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The Economic Integration of Immigrants and Regional Resilience

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Introduction

As the economy continues to recover slowly from the Great Recession, the flow of new immigrants into the United States has slowed significantly. Two decades earlier, millions of new workers and their families migrated to and settled in a variety of U.S. regions. This period of migration is markedly different in three key ways than other periods: 1) large scale immigration from Latin America and Asia – particularly Mexico, 2) a continual replenishment of immigrants from the same sending countries, and 3) migration to "new destinations" such as regions in the Southeast and new types of communities—suburbs and rural towns (Waters & Jiménez, 2005).

Thus it is critical that policymakers understand how the U.S. economy performed in successfully integrating new migrants into the labor market and the degree to which these families are able to move up the economic ladder. Since the pattern of immigration was uneven across regions and also varied by country of origin and skill level, we might also expect that there is wide geographic variation in the level of economic integration of immigrants. Uneven patterns of economic integration may also be driven by factors relating to: 1) human capital; 2) the context of reception; 3) migration to ethnic enclaves; 4) spatial mismatch between where immigrants locate (e.g. concentrated poor neighborhoods in the central city) and where jobs are located (e.g. suburbs); and 5) the increasingly divergent patterns of economic development across regions, as some "innovative regions" move far ahead of declining metropolitans areas in wealth generation and economic opportunity (Moretti, 2012).

This paper will explore the patterns of immigrant economic integration across metropolitan areas with large immigrant populations in the U.S. and attempt to explain which factors or sets of factors are associated with immigrant economic integration. Furthermore, this study will explore whether metropolitan areas with higher levels of economic integration among

immigrants are more resilient to the economic shock resulting from the Great Recession. Specifically, this paper will document the extent to which immigrants are relegated to isolated niches in the labor market that lack the opportunity for economic mobility—for example in food processing occupations in the Southeast—or, conversely, well-integrated to a variety of occupations and industries throughout a regional economy. This paper builds upon research supported by the BRR network in the past; particularly in Pastor, Lester and Scoggins (2009), which demonstrates the divergent trend in regional performance, and Chapple and Lester (2010) which explores the factors behind resilient regional labor markets. In addition, this paper will use the Building Resilient Regions (BRR) database as a basis for explanatory variables and will add additional updated (e.g. 2010 ACS census data) measures to this shared resource.

This paper is intended to be an exploratory analysis that highlights regional variations in the economic integration of new immigrants. We define and test several quantitative measures of occupational diversity among immigrants as a key proxy for their economic integration. Next, we explore the characteristics of regions that are associated with greater economic integration and test several leading theories (e.g. human capital, context of reception, ethnic ties, spatial mismatch, and regional industrial? structure). Finally, we test the relationship between economic integration of immigrants and regional economic resilience by measuring the effect of immigrant occupational diversity on unemployment and real wage growth before and after the Great Recession. The remainder of this paper is structured as follows: Section 2 reviews the literature on immigrant economic integration and develops a conceptual framework that describes the theoretical determinants of economic integration. Section 3 describes the methodology used to measure occupational diversity and outlines the quantitative analyses to follow. Section 4 presents the results and discusses the high-level findings. The final section concludes and outlines a research agenda that builds upon this exploratory research.

2. Immigrant Integration in the U.S.

2.1 Classical and Segmented Assimilation

Classical models of immigrant integration or assimilation have heavily focused on European immigration to urban gateways, such as New York and Chicago, in the early 20th century. During this period, immigration occurred in large waves (as opposed to steady streams), which allowed for studies of immigrant cohorts. In general, studies revealed that there was a linear process of assimilation for European immigrants. Immigrants became more integrated with longer residence and were fully integrated into host societies after two or three generations (Alba and Nee 2004, Joppke and Moawska, 2003; and Ireland, 2004). This model predicts that higher levels of human capital, including English language ability, education, and work experience, will accelerate economic integration.

Post-1965 changes in Federal immigration policy that resulted in large-scale immigration from Latin America and Asia and changing settlement patterns challenged traditional assimilation theories. Scholars found that not all contemporary immigrant groups follow a linear assimilation process as posited by classical models, but rather, they follow divergent paths of assimilation. This alternative model, segmented assimilation, suggests that while some immigrants may achieve socioeconomic mobility and assimilate into the middle-class, other groups experience "downward assimilation" leading to permanent poverty and spatial settlement with the underclass, as in the case of West Indians in Miami, Florida (Portes and Zhou, 1993; Zhou 1997; Portes et al., 2005). There is even a third path, which is facilitated by strong ethnic ties and solidarity and may lead to more rapid economic integration. This path does not necessarily lead to integration with whites. Instead, immigrants maintain their cultural and ethnic identity and work within the ethnic economy, yet still achieve socioeconomic mobility.

