broad and uncertain ports of entry for workers looking for jobs. Secondary market jobs are characterized by firms operating in competitive industries where employers are unlikely to train their workers and a lack of unions gives workers no hope of reshaping the scarring nature of the jobs market.

The dual jobs market in the U.S. means that workers experiencing the most precarity are the least likely to find upward mobility. Who comprises the precariat depends on state policy and the interactions between employers and workers.

Social policy. Immigration policy in the U.S. shapes the experience of immigrants in terms of their access to and duration of social welfare and jobs. U.S. immigration policy has not been reformed since the 1990s and is based on the following categories: family, employment, protection (refugees/asylum-seekers), and diversity.

Social policy also includes the system of social welfare. Well-funded pensions can ensure an easy transition out of the jobs market for older workers. Accessible health care can protect worker and family member health to keep workers in the jobs market. Cash transfer programs can help those with income shocks or subsidize workers in low wage jobs. Less generous social programs reregulate the power to the employers and take away any bargaining power from

workers. Social welfare can safeguard against precarity in the jobs market. If the only way to survive is to work and receive wages, the social safety net can protect workers from uncertainty and precarity in the jobs market.

According to Espenshade et. al (1997), major changes in noncitizen eligibility for welfare benefits and in US immigration policy are contained in two pieces of federal legislation: the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 and the Illegal Immigration Reform and Immigrant Responsibility Act of 1996. The Personal Responsibility and Work Opportunity Reconciliation Act (also known as the Welfare Reform Act [WRA]) reformed the entitlement policy for poor families and imposed new limits on alien access to welfare payments and other social service. The WRA introduced significant changes in immigrant eligibility for social services by creating a four-tier system: the broadest eligibility was reserved for US citizens, next came refugees and asylees. Newly limited access was imposed on legal immigrants and undocumented immigrants remained ineligible for almost all social programs. For example, under the law refugees became eligible for SSI (Supplemental Security Income) and food stamps only during their first five years in the United States. Legal immigrants were now denied access (although there are some exceptions) and undocumented immigrants remained ineligible. Similarly, access to Medicaid became restricted for refugees for their first five years and new legal immigrants became eligible only for emergency assistance during their first five years. Undocumented immigrants continued to be eligible for emergency assistance only.

The Immigration Reform and Immigrant Responsibility Act of 1996 (IRA), on the other hand, strengthened efforts to combat illegal immigration and created higher standards of financial self-sufficiency for the admission of sponsored legal immigrants. For example, the IRA

reiterated the Welfare Reform Act's delegation of discretionary authority to the states to distinguish between citizens, legal immigrants, and refugees. As a result, it became costlier to be a noncitizen in the United States, especially a poor noncitizen than it was before. Both, the WRA and IRA created incentives for poor noncitizens already living in the United States to become naturalized US citizens in order to preserve their access to public benefits, and at the same time they have erected new barriers against legal entry by poorer would-be immigrants.

The role of the employer. The employer, existing within the rules of the game, is able to deploy different strategies with workers. Employers can create immigration through employment-sponsored visas such as H1B. Employment immigration is structured to protect American workers as only exceptional foreign workers can be hired when there is no American worker to do the job. But, employers can also pay targeted immigrant workers less than they would an American, creating a labor gap so American workers do not enter the field (Trimbach 2016).

Employers also benefit from a reserve army of labor. The reserve army serves as a threat to workers who are substitutes in the production process. Historically, women were excluded from the jobs market. Employers began to include women to force the incumbent² minority male workforce to accept lower wages and worse working conditions. As women are complements to white men and substitutes for other marginalized groups, more women in the workforce leads to lower pay for black men (Borjas 1986). But, reserve armies do not even need to exist in the same part of the world. American hospitals, in an effort to cut costs, are overnight outsourcing work to competent Indian radiologists (Wachter 2006). This reserve army puts strain on the wages and employment opportunities for American radiologists. Employers have also used a reserve army

² Although the term incumbent worker can include non-newly arrived immigrant labor force participants in addition to U.S.-born workers, we use the term incumbent to refer to workers born in the U.S. unless otherwise noted.

of immigrant workers as a tool to strikebreak against American workers in manufacturing (Ehrlich 1974; Smith 2003).

Employers also quash any efforts by workers to unionize through a “divide and conquer” strategy (Reich, Gordon & Edwards 1973), which seeks to divide workers by attributes like gender, race, or nationality and prevent collective efforts. By pinning workers against each other, unionization is harder to achieve and employers gain more power by negotiating with each worker one by one. “Divide and conquer” strategies privilege certain subsets with status and better wages, discouraging collective efforts for upward mobility (Bodnar, Simon & Weber 1983).

The employers, those with the most access to capital, also have the power to shape the rules of the game by influencing state policy. Employers have fought in favor of the Dreamers in the on-going debate around DACA. Employers know that having more immigrant workers in the country can give them more bargaining power in the jobs market, so large players like Amazon, Starbucks, and Microsoft supported a lawsuit filed by 15 states and the District of Columbia that challenges the Trump administration’s decision to end DACA. Amazon said it employs nine people with DACA status but added that the company might employ many more that it does not know of. “If these employees lose their status and are deported, Amazon will suffer injury.”

The analysis of the role of the employer serves to demonstrate that the employer is not bargaining on equal ground as the worker, though a simple neoclassical economic analysis seems to suggest that wages are set apolitically by the market. Instead employers use their power in the labor process and can work with the state to regulate power away from workers.

Worker behavior. While there is large heterogeneity within the workforce, workers have agency to make changes within the structure of the jobs market. Unionization has been on the

decline in the U.S., but collectivizing remains an important tool for upward mobility in the workforce. Unions have the ability to change secondary market jobs into primary market jobs with training, a job ladder, and better pay (Rubery 1978). The process of unionization can serve to include or exclude marginalized populations within the workforce to create solidarity or protect subsets of the workforce.