2.2 Ethnic Enclaves and Ethnic Economies

Ethnic enclaves are defined by the concentration of co-ethnics in space. These concentrated co-ethnic neighborhoods, which allow immigrants to preserve their culture, maintain community solidarity, and access social networks may be another avenue for achieving economic advancement and labor market integration. The case of Cubans in Miami is an example of how ethnic enclaves can buffer the transition resulting from migration and can provide kinship ties that insulate Cuban immigrants from downward assimilation (Portes et al., 2005).

The persistence of ethnic enclaves, the steady stream of new immigrants from the same sending communities (e.g. immigrant replenishment), and the high numbers of undocumented immigrants who are often transnational residents that want to eventually return to their home country, raises interesting questions about the need or the desire to integrate into middle-class white society in order to achieve economic advancement. Bonacich (1973) describes the immigrant sojourner as someone who does not fully participate in the civic life of the host society because he does not consider it his permanent home. She describes middlemen minorities as occupying an intermediate role in the economy, such as someone in between the employer and the employee or the consumer and the producer, with the following characteristics: "…resistance to out-marriage, residential self-segregation, the establishment of language and cultural schools for their children, the maintenance of distinctive cultural traits (including, often, and distinctive religion), and a tendency to avoid involvement in local politics except in the affairs that directly affect their group" (Bonacich, 1973, p. 586). Thus, sojourners and middle-men minorities are able to succeed economically, but do not depend on integration into the host society to do so.

While some racial/ethnic groups do not want to integrate, others face barriers in doing so, such as Black immigrants (Freeman, 2002). Studies suggest that living in racially or economically homogeneous neighborhoods can inhibit socioeconomic mobility, by restricting an individual's social network to those who have similar resources and skills. Granovetter (1973) explains that it is not these strong ties with one's interpersonal network in homogeneous neighborhoods that lead to employment opportunity, but weak ties (e.g. acquaintances) that expand an individual's connections to a more varied set of institutions and organizations. Thus, close-knit networks, such as those found in ethnically homogeneous neighborhoods (e.g. ethnic enclaves), that have strong "bonding capital" but little "bridging capital" can inhibit economic integration (Granovetter, 1973; Lin, 2000; Putnum, 2001). In addition, Hendricks (2002) finds that employers use ethnicity as a predictor of skill since it is difficult to evaluate new immigrants' skills. Therefore, the continual streams of immigration from poor sending countries can depress wages for immigrants entering in earlier periods and may also discourage earlier immigrants to invest in skills improvement because employers hire and pay on the basis of ethnicity and not necessarily skill level.

2.3 Spatial Mismatch

While much of the theoretical debates over immigrant integration have been aspatial, there is a growing body of research that applies Kain's (1968) spatial mismatch thesis to immigrants. Kain's seminal study on housing segregation, decentralization of jobs, and Black employment found that Blacks living in concentrated poor neighborhoods in the central city were disconnected from major growth centers (e.g. suburbs). Thus, residential segregation of Blacks in urban areas and job growth in the suburbs, otherwise known as the jobs/housing imbalance, results in higher overall unemployment and greater poverty for the region. While the magnitude

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of the effect of employment decentralization on Black unemployment has been debated, decades of research offer evidence that the Blacks in the central city have less access to jobs than Blacks and Whites in the suburbs and Blacks who are employed have higher commute times than employed Whites (Holzer 1991).

Recent migration trends show that immigrants are bypassing immigrant gateways and locating in new destinations and even locating directly to suburbs rather than central cities (Frey, 2003; Singer, 2004). This raises the question of whether job decentralization has impacted immigrants differently than Blacks. Lui and Painter's (2012) study of sixty metropolitan areas finds that immigrants are more spatially segregated from jobs than Whites, but less so than Blacks. Furthermore, they find that immigrants are residentially mobile than Blacks, and can thus follow the jobs, while Blacks are slower to locate residentially to where the jobs move. Another study also found that first generation Latino immigrant youths' employment was not constrained by whether they lived in the central city, inner ring suburbs, or outer-ring suburbs, suggesting that Latino youth have more residential mobility than even White youth (Painter et al., 2007).
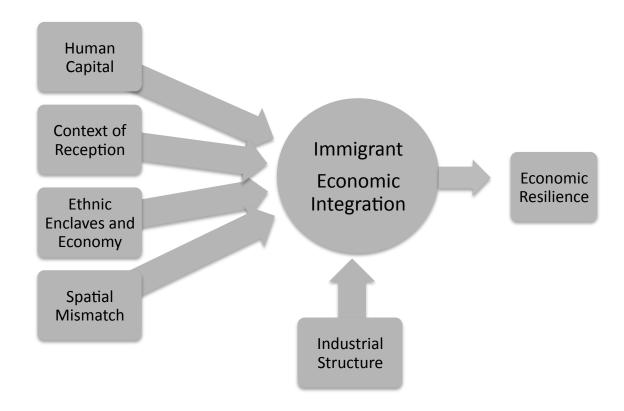
2.4 Occupational Diversity of Immigrants and Resilience

Significant attention has been paid to defining the concept of "resilience" and understanding how to operationalize it (Christopherson et al., 2010; Foster, Pendall, and Cowell, 2010; Simmie and Martin, 2010). In this paper, we define resilience as the ability of metropolitan areas to be more or less adaptable to economic stress caused by the Great Recession. We hypothesize that regions with a greater occupational diversity of immigrants will be more resistant to and recover more quickly from the economic downturn. Specifically, we examine whether regions that express higher levels of occupational diversity are more resilient to

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the economic shocks posed by the great recession. In particular, we test the relationship between occupational diversity among immigrants in 2000 and the resulting change in unemployment and real wage growth between 2000 and 2010.

Based on our understanding of the literature, we have developed a conceptual framework that is shown in *Figure 1*. This framework suggests that factors relating to human capital, the context of reception, living in ethnic enclaves, and the degree of spatial mismatch between immigrants place of residence and location of jobs may be associated with the degree of immigrant economic integration in the region. In addition, we control for the industrial structure of each region because this may determine whether jobs are available in the various sectors. For example, if a large proportion of jobs are concentrated in the manufacturing sector and a smaller proportion are available in the construction sector, then the industrial mix of a region may inhibit occupational diversity of immigrants, thereby reducing their ability to be more economically integrated. This conceptual framework also suggests that immigrant economic integration will also contribute to economic regional resilience, with more integration associated with greater resilience.

Figure 1: Conceptual Framework for Immigrant Economic Integration and Regional Economic Resilience

3. Methodology

3.1 Measuring Labor Market Diversity

To measure the labor market diversity among immigrants we constructed two distinct measures of occupational diversity at the metropolitan level. First we construct a non-relative occupational diversity index based on the Hirshman-Herfandahl Index.

$$(0.1) \qquad occdiv_{ij} = 1 - (\sum_{k}^{8} p_k^{\,2})_{ij}$$

As described in equation 1, the occupational diversity index is defined for each metropolitan area (i) and is based on the squared shares of workers in each occupational category (p_k) compared to the overall workforce. We defined nine broad occupational categories based on the Integrated Public Use Microdata Sample (IPUMS) variable 'occ'. The diversity index is calculated separately for three groups (j); all immigrants, Mexican immigrants, and native-born workers. Thus, the term p_k for the occupational diversity index of immigrants represents the share of immigrants in occupational category k out of the total number of immigrant workers in the metro area. If all immigrant workers were concentrated in only one category, then occdiv$_i$ would equal zero (i.e. $1 - 1^2 = 0$). Alternatively, if workers were evenly distributed across all categories the index would equal 1- 1/k, or 0.889. Thus higher values of the diversity index indicate more diversity across occupations, while lower values reflect more concentration.

As with all categorical measures of diversity, our occupational diversity index is highly dependent on the number of categories and the method used to develop them. There is an inherent tension in developing the occupational categories between the level of detail achieved and the statistical limits of the microdata samples we employed. On the one hand, we would ideally like to capture the degree of immigrant concentration in key occupations that are

dominated by immigrants, at least anecdotally (e.g. restaurant cooks, drywall installers, etc.)

However, if we use too many occupations we will not have sufficient sample size in each

metro/occupational cell to estimate an accurate measure of p_k. Ultimately, we used the

following categorization scheme, which roughly approximates the major occupational groups

defined in the Standard Occupational Classification (SOC) system. We made minor

modifications that better approximate the skill and wage distinctions within the service sector.

Specifically, the categories are 1) management; 2) professional, technical and protective

services; 3) low-wage services (includes food services, home health aids, building maintenance

occupations); 4) sales and office/administrative; 5) agriculture; 6) construction; 7) other blue-

collar jobs (includes transportation, utilities, communication, repair, and resource extraction

occupations); 8) production and/or manufacturing; and 9) military and unclassified occupations.

Table 1 in the next section lists the distribution of employed workers across these occupational

categories for immigrants, native-born workers and Mexican immigrants. It is important to note

that we do not include self-employed individuals as a separate category. While the literature

suggests that access to entrepreneurship is an important indicator of economic success, sample

size limitations at the metropolitan level preclude this analysis.