Workers can also fight against growth in the workforce. Men can harass female coworkers to discourage women from taking high-paid and high-status jobs. Northern African Americans can resist Southern African Americans working in industrial cities (Boustan 2009). Today, populist resistance of immigrants and other non-white working groups dominates the headlines. The incumbent workforce can demand more protectionist policies or work with employers and union leaders to exclude certain groups, making incumbent workers less substitutable.

Workers also respond to projected growth in labor demand. Medical school applications and health care certifications have grown over the last decade and continue to grow. Immigrants are also responding to potential growth in need for specific jobs in the U.S., like home care work and agricultural work. This worker reaction has a Cobweb effect in the jobs market where demand growth creates supply growth, which can create demand contraction and supply contraction (Kaldor 1938). While workers intend to get higher pay by meeting an underserved demand in the jobs market, the overall effect is ambiguous and indeterminate.

Labor markets are not perfectly competitive. Instead, they are segmented and employers play a powerful role in shaping the dynamics of the market. Employers do not pay workers their marginal product, rather they employ strategies, pinning workers against each other, to get away with paying as little as they can.

Section 3. How Immigration Is Modelled in the Economics Literature

We find that scholars disagree over the effects of immigration on incumbent workers. Results range from immigration having significant adverse effects on incumbent workers' wages (Borjas 2003), to minor adverse wage effects that become negligible in the long run (Card 2009), and even minor positive effects (Ottaviano & Peri 2012; Manacorda, Manning, & Wadsworth 2012). These differences depend on the varied positions on the best empirical research design for investigating the impact of immigration on the labor market. The difficulty with this research, which attempts to identify, measure, and draw conclusions from imprecise social phenomena, is that isolating the impact of immigration on the labor market requires the impossible task of observing the same labor market with and without immigration. Economists overcome this empirical limitation by either 1) comparing multiple labor markets that are similar except in their supplies of immigrant workers; or 2) examining a single regional or occupational labor market that experienced an influx of immigrant workers (not attributable to market-related factors) before and after the change.

Moreover, as part of this process researchers must make decisions about which variables to consider and how to define them, such as measuring the immigration shock as the share or inflow of immigrant workers, which have implications for investigation results and their comparability to other studies. Thus, prominent empirical studies, which adopt varying positions on several factors outlined below, provide inconclusive evidence on the labor market impacts of immigration. We find that conflicting conclusions stem from divergent positions on the following main factors: 1) the substitutability of immigrant and incumbent labor; 2) the geographic unit of analysis used to determine labor market outcomes; 3) the parameters selected to measure the market effects of immigration; and 4) the definition of immigration shocks.

The level of substitutability between workers indicates whether the presence of immigrant workers helps incumbent workers, by occupying complementary jobs that enhance incumbent worker productivity, or hurts them, by increasing competition for similar jobs. Additionally, the geographic unit of analysis, either focused on national or regional labor markets, has important implications for capturing how incumbent workers respond to immigration-induced wage and employment fluctuations. Understanding the differences between studies' selected parameters for measuring market impacts, such as total versus relative wage effects, is essential for comparing their results. Finally, how immigration shocks are defined, either as the share or inflow of immigrant workers, is also significant for producing unbiased estimates of labor market impacts (Card and Peri 2016).

We also check for robustness in identifying the sources of variation between the different studies. We find that there are methodological problems in measuring the effects of immigration. The scholars also fail to recognize any institutional dynamics, often resorting to simplistic and cartoonish depictions of employers, if any at all. While the literature finds that immigration has small, negative effects on incumbent workers that dissipate over time, this institutional oversight limits its policy application.

Immigrant Labor: Substitutes or Complements? Economists use the elasticity of substitution³, which measures the degree of similarity between workers based on their labor market characteristics, to determine the effect of an increase in immigrant workers on incumbent workers' wage and employment outcomes. The higher this elasticity, the higher the level of

³ Specifically, the elasticity of substitution measures the percentage change in the ratio of the supply of one group of workers to another in response to a given percentage change in the wages of the first group as compared to the second.

substitutability between these groups and the more likely that an increase in immigrant labor supply will adversely affect incumbent workers. Because economists consider workers' level of skill (or education) to be one of the most definitive characteristics for labor market competition, the theoretical framework used to categorize workers into skill groups has important implications for the labor market impacts of immigration⁴.

For the U.S. case, which is characterized by a large population of immigrant high school dropouts relative to incumbent workers, the size of immigration's estimated adverse effects on low-skilled U.S. workers depends heavily on how studies classify high school dropouts. In fact, Card (2009) writes, "Perhaps the single most important issue for understanding how immigrant inflows have affected native wage structures is the degree of substitutability between high school graduates and dropouts⁵" (pg. 18). The two-skill framework classifies workers as either high school or college equivalents, each including those who partially and fully completed these respective education levels⁶. Thus, in not distinguishing between high school dropouts and graduates, the disparity between high school dropouts among immigrant and incumbent populations becomes irrelevant within this framework. Furthermore, the similarity in the size of the population of high school equivalent workers among U.S. immigrants and incumbents makes them appropriately comparable.

In contrast, the four-skill framework classifies workers as high school dropouts, high school graduates, having some college education, or college graduates. Using this framework,

⁴ Some economists further distinguish workers within the same skill (education) group by their level of experience (Card & Lemieux 2001; Borjas 2003).