This way of measuring labor market diversity does not make comparisons in a given

metropolitan area to a reference region (e.g. the U.S. as a whole). As such it simply measures

diversity across a given set of categories within a single economy. There is no implied "ideal"

distribution across occupations since the structure of labor demand is itself likely to vary across

metropolitan areas for reasons that do not relate to the degree of integration of immigrants.

Thus, in the empirical analysis below we also compute the *within-metro* difference in

occupational diversity between immigrants and native workers to construct a measure of diversity that nets out the effect of the region's economic structure.

$$(0.2) \qquad occdiv_{i,\text{IMMIGRANTS}} - occdiv_{i,\text{NATIVE}}$$

In addition to the immigrant versus native difference, we construct an alternative measure of labor market diversity that is relative to the US. Specifically, we use an index of specialization. As equation 1.3 indicates, the index of specialization is a relative index that compares the share of immigrant workers employed in a given category k in each region i to the same share for all workers of group j (e.g. immigrants, native-born workers, etc.) across the US as a whole.

$$(0.3) \qquad IS_{ij} = \frac{1}{2} \sum_{kl} \left| \frac{US_{kj}}{US_{Aj}} - \frac{R_{kij}}{R_{Aij}} \right|$$

The index of occupational specialization ranges from zero to one, with more diverse regions closer to zero and more specialized ones closer to one. A higher index of specialization means that the absolute differences between the share of workers in the occupational groups is higher. In other words, in some regions the immigrant labor-force is more specialized or concentrated in some categories compared to the distribution of immigrant workers overall.

3.2 Data Sources and Construction Steps

The primary data source for the measures of occupational diversity are the Integrated Public Use Microdata Sample (IPUMS) files from the U.S. Census Bureau maintained by the University of Minnesota Population Center (Ruggles et. al., 2013). We used microdata extracts

from the 5 percent (long-form) 2000 decennial census and the 2010 American Community

Survey (ACS). In addition to the occupational diversity indices, we also computed the percent

of immigrant workers with a bachelors degree or higher, the rate of unemployment and the real

income growth of each immigrant group for each year. All values were calculated at the

metropolitan area level using the consistent IMPUS variable *metarea* and then rescaled to the

current combined statistical area (CBSA) definitions.[1] We then merged these variables with a

selected subset of relevant variables from the Building Resilient Regions (BRR) database

(Pastor, Lester, and Scoggins, 2009). The BRR database was developed by a MacArthur

Foundation funded research network and contains over 1,400 variables that measure a wide

variety of demographic, economic, social, and political characteristics of metropolitan regions.

While the database contains information for all metropolitan areas in the U.S., some variables

which were derived from microdata, were only available for larger regions (i.e. those with a

minimum of 200,000 persons in 2000). Thus we limited our analysis to the sample of 192

metropolitan areas that meet this size criterion.

In addition to using data from the IPUMS and BRR files, we developed two new

variables which we argue are metrics of a region's *context of reception* of immigrants. These

variables are policy or civic variables that are intended to be proxies for the broader institutional

setting at the regional scale. In the last decade, a greater number of local elected officials and

local governments have attempted to actively facilitate immigrant integration by changing public

and administrative policies and institutionalizing the change through the development of

immigrant service offices. For this study, we identify the metropolitan areas that have an

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[1]The IPUMS files use the older metro definitions, which correspond to the MSA/PMSA definitions used for the 2000 Census. To covert these values to the current system, we allocated each value to the county level and then used the county-based CBSA definitions determined by the OMB to take the population-based weighted average to reconstruct each measure back to the CBSA level. Variables were converted from their original geography so that we could merge the dataset to the Building Resilient Regions database.

immigrant or ethnic service office or have adopted immigrant-friendly city-wide initiatives as "pro-immigrant." We classify metropolitan areas as "anti-immigrant" if they have adopted policies that immigrant-advocacy groups have considered hostile to immigrants, such as the ICE ACCESS 287(g) Program. Both "pro-immigrant" and "anti-immigrant" are dichotomous variables and a single metropolitan area might have both types of policies.

To identify these policies, we searched government websites for the primary city or cities of each metropolitan area. We searched on the following keywords/terms: immigration, immigrant, and citizenship. We also looked at all the local commissions and the various types of mayor's offices (eg. Mayor's Office of Immigrant Affairs, Mayor's Office for New Americans) to see if they explicitly served immigrants, through programs such as translation for Spanish language speakers or an advisory commission for a specific ethnicity. We also examined special local initiatives, such as welcoming immigrant initiatives.