⁵ Card points out that in the 2005/2006 American Community Survey, the education distribution for working age immigrants was 30.5% dropouts; 24.2% high school graduates; 18.6% some college, and 26.7% college graduates. The corresponding fractions for incumbents were 10.8%; 30.4%; 30.9%; and 27.8% (ibid. pg. 9).

⁶ Based on Katz and Murphy 1992, Card (2009) categorizes high school dropouts, high school graduates, and some fraction of people with 1-3 years of post-secondary education as high school equivalents. College equivalents consist of the remaining fraction of those with some college education (pg. 7).

Borjas (2003) finds significant adverse wage effects of immigration for incumbent male high school dropouts. Specifically, he estimates that the 11 percent immigration-induced increase in the supply of working men between 1980 and 2000 resulted in an 8.9 percent wage reduction for incumbent high school dropouts⁷. However, these findings are misleading given that the high fraction of immigrant high school dropouts distorts the relative share of dropouts in the overall market and lowers the wage of dropouts relative to other education groups (Card 2009, pg. 9).

The strong empirical evidence supporting the two-skill framework suggests that the four skill framework misrepresents the level of substitutability between immigrant and incumbent workers and skews the distribution of immigration's adverse effects within the labor market. Using a four-skill framework, Borjas (2003) fails to identify a single inverse elasticity of substitution across four education groups, and the two estimates he generates are relatively imprecise⁸. Moreover, other studies demonstrate a high level of substitutability between high school dropouts and graduates, thereby challenging the four-skill framework's distinction between them. In particular, Katz & Murphy (1992), Acemoglu (2002), and Goldin & Katz (2008) show that the wage gap between college- and high school-educated workers depends more on the relative number of high school equivalents than high school graduates (Card 2009 pg.12). Card's analysis of wage variation using 1980-2000 Census and 2005/2006 American Community Survey (ACS) data for the U.S.'s largest 124 Metropolitan Statistical Areas also finds that incumbent male high school dropouts and graduates are perfect substitutes (pg. 21).

⁷ Borjas' (2003) results show that the wage impact differed dramatically across education groups, with the wage falling by 8.9% for high school dropouts, 4.9 percent for college graduates, 2.6% for high school graduates, and barely changing for workers with some college (pg. 1370).

⁸ Borjas (2003) reports two estimates of the inverse elasticity across education groups: 0.74 (with a standard error of 0.65) and 0.76 (with a standard error of 0.58) (pg.1364).

Card and Yasenov (2018) note that the administrative data can only capture annual information for workers, which may miss out on short-term fluctuation in employment and income. We also assert that the use of administrative data is limited because the US data does not match employer with employee. In countries like Denmark and Norway, employee-employer data can uncover micro-trends in employee and employer behavior and the impact this has on jobs market outcomes. Employer power, or employers' ability to exploit their workers by paying them less than their marginal product, can be easily detected and quantified through datasets that match employers with employees. : In the absence of U.S. employer-employee datasets, proxies for employer power, like size of the firm (Green, Machin, & Manning 1996) and separations elasticity (Booth & Katic 2010) , can be used to measure the level of exploitation in the labor market.

It is also important to note that studies that find significant negative impacts of immigration on incumbent workers (Borjas 2003; Borjas & Katz 2007) assume that immigrants and incumbents in the same education and experience group are perfect substitutes. However, some research indicates that immigrants and incumbent workers with the same level of skill and experience are not perfect substitutes. This is important because it implies that an increase in immigration most adversely affects the labor market outcomes of incumbent immigrant workers, who are closer substitutes for recent immigrants, rather than U.S.-born incumbent workers.

In fact, Card and Peri's (2008) reapplication of Borjas (2003) and Borjas and Katz' (2008) analytical approach, modified to allow for imperfect substitutability between immigrants and incumbent workers, finds small but relatively precise positive effects of immigration for incumbent workers on average. Specifically, their results indicate that in the short run immigration had a small negative impact on incumbent workers with a high school degree or less

that transitioned to a small gain in the long run. Additionally, they find a significant negative effect of new immigrants on previous immigrants' wages. Other studies that assume immigrants and incumbent workers within the same education and experience group to be imperfect substitutes (Grossman 1982; Borjas 1987; Ottaviano & Peri 2006,) also find more pronounced wage impacts of immigrant inflows for incumbent immigrant workers than for incumbent U.S.-born workers.

Aside from observed skill level, studies show that factors such as language ability (Peri & Sparber 2009; Lewis 2011), duration of U.S. work experience (Dustmann et al. 2008), and quality of education in countries of origin (Friedberg 2000) distinguish otherwise similar workers. Additional research (Dustmann et al. 2012; Dustmann et al. 2016) has also found that immigrants "downgrade," or compete below their observed skill level upon entry into the labor market. As discussed in more detail in a later section, downgrading poses a challenge for methodologies that rest upon the accurate categorization of workers based on skill.

We find that skill classification can also veil the dynamics involved in hiring decision-making. The skills of immigrants and incumbent workers are not likely to always be one-for-one in firms' employment decisions. On the one hand, employers can and do discriminate against immigrants (Portes & Rumbaut 2006). While an immigrant may have the exact same level of skill, tenure, and education as an American-born worker, not all employers would see these two workers as the same. There is also the potential to misclassify the skill level (Saarela & Weber 2017). This misclassification may be intentional or due to human error, but the likelihood is high considering immigrants, especially refugees, may be more willing to accept a job below their level to avoid unemployment.

Geographic Unit of Analysis. The geographic focus of the labor market being studied is also important for capturing incumbent workers' responses to immigration-induced changes in market conditions and consequent effects on their wage and employment outcomes. Economists analyze labor market effects through a regional approach, which compares labor market outcomes in specific areas with high and low immigrant populations, or a national approach, which compares labor market outcomes in national industries, occupations, and education or experience groups based on their respective immigrant populations.

The frequently used regional or area approach exploits geographic diversity in the immigrant population to identify effects of immigration on regional labor markets (Okkerse 2008, pg.7). Studies that use this approach (Altonji & Card 1991; Card 2001; Card 2009) relate local wages and employment opportunities to the fraction of immigrant workers within the labor market. Thus, this approach theorizes that if immigration depresses incumbent wages and employment, then incumbents in areas with large immigrant populations should exhibit lower wages or higher unemployment rates.

Research employing the regional approach consistently find small and often insignificant effects of immigration on incumbent workers' wages (Friedberg & Hunt 1995; Card 2001; Card & Lewis 2007; Card 2007). Nevertheless, there are two shortcomings that subject it to criticism. One is the issue of endogeneity arising from the possibility that immigrants cluster in areas with higher wages or better employment opportunities (Okkerse 2008, pg. 8; Borjas 2003, pg.1338). Because estimation using Ordinary Least Squares (OLS) requires all explanatory variables to be exogenous, failure to address this endogeneity will generate biased coefficients (Okkerse 2008

pg. 8). Economists resolve this endogeneity issue through instrumental variable (IV) estimation⁹ and analysis of ‘natural experiments’¹⁰.

Another issue is that incumbent workers may relocate their labor or capital to other areas in response to immigrants entering local labor markets. Consequently, a cross-city comparison of incumbent labor market outcomes will not detect local immigration effects because they will be diffused nationally (Borjas 1999, 2003, pg. 1339; Borjas, Freeman & Katz 1997; Okkerse 2008, pg. 9). Although the evidence on incumbent compensatory outflows is mixed, numerous studies (Butcher & Card 1991; Wright et al. 1997; Butcher & DiNardo 1998; Kritz & Gurak 2001; Card 2001; Card & Peri 2016) fail to substantiate the claim that incumbent workers migrate in response to recent immigration (Okkerse 2008, pg. 9).

In response to these shortcomings, some economists favor a national approach that relates changes in incumbent labor market outcomes to the national concentration of immigrants in shared industries (John & Zimmerman 1994, Mühleisen & Zimmerman 1994), occupations (Camarota 1998; Card 2001; Orrenius & Zavodny 2003), and education or experience groups (Borjas 2003; Borjas & Katz 2007). This approach escapes the issue of compensatory incumbent migration based on the underlying rationale that it is more difficult for incumbent workers to change from an industry or occupation than it is for them to relocate. Two principles studies (Borjas 2003; Borjas & Katz 2007) have found significant negative effects of immigration on the wages of low-skilled incumbent workers that contrast with the small and insignificant

⁹ Instrumental variable estimation involves selecting a variable that is highly correlated with the concentration of immigrants but uncorrelated with incumbent wage or employment levels. A commonly used instrument is the share of immigrants in the labor market at the start of the period, based on the assumption that immigrants often settle in areas with existing immigrant populations (Okkerse 2008, pg. 8). Consequently, immigrants’ migration decisions are a function of the share of immigrants presents in various segments of the labor market at the start of the period (ibid.).

¹⁰ Natural experiments consist of an increase in the immigration population that is unattributed to labor market conditions. These population flows are politically rather than economically motivated as in the case of the ‘Mariel boatlift’ of Cubans to Miami (ibid.).

immigration effects reported in regional analyses. As a result of this discrepancy, they conclude that regional analyses underestimate the labor market impact of immigration. In particular, Borjas (2003) argues that the analysis of wage differentials across regional labor markets conceals as much as two thirds of the sizable national adverse wage effects that he finds immigrants have on incumbent workers.

However, these results are misleading. Ottaviano and Peri's (2008) analysis attributes Borjas's (2003) and Borjas and Katz's (2007) results to their imprecise and erroneous estimates of the elasticity of substitution between high school dropouts and graduates as well as to Borjas's (2003) failure to account for short-run capital adjustments, which negatively inflates incumbent workers' short-run wage effects. Moreover, they point out that existing national datasets do not contain sufficient data to estimate within-group and across-group effects without imposing restrictions. As a result, studies (Borjas 2003; Borjas & Katz 2007) that do not explicitly describe the underlying structure of cross effects can only estimate the partial effect of immigration within a group (for the given supply in other groups) and not the actual effect of immigration on wages of incumbent workers within each skill group.

Perhaps the biggest problem with the econometric modeling is that of controlling for regime change – controlling for economic growth. Labor immigrants are attracted to certain regions, cities, or firms because of growth and the potential for sustained work. Refugees have little to no choice in their resettlement, regardless of the economic climate in their host country. Without controlling for growth, economists may be misstating the effect that immigrant workers have on the substitutes within the incumbent workforce. The instrumental variable of growth may even explain conflicting results.

Incomparability of Selected Parameters. A close look at the parameters studies use to measure immigration-induced labor market impacts highlight the incomparability of their results. Dustmann et al.'s (2016) division of the economic immigration effects literature into three main categories, namely the national skill-cell, pure spatial, and mixture approaches, based on the parameters they measure provides a useful reference for comparison. In contrast to regional studies, which estimate the total effect of immigration across and within education groups, studies that use a national or mixed approach respectively estimate relative effects across education-experience and education groups. Of the three approaches, we maintain that the pure spatial approach, which identifies the total effect of immigration and is robust to labor supply heterogeneity across skill groups and downgrading, produces the most relevant and methodologically sound estimates of the labor market impacts of immigration.