It should be noted that the quality and ease of navigating the city websites varies widely, so we may have missed a program/policy or not easy to find on the website. On the flip side, this may be indication of the importance of the initiative. If it is difficult to find publicly, there may not be much public support for the initiative. These are somewhat crude measures of pro- and anti-immigration, but there is currently no centralized database that contains information on the context of local government reception for immigrants.

Lastly, we used data from the National Center for Charitable Statistics (NCCS) database from the Urban Institute to count the number and revenue of non-profit organizations that serve immigrant or ethnic populations. These immigrant serving organizations may provide a broad array of services to immigrant communities including housing and social services in addition to labor market support. These variables were normalized by the total immigrant population in the

given year.

3.3 Research questions and empirical strategy

The main empirical analysis in this paper consists of two distinct tasks. First, we attempt to explain the variation in occupational diversity across metropolitan areas based on the conceptual framework developed in section two. In this task we ask which factors are associated with occupational diversity, our main proxy for economic integration of immigrants. For each of the potential explanatory factors—human capital, ethnic enclaves, context of reception, and regional economic structure—we chose a set of metrics from our updated BRR database (see Appendix A for the list of specific variables chosen to proxy for each factor). Next, we estimated a set of basic OLS regression models that models the association between each factor and our various measures of occupational diversity (the dependent variable). It is important to note that our purpose in conducting this OLS analysis is not to test specific causal relationships, but rather to explore broad associations between regional characteristics and occupational diversity

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The next task is to test the basic hypothesis that occupational diversity among immigrants leads to greater resilience at the regional scale. For the purposes of this paper we define resilience in a strictly economic sense—the ability to withstand economic shocks such as the Great Recession—and use two primary outcome measures of resilience: the change in the unemployment rate of immigrants between 2000 and 2010 and the change in real wage income.

4. Results

4.1 Descriptive Analysis and Ranking Tables

Before turning to our regression results, we examine the occupational distribution of native-born, immigrant, and Mexican immigrant workers across the nine occupational categories we used to develop the occupational diversity index. As shown in Table 1, native-born workers are heavily concentrated in three occupational groups in both 2000 and 2010: sales and office, professional, technical and protective services, and management. These three occupational groups employ 67.5% of the native-born workforce in 2010. These three types of occupations tend to be higher paying than other occupations in our list. A greater proportion of native-born residents are working in low wage service jobs in 2010 (13.3%) than in 2000 (11.6%). A very small proportion of native-born individuals work in agriculture and military occupations, 0.3% and 0.2%, respectively.

When immigrant workers are considered, they are less concentrated in higher wage occupations than native-born workers. In 2010, there were 18.6% of immigrants working in sales and office, 18.6% in professional, technical and protective services, and 10.5% in management, for a total of 47.7%. Immigrant workers have a much higher concentration in low-wage services, construction, other blue collar, and production/manufacturing than native-born workers. These jobs account for 47% of the immigrant workforce in 2010. Like native-born workers, a greater proportion of immigrant workers are working in low-wage service occupations in 2010 than in 2000. This signals the changing economic structure over time.

We also compare Mexican-immigrants, the largest immigrant group in the U.S., to immigrants overall. We find that there are stark differences in their occupational make-up, as compared to all immigrants. Mexican workers have low representation in management and professional, technical, and protective service occupations. A large number of Mexican workers,

73.9%, are concentrated in low wage services, construction, other blue collar, and production/manufacturing.

When we compare the occupational distribution of native-born, immigrants, and Mexican-immigrants, there are clear differences, with a greater proportion of native-born workers concentrated in higher wage, higher status jobs and Mexican immigrants are more concentrated in lower wage, lower status jobs. Yet when we consider the diversity index, all groups have high levels of occupational diversity. Immigrant workers have the highest occupational diversity score in 2000 at 0.85. Mexican immigrant workers have the next highest at 0.83, and native-born workers have the lowest at 0.81. These trends remain similar in 2010. Taken together, these statistics reveal that the overall occupational diversity, as measured by the diversity index, of the three groups is similar, but how each group is distributed across occupational categories varies.

[TABLE 1 ABOUT HERE]

Next, we rank metropolitan areas by the top ten most diverse and least diverse occupationally for immigrants, using our two measures: the Diversity Index and the Index of Specialization. Metropolitan areas that were ranked highest with the Diversity Index include six California metropolitan areas: Modesto, Stockton, Chico, Oxnard-Ventura, Santa Barbara-Santa Maria, and Santa Cruz-Watsonville (see Table 2). There were two metropolitan areas from Texas, Beaumont-Port Arthur and McAllen-Edinburg-Mission that are also ranked high on occupation diversity of immigrants. In general, these regions have traditionally been magnets for immigrants, particularly Mexicans. They have also had a strong agricultural and manufacturing base and tend to be smaller in population than other metropolitan areas in our study. Boise-City-Nampa, Idaho and Lakeland, Florida round out the top ten most occupationally diverse

metropolitan areas for immigrants. The range in the Diversity Index value for these metropolitan areas ranges from a high of 0.877 to a low of 0.859, therefore, the differences in level of occupational diversity is small among these metropolitan areas.