Studies that use Borjas' (2003) national skill-cell approach (Aydemir & Borjas 2007; Llull 2010; Borjas 2014; Card & Peri 2016) identify the relative wage effect of immigration by workers' level of experience within education groups (Dustmann et al. 2016, pp. 41-42). This national skill-cell parameter measures the direct partial effect of immigration and uses time fixed effects, while holding total and education-specific effects constant, in order to identify the inverse elasticity of substitution between experienced and inexperienced workers within education groups. Specifically, it compares wage changes between inexperienced and experienced low-skilled workers with wage changes between inexperienced and experienced high-skilled workers.

It is important to note that estimates obtained from this approach identify national labor supply elasticity, which has different implications for the magnitude and relevance of its

results¹¹. Under the common assumption of inelastic labor supply, signifying that incumbent workers' employment is unresponsive to wage changes, changes in total incumbent employment are entirely attributable to immigration. In this instance, the national skill-cell parameter is unambiguously negative, and increasingly so the less substitutable experienced and inexperienced workers are within education groups. However, if labor supply is elastic, but constant across skill groups, relative wage effects diminish and employment effects are intensified. If labor supply is infinitely elastic, relative wage effects approach zero and corresponding employment effects approach -1, which implies that each immigrant displaces one incumbent worker. Under the most realistic assumption that labor supply elasticities vary across skill groups nationally and locally, national skill-cell estimates become difficult to interpret and uninformative because the experience-specific relative wage effects will likely differ between high- and low-skilled workers.¹² Furthermore, if immigrants downgrade, or work in jobs below their observed skill and education level, then the national skill-cell approach, which exploits immigrant skill-cell variation, will produce biased estimates. Although the bias is generally ambiguous, Dustmann et al. (2016) demonstrate the potential for the national skill-cell approach to severely overstate immigration's negative relative wage effect in the U.S. context of relatively low-skilled immigration (pg. 53).

Studies that use a regional, or what Dustmann et al. (2016) call a pure spatial, approach (Card 1990; Altonji & Card 1991; Dustmann, Fabbri, & Preston 2005; Card 2007; Boustan,

¹¹ Labor supply elasticity measures workers' responsiveness to changes in their relative wage. Labor supply elasticity at the national level only captures workers' response of either moving into and out of unemployment or by entering and exiting the labor force altogether (Dustmann et al. 2016, pg. 40). Because workers have a wider range of potential responses to wage changes at the local level, local labor supply elasticity is relatively large compared to national labor supply elasticity (ibid.).

¹² Dustmann et al. (2016) point out that the national skill-cell parameter assigns a negative weight to the relative effect in one education group and a weight greater than 1 to the corresponding effect in the other, thereby aggregating the two relative wage effects by experience in a non-meaningful way (pg. 44).

Fishback, & Kantor 2010; Dustmann, Frattini, & Preston 2013; Borjas 2015; Dustmann, Schönberg, & Stuhler 2016; Peri & Yasenov 2016; Foged & Peri 2016) identify the total wage effect of immigration for incumbent workers by their skill and experience level (pg. 42). Unlike the national skill-cell parameter, the pure spatial parameter measures the total effect of an immigration-induced labor supply shock on incumbent workers in a particular education-experience or education group as well as the indirect effects through complementarities across skill-cells and across capital and labor. In other words, it reflects the wage changes for incumbent workers in a particular region, education, and experience group driven by changes in the ratio of all immigrants entering and incumbent workers within a region. Furthermore, spatial parameter estimates depend on the elasticities of substitution between inexperienced and experienced workers and high- and low-skilled workers as well as the capital supply elasticity and the share of capital in production. As a result, estimates of immigration effects derived from this parameter vary widely based on the skill group being studied.

Estimates obtained from this approach identify regional labor supply elasticity, which has different implications for the magnitude and relevance of its results.¹³ As such, when labor supply is inelastic the labor market effects of immigration will depend on the supply elasticity of capital. If capital supply is fully elastic, total wage effects will be zero on average, negative for skill groups with higher concentrations of immigrants, and positive for other skill groups. However, the total wage effect may be negative for all skill groups if capital supply is fully inelastic.¹⁴ As with the relative impacts of the national skill-cell and mixture approaches, the

¹³ Labor supply elasticity at the local level captures workers' willingness to participate in the labor force as well as workers' internal migration between areas. As a result, it may depend on additional factors such as housing supply (Moretti 2011) and the size of the labor market being considered (Borjas 2006) (Dustmann et al. 2016, pg. 40). Studies that focus on spatial variation in immigrant inflows feature larger estimates of labor supply elasticity for incumbent workers than national studies (ibid.).

¹⁴ In this case, immigration will result in rising capital profits and a consequent redistribution of a fraction of output from labor to capital (Dustmann et al. 2016 pg. 41). The literature often considers the case of inelastic capital supply

pure spatial approach's total wage effects diminish and employment effects are intensified when labor supply is elastic but constant across skill groups. Nevertheless, estimated total effects derived from the pure spatial approach retain their significance and policy-relevance under the condition of varying labor supply elasticities across skill groups. In particular, this approach can be used to estimate education-experience-specific labor supply elasticities by dividing the estimates for the total incumbent employment effect in a particular education-experience group by the respective estimate of the total wage effect. Moreover, in the case of downgrading the pure spatial estimates of total immigration effects, which do not involve pre-assigning immigrants into skill cells, remain robust.

Studies that apply a mixture of the previous approaches (LaLonde & Topel 1991; Card 2001; Borjas 2006; Card & Lewis 2007; Card 2009; Lewis 2011; Glitz 2012; Dustmann & Glitz 2015; Özden & Wagner 2014) exploit variation in the immigration shock across both skill cells and regions to identify the relative wage effect of immigration. The mixture approach's spatial skill parameter measures the direct partial effect of immigration and holds the total immigration shock constant in order to identify the inverse elasticity of substitution between high- and low-skilled workers. Similar to the national skill-cell approach, when labor supply is inelastic the spatial skill parameter will be unambiguously negative, and increasingly so the less substitutable high- and low-skilled workers are.

As with the previous approaches, relative wage effects diminish and employment effects are intensified when labor supply is elastic, but constant across skill groups. In the presence of heterogeneous labor supply elasticities, the mixture approach continues to be informative on immigration's separate wage and employment effects but potentially distorts overall relative

as a short-run immigration effect and the case of perfectly elastic labor supply as a long-run immigration effect (ibid.).

effects.¹⁵ Finally, in the presence of downgrading the mixture approach, which exploits immigrant skill variation, is also likely to overstate immigration's negative relative wage effect in the U.S. context although to a lesser degree than the national skill-cell approach.¹⁶

That each of these approaches are using different sources of variation – between experience groups, education groups, and regions – to measure the labor market impacts of immigration, highlights the incomparability of their results and the need for caution in interpreting them. As noted above, we maintain that the pure spatial approach generates the most relevant and methodologically sound estimates based on its identification of the total effect of immigration on the labor market and its robustness to downgrading and labor supply heterogeneity across skill groups.

Immigrant Skill Share vs. Inflow. A final factor that has important implications for the labor market effects of immigration is whether immigration labor shocks are defined by the inflow or the skill-group share of immigrants. The immigrant inflow measure is given by the cumulative change in the number of immigrants in a particular skill group divided by the total supply of labor in the skill group, including immigrant and incumbent workers, for the previous period (Card & Peri 2016, pp. 4, 8). Descriptive analyses using the inflow measure relate changes in incumbent workers' labor market outcomes to corresponding labor supply changes due to immigration. In their comparative estimation across both measures, Card and Peri's (2016)

¹⁵ Dustmann et al. (2016) use the term “perverse” effects to describe the contrasting relative wage and employment effects that immigration can generate through the mixture approach under the condition of heterogeneous labor supply elasticity (pg. 44). As an example, they suppose that immigration is relatively low-skilled and that low-skilled incumbent workers have a higher labor supply elasticity than high-skilled incumbent workers. In equilibrium, low-skilled incumbent workers' employment will have a strong negative response to immigration relative to high-skilled incumbents, while the former's wages may adjust less or potentially increase relative to those of the latter.

¹⁶ Borjas (2003) hypothesizes that the tendency for the national skill-cell approach to produce more negative wage estimates than the mixture approach stems from the likelihood for national labor supply elasticity to be smaller than regional labor supply elasticity (Dustmann et al. 2016 pg. 43).

estimates¹⁷ of the effect of immigration on incumbent wages are relatively small and positive at the metropolitan area, state, and Census division level (table 2). Although the effect is negative at the national level, this estimate contains a large standard error. Overall, these results imply that the partial correlation between immigrant inflows and incumbent wages is close to zero and consistent across different levels of aggregation.

In contrast, the immigrant skill share measure is given by the fraction of immigrants in a particular skill group and labor market for the current time period. Borjas and others (Borjas 2003, 2006, 2009; Aydemir & Borjas 2007; Bonin 2005; Bratsberg et al. 2014; Steinhardt 2011) have extensively used this measure to relate changes in incumbent workers' wage and employment outcomes to the fraction of immigrants in their skill group. Card and Peri's (2016) comparative estimation across both measures highlight the disparity between them. Using the skill share measure, all their estimates¹⁸ of the effect of immigration on incumbent wages are statistically significant and negative. In fact, they become increasingly negative at higher aggregation levels, thereby affirming a negative association between increasing immigration and decreasing incumbent wages.

Although Borjas (2014) attributes the discrepancy between the inflow and skill share measures' results to potential measurement error at smaller geographic levels and other factors that diffuse immigration's wage effects (pg. 86), Card and Peri (2016) demonstrate how the skill share measure's mechanically negative correlation with net incumbent migration make it biased

¹⁷ Card and Peri's (2016) estimates for incumbent wage effects (and standard errors) derived from the immigrant inflow measure are 0.036 (0.010); 0.049 (0.019); 0.022 (0.032); and -0.124 (0.132) at the metropolitan area, state, Census division, and national levels (table 2).

¹⁸ Card and Peri's (2016) estimates for incumbent wage effects (and standard errors) derived from the immigrant skill share measure are -0.058 (0.018); -0.186 (0.029); -0.237 (0.048); and -0.529 (0.102) at the metropolitan area, state, Census division, and national levels (table 2).

(pg. 13). This bias is made visible through applying first difference estimation,¹⁹ which evaluates the change in the immigrant skill share over time. The bias arises from the same endogeneity issue previously referenced in which there is a potentially positive correlation between incumbent wages and the arrival of new immigrants. Because the fraction of incumbent workers in a particular skill group, or the incumbent skill share, is assumed to be negatively related to the immigrant skill share, this positive bias in the partial correlation between immigration and wages results in a negative bias for the estimated effect of immigration on incumbent wages (pg. 7).

Where Are the Institutional Dynamics? Aside from glaring methodological issues, we find it problematic that the economists exclude the institutional dynamics at the intersection of immigration and labor markets. The characterization of the labor process is simplistic and dishonest, with a subset of workers vying for the same jobs and out-bidding each other for lower pay or worse working conditions. The role of the employer is absent, as expected given the dependence on neoclassical theory. The labor market, like all others, is constantly clearing and employers passively accept the market wage to determine how many workers they need to maintain output.