Looking at the ten metropolitan areas with the least occupational diversity for immigrants, they seem to be metropolitan areas that have older economies, such as Pittsburgh, Pennsylvania and Atlantic City, New Jersey or are smaller in size. Four of the metropolitan areas could be considered college towns: Champaign-Urbana, Illinois, Gainsville, Florida, Ann Arbor, Michigan, and Madison, Wisconsin. Whereas the most diverse regions appear to be magnets for Mexican immigrants, metropolitan areas that have less occupational diversity seem to attract immigrants from a broader range of countries.

Since the Diversity Index is the spread of immigrants across the nine occupational groups without reference to any other group, we also calculate the Index of Specialization to compare the occupational distribution of immigrants in each metropolitan area relative to their distribution in the U.S economy as a whole. The rankings using the Index of Specialization are somewhat different than our rankings using the Diversity Index. Examining the top ten regions for occupation diversity of immigrants, we find that larger metropolitan areas, and those with strong high-tech and service economies tend to rank high. As shown in Table 2, two populous California regions, San Diego-Carlsbad-San Marcos and Sacramento-Roseville, rank highest for occupational diversity for immigrants. There is much more regional variation using the Index of Specialization as compared to the Diversity Index, with three metropolitan areas in the West, three in the South, two in the Northeast, and two in the Midwest.

According to the Index of Specialization, the regions that have the least occupational diversity for immigrants appear to be smaller places with more specialized economies. There are

six metropolitan areas that are the same as those found in the Diversity Index ranking for least diverse area. The places that make it on this list and are different than on the Diversity Index list for least diverse include: Yakima, Washington, Bakersfield, California, Fayetteville-Springdale, Arkansas/Missouri and Merced, California. In general, the places on this list appear to have more specialized economies.

[TABLE 2 ABOUT HERE]

4.2 Explaining occupational diversity across regions

Beyond the rankings tables, to explore which characteristics are associated with greater occupational diversity of immigrants we ran a set of OLS regression models that take the general following form.

$$[4] \qquad OCCDIV_i = \beta[HC_i] + \beta[EE_i] + \beta[SM_i] + \beta[IS_i] + \beta[CR_i] + \mu_i$$

As indicated by equation 4, the dependent variable is the diversity index for each metropolitan area i, and is predicted by five sets of variables. HC_i is a vector of variables that measure the human capital of immigrants and include: the share of immigrants with a BA or higher, the share of a region's immigrants who immigrated in the 1980s or 1990s (our proxy for labor market experience), and the degree of linguistic isolation or language ability. The terms EE_i and SM_i is a vector of variables that measure the degree to which immigrants are spatially concentrated or cut off from regional opportunities and include variables such as the spatial dissimilarity index of the foreign born and the degree of concentrated poverty. Since the labor market diversity of all workers in a region, much less immigrant workers, is shaped by the structure of regional labor demand, we include a set of control variables that account for the industrial structure IS_i of each region. Lastly, the vector CR_i includes our variables that proxy for the context of reception such as the presence of pro- or anti- immigrant policies in the central city of each region, the number

of immigrant service NGOs per capita, and the share of regional votes for President Bush in 2004.

We conduct this analysis for the occupational diversity index for all immigrants, Mexican immigrants and also for the alternative differential diversity index (Table 3). It is important to note that not all variables within each broad vector were included in the final regressions listed in Tables 3 and 4 below. In specifying the models, we attempted to balance the competing needs of including variables from each of our conceptual factors while maintaining as parsimonious a model as possible with decent explanatory power. For this reason the set of variables used to predict the index of specialization (Table 4) is slightly different than those used for the diversity index.

[TABLE 3 ABOUT HERE]

Table 3 lists the results of our regressions predicting occupational diversity of immigrants. Column one contains the results for all immigrants, while column two is for Mexican immigrants separately and column three lists the difference in diversity index for all immigrants. The measure of human capital (% of immigrants with a BA or higher) is associated with lower labor market diversity and is significant for all immigrants and the differential. This makes sense as immigrants a higher degree of education means that immigrants would be relatively concentrated in the two higher skill occupational categories (management and professional services) and is an indicator of labor market specialization. Interestingly, this variable is not significant for Mexican immigrants, which might indicate that Mexicans face a greater degree of labor market discrimination. Not surprisingly, the degree of linguistic isolation also appears to reduce labor market diversity.