Instead, employers have power in the labor market and can shape policy and labor standards to drive profits. First, the more friction there is in the labor market -- the harder it is for workers to respond to changes in the market -- the more power employers have to exploit. Secondly, the more economic power firms have, the better they are at segmenting the labor

¹⁹ The first difference equation relates the change in incumbent labor market outcomes over time to the change in the immigrant skill share over time. Because the immigrant skill share is a fraction, evaluating it over time requires information about the corresponding incumbent skill share, which together comprise the full labor market. Thus, the change in the immigrant skill share over time is effectively a weighted average of the difference between the immigrant-driven supply shock (equivalent to the immigrant inflow measure) and the change in the number of incumbent workers in the same skill group divided by the total supply of labor in the skill group, including immigrant and incumbent workers, for the previous period (Card & Peri 2016, pg. 6).

market. If agriculture becomes one group's work and childcare becomes another's and if financial advising is for one group, firms can wield more power. The institutional dynamics siphon off power, strategic and economic, to employers allowing them to actively determine wages, employment, and working conditions to their own benefit.

Borjas, Card and Peri, instead of working to understand the role of the employer, opt to focus on the Mariel boatlift, asserting that using this data is akin to measuring a "natural experiment." While migration to the U.S. often follows steady trends, given existing policies and general migration flow rates (Abel & Sander 2014), the boatlift offered a unique, modern example of an "exogenous shock" of increased labor supply. But, for the boatlift to be a natural experiment, immigrants must be randomly sorted to specific locations and professions. Instead, the refugees from the Mariel boatlift willfully chose to leave Cuba and moved to the Miami area. Those who did not want to leave Cuba would not be included in this increased labor supply and one's willingness to emigrate may have different effects than those unwilling. As politically-motivated refugees there could be something distinct about the Cubans who chose to migrate versus those who did not that limits the ability to extrapolate these results to the effects of economically-motivated non-refugee immigrants more broadly. Miami also has a largely Latin American immigrant population, so the ability of Cuban refugees to compete in the labor market would be different than in a randomly-selected city. The highly-debated natural experiment, rather, is rife with endogeneity in the labor supply increase.

Crucially, immigration status is absent. Economic studies should help us inform social policy decisions. Without acknowledging and utilizing the heterogeneity of immigration status in the economic analysis, the econometric results are not informative for immigration policy. Different statuses may affect the labor market differently. Employment immigrants,

undocumented immigrants, and refugees all access employment differently and employers can exploit these differences. Instead, the economic community has been narrowly consumed with measuring the adverse wage and employment effects of immigration on American workers rather than comprehensively analyzing the roles of immigration, economic growth, institutions, and employers interact to influence labor market conditions.

Section 4. Policy Implications

The econometric results suggest that the effect of immigration on incumbent workers' wages, employment, and working conditions is inconclusive. Rather than suggesting uncertainty, the results highlight the fragmented methodology amongst the top economists as well as limitations within the methodology due to exclusion of institutional dynamics. The models themselves fail to include the active role employers play in shaping the dynamics of the jobs market as well as setting the wages, level of employment, and working conditions. Given institutional factors, it is likely that more immigration will create some losers in the jobs market, regardless of how beneficial it is in the aggregate.

Because the economic literature does not include immigration status in the methodology, we cannot develop a robust immigration policy proposal. Instead, we focus on how to subsidize those disadvantaged in the jobs market as well as find ways to dampen any negative effects.

One way to combat negative effects for both incumbent and immigrant workers is through unionization. Union density has been in decline in the US since the 1970s and American workers have not been paid for productivity increases over the same timeframe. Incumbent workers and immigrant workers alike stand to benefit from protections that traditional trade unions provide. Milkman (2011) has documented the efforts of trade unions to organize

immigrant workers, who have demonstrated receptivity to unionization contrary to the conventional wisdom. The main challenge for the immigrant and incumbent workforce is the hostile attitude from private sector employers on labor organizing. Creating a safer environment for workers to unionize stands to benefit all workers in the face of a growing labor supply.

The US can decrease chronic unemployment and underemployment of various subpopulations through job guarantees, for instance by funding public works projects under the Humphrey-Hawkins Full Employment Act. A job guarantee would help incumbent workers left to precarity have better access to better jobs. If there are more secure government jobs added, the effectiveness of the disciplining falls and worker bargaining power increases. Economists have been concerned that inflation will spiral too much if the economy reaches full employment, but many Keynesians and even the Federal Reserve are beginning to question this relationship between employment and inflation (Owyang 2015).

Through social policy the US can also dampen any negative effects of immigration on incumbent workers. Many older workers continue working after taking their Social Security benefits due to inadequate retirement savings. The average older worker only has \$15,000 saved and working longer is their only option to prevent falling into poverty. As Bruder (2017) documents in *Nomadland*, employers use a new pool of precarious labor to exploit as some older workers take to nomadic lifestyles just to get by. Through structural reform of pension policy, like creating Guaranteed Retirement Accounts and other forms of basic income, older workers could leave the jobs market and competition between prime-age incumbent workers and immigrants would decrease.

The literature suffers from framing the issue as immigration alone hurting American workers and does not model all the factors determining wages and employment. Employers

actively shape social policy in their favor, as we find in recent debates on DACA. Employers are also not passive wage-takers; they employ strategies like strikebreaking and “divide and conquer” to set wages as low as they can. The economists have developed an incomplete picture of jobs market outcomes by ignoring the institutional dynamics and the literature stands to advance with more balanced methodology.

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Appendix 1: Current immigration policy

US immigration policy is based on the following categories: family, employment, protection (refugees/asylum-seekers), and diversity (Kandel 2014):

A. Protection (refugees/asylum-seekers): The current regulations regarding admission of individuals seeking protection is based on the 1980 Refugee Act and follows international standards in the determination of who is eligible for protection. Protection may be granted upon five grounds: race, religion, nationality, membership in a particular social group, and political opinion. The President, in consultation with Congress, decides each year on the numerical limit of individuals admitted under refugee status. For 2016, the President set the ceiling at 85,000 (U.S. Department of State et al 2015). Refugees and asylees may be granted a permanent resident title one year after admission to the US as a refugee or one year after receiving asylum. Refugees and asylees are not restricted in the access to the employment sector.