Our findings also indicate that when immigrants are more spatially segregated, they are less diverse across occupations, as indicated by the negative and significant coefficient for the spatial dissimilarity index among immigrants. Recall that the dissimilarity index (calculated at the census tract level) measures the share of immigrants that would have to move to another neighborhood to even out the distribution of foreign born and native born cities with a region. This finding is consistent with the existing literature on the spatial isolation of immigrants.

Our analysis also indicates that regional industrial structure plays an important role in shaping the opportunity for greater economic integration of immigrants across occupations. Specifically, the diversity index of employment across industries (calculated in a parallel manner as our occupational diversity index) is positive and significant for models 1 and 3. This suggests that more diverse economies in terms of labor demand are associated with greater occupational diversity for immigrants. Interestingly, this variable is insignificant for Mexican immigrants, again perhaps indicating that Mexicans face additional barriers within the labor market that prevent them from taking advantage of a wider array of jobs within the regional economy. In addition, the share of regional jobs in manufacturing is negatively associated with occupational diversity. Among the other variables that control for the economic structure of regions, the only other variable that is significantly associated with occupational diversity is the measure of income inequality (the 90/10 household income ratio). Regions that are more unequal are slightly more diverse.

When we examine the results for our variables that attempt to capture the *context of reception* for immigrants, we find that generally none of the policy variables were significant, except for Mexican immigrants and the number of immigrant service NGOs per capita. The fact that regions with more immigrant service organizations are less diverse is somewhat of a

puzzling finding. One reason why this may be the case is that these organizations form in response to the fact that Mexican immigrants are concentrated a relatively narrow set of low-wage jobs that may require more social and support services.

[TABLE 4 ABOUT HERE]

These results for our models that explain variation (see Table 4) in the index of occupational specialization are similar to the results for the occupational diversity index. To remind, the signs on each coefficient have the opposite interpretation since as the index of specialization increases, diversity decreases. Again, the share of workers with a BA or higher is associated with less diversity, while the language ability of immigrants seems to increase diversity. Additionally, having more recent immigrants, those who immigrated in the preceding decade (1990s), is associated with less labor market diversity This reflects less experience in the U.S. labor market.

The story with industry structure is also broadly similar, with the percent manufacturing negatively associated with diversity, and greater shares of high-tech and FIRE jobs are associated with greater occupational diversity. These sectors, unlike manufacturing, generate job opportunities across a wider spectrum of occupations and thus create a more diverse labor demand structure. In other words, regions with high-tech or service based economies produce a broad based labor demand for immigrant workers. The fact that these variables are not significant for Mexican immigrants again is suggestive of labor market segmentation within the immigrant labor market.

4.3 Explaining economic resilience

Next, we turn to our models that explore the relationship between occupational diversity and economic resilience. We analyze the impact of diversity on two distinct measures of

economic resilience; the change in unemployment and the net change in real wage income between 2000 and 2010. Making a comparison across this time period compares a base year that was the pinnacle of the overall labor market in terms of unemployment (2000) to 2010, which is just after the Great Recession that ended in 2009. Our diversity index variables are measured in the year 2000, which allows us to make a stronger argument about the causal relationship between diversity and resilience. Table 5 contains the results of models that test use our diversity measures on the right hand side and include a vector of control variables.

[TABLE 5 ABOUT HERE]

Based on the results presented in Table 5, we find that greater occupational diversity is associated with smaller changes in unemployment among immigrants. The results are significant for both of our measures of diversity (columns 1 and 2). This indicates that regions where immigrants are more broadly spread out across the labor market are more resilient to economic shock posed by the Great Recession. This is also essentially a 'portfolio argument' at work here. To the degree that immigrants are not concentrated in any one sector (e.g. construction) that faces a macroeconomic shock, immigrant workers as a whole will not see as large a spike in unemployment. Interestingly, higher rates of homeownership had a higher change in unemployment among immigrants, which may be reflective of the housing foreclosure crisis during the Great Recession.

[TABLE 6 ABOUT HERE]

In Table 6 we measure the impact of occupational diversity on the real change in wage income among immigrants. The results here are generally parallel to those in Table 5, in that greater occupational diversity is associated greater economic resilience. Specifically, the coefficient for the occupational diversity index is positive and significant at the 10% level for all

immigrants. However, for the index of specialization, the coefficient's sign is negative but not significant.