B. Diversity: Initiated with the 1990 Immigration Act, the Diversity Visa lottery program annually allocates 55,000 randomly to nationals from countries that have sent less than 50,000 immigrants to the US in the previous 5 years (Lemay & Barkan 1999). Eligibility requirements for the program include a high-school education (or its equivalent) or have, within the past five years, a minimum of two years working experience in a profession requiring at least two years of training. Spouses and minor unmarried children of the applicant are considered dependents and may apply under this provision.

C. Employment: Also based on the 1990 Immigration Act, current immigration policy relative to employment is organized in five distinct preference categories (Kandel 2014):

- 1) “Persons of extraordinary ability” (40,000 per year)
- 2) Members of the professions holding advanced degrees (40,000 per year)

- 3) Skilled workers with at least two years of training or experience, professionals with college degrees (40,000 per year), or “other” workers for unskilled labor that is not temporary or seasonal (5,000 per year)
- 4) Certain “special immigrants” including religious workers, employees of U.S. foreign service posts, former U.S. government employees and other classes of aliens (10,000 per year)
- 5) Persons who will invest \$500,000 to \$1 million in a job-creating enterprise that employs at least 10 full time U.S. workers (10,000 per year)

D. Family: Family reunification has historically been a beacon in US immigration policy.

Foreigners may be admitted either as immediate relatives or through the family preference system (Kandel 2014). Immediate relatives are spouses of U.S. citizens; unmarried minor children of U.S. citizens (under 21-years-old); and parents of U.S. citizens (petitioner must be at least 21-years-old to petition for a parent). There is no limit to individuals receiving a residence permit through immediate relatives. The family preference system includes adult children (married and unmarried) and brothers and sisters of U.S. citizens (petitioner must be at least 21-years-old to petition for a sibling), and spouses and unmarried children (minor and adult) of permanent residents. This preference system corresponds with annual numerical limits and is readjusted according to the residence permits granted under the immediate relative’s category.

Appendix 2: Labor economics models in general

Neoclassical model. Within a neoclassical model of the jobs market, immigrants are treated as mostly substitutes for, and not complements to domestic labor. The mechanics are thus firms face technologies so that each additional worker produces less than the worker hired before – this condition is called decreasing marginal returns which is especially strong in the short run. Decreasing marginal returns means the demand for labor increases as the market wage falls. The marginal return to hiring a worker is determined by the marginal productivity of the workers employed with a fixed level of capital in the production process. The number of workers hired is determined when profits are maximized, when the marginal benefit of the last worker hired is equal to the marginal cost of hiring that worker. The jobs market is always market-clearing where the marginal productivity of the last worker hired is the same as the going market wage. The demand for labor, or the marginal product of the workforce, equals the supply of labor, or the marginal cost of hiring workers.

The firm would like to pay workers less, but if they do then workers will go to a different firm that pays the higher market wage. At the same time, if the firm were to increase the wage to compete with other firms, their profitability would be compromised. This razor solution keeps the market always in equilibrium, unless there are external shocks like an increase in the labor force.

When immigrants come to the U.S. to work, labor supply increases and the marginal cost of hiring workers is lower. The market wage falls, which means some of the current workforce will exit and not accept this lower wage. At the same time, the firm can hire more workers than before because the marginal cost is lower. This leads to more workers hired, but not all incumbent workers are retained.

An important assumption is that the immigrant workers are substitutable for the incumbent workers in the workforce. If, for example, the immigrant workers cannot speak English or do not know the specific coding language, then the firm would not be able to hire more workers. The marginal cost of hiring an additional worker remains the same. In order for the immigrant worker to be included in the labor supply, they must be substitutable for the productive capacity of the rest of the workforce.

In line with primary and secondary jobs markets, firms would be willing to hire “high skill” workers who are more productive at a higher wage, given that their marginal product would be higher. This means that the firm can have multiple demand schedules and with corresponding supply schedules. Any increases in the labor supply from immigration would have to be sorted to the respective supply schedules for which these additional workers would be substitutes for incumbent workers. Thus, any increases in the supply of “low skill” workers would have a non-negative effect on the wages, employment, and working conditions of incumbent “high skill” workers.

Institutionalist monopsony model. The competitive model is simplistic and depends on assumptions of the labor supply elasticity. In reality, capital can wait for returns, but labor must be used when it is ready. Workers depend on employment for subsistence and do not have the luxury to respond to slight – and sometimes substantial – fluctuations in wages and working conditions. The neoclassical model assumes that if employers lower the real wage by one cent, they would lose all of their workers to the competition. This is a naïve assertion as workers would not be able quickly find another job. The only choice for many, if not most, is to accept lower standards.

In reality, there are frictions in the jobs market, which adversely affects workers but increases a firm's relative power in the jobs market. The marginal cost of hiring to the firm is more inelastic than in a neoclassical model (Manning 2003). At the margins, firms continue to hire where the marginal cost and marginal benefit of hiring are equal, which is a lower level of employment and at a higher cost. Fewer workers are hired and the firm can pay less as workers have to accept lower wages due to the frictions within the jobs market.

The firm does not have to pay the worker their marginal productivity in order to get the worker to take a job. Instead, the firm gains rent in hiring workers and can exploit them; the degree of exploitation depends on the relative elasticities between the marginal cost of hiring and the labor supply. Anything that creates more friction within the jobs market and increases the precarity for workers increases the firm's relative power and the level of exploitation.