Conclusion

While the literature on immigrant integration often pitches competing theories, our study of 192 metropolitan areas with the largest immigrant populations suggests that there is support for combining different schools of thought on immigrant integration. Using two different measures for immigrant economic integration (operationalized as occupational diversity in the metropolitan labor market), we found that human capital factors matter. In particular, metropolitan areas with recent (in the decade of the 1990s) and more linguistically isolated immigrants will have less economically integrated immigrants.

Our study also found that metropolitan areas with greater spatial segregation between immigrants and non-immigrants had lower levels of economic integration. This finding reveals that having more concentrated immigrant neighborhoods may inhibit labor market opportunities and lead to greater occupational homogeneity. We did not find evidence for the spatial mismatch hypothesis, which argues that the decentralization of jobs to the suburbs affects immigrant economic integration. Previous work suggests that immigrants are residentially mobile and are able to move to employment areas, thus employment decentralization has had less of an impact on immigrant employment than on Black employment (Painter, Lui, and Zhuang 2007; Lui and Painter, 2012).

Our pro-immigrant and anti-immigrant policy measures and the number of immigrant service NGOs, which attempted to capture the context of reception for immigrants were not significant. Quantifying the context of reception for each region is difficult because many regions have a mix of policies, both pro and anti, at the local, regional, and state level for

immigrants. Future research should find more refined measures that can capture public attitudes towards immigrants or immigrants' perceptions about how they are treated and whether they feel welcomed by the community at-large and by local government authorities.

The industrial structure is also a strong predictor of immigrant economic integration. Our results indicate that regions that specialize in manufacturing tend to generate less diverse opportunities for immigrants, while regions that have a higher share of FIRE or high-tech jobs have more occupational diversity. We interpret this finding as an indicator that growing high-tech service economies will produce a broader set of labor demands for immigrant workers skills at both the high-end (e.g. information technology) and low-end (e.g. restaurants and personal services). The fact that these variables don't seem to matter in explaining the occupational diversity among Mexican immigrants is an interesting finding that requires more research but is indicative of more rigid labor market segmentation for this group.

Are metropolitan areas with greater immigrant economic integration more resilient to economic shocks? Our analyses, regardless of outcome measure used, indicate that greater occupational diversity does buffer metropolitan regions from more pronounced effects of the Great Recession. Unemployment level change for immigrants is less dramatic in metropolitan areas with greater economic integration. Furthermore, real wage income growth is higher in metropolitan areas with more economic integration. These findings have implications for current immigration policy reform, showing that policies that seek to recreate a segmented labor force will be unwise since occupational diversity reduces the impact of a sectoral specific shock. Thus, policymakers should provide legal avenues for workers from more wide ranging types of occupations. Our current federal immigration policies offer preferential treatment to high-skilled (e.g. software engineers) and low skilled or agricultural workers.

Looking forward, the findings in this paper can serve as the basis for case selection for future qualitative analysis that seeks to drill down to the explanatory factors that enhance or exacerbate economic integration and labor market mobility of new immigrants. Furthermore, findings from this study offer ways policy-makers, elected officials, and street-level bureaucrats who would like to facilitate immigrant integration can do so through human capital accumulation, desegregating immigrants, and developing a more welcoming context.

Tables and Figures

Table 1. Distribution of Occupation by Immigrant Status, 2000, 2010

Occupational Group	Native born		Immigrants		Mexican Immigrants	
	2000	2010	2000	2010	2000	2010
Management	14.6%	15.3%	10.1%	10.5%	3.7%	4.0%
Professional, Technical and protective services	23.4%	24.4%	18.9%	18.6%	4.8%	4.6%
Sales and office	28.6%	27.8%	20.3%	18.6%	13.0%	12.8%
Low wage services	11.6%	13.3%	19.1%	22.7%	25.4%	29.4%
Agriculture	0.3%	0.2%	1.7%	1.6%	5.4%	4.7%
Construction	4.9%	4.7%	7.3%	9.4%	15.2%	18.5%
Other blue collar	9.6%	8.9%	9.8%	9.7%	13.6%	12.9%
Production/Manufacturing	6.7%	5.0%	12.6%	8.8%	18.8%	13.1%
Military or Unclassified	0.2%	0.4%	0.1%	0.1%	0.0%	0.1%

Source: Author's analysis of *Integrated Public Use Microdata Series* (IPUMS) U.S. Census Bureau data from the 2000 5% PUMS Sample and the 2010 American Community Survey 5% Sample.

Table 2. Ranking of Ten Most/Least Occupationally Diverse Regions in 2000, All Immigrants

	Region	Diversity Index	Region	Index of Spec.
		Most Diverse		
1	Modesto, CA	0.866	San Diego-Carlsbad-San Marcos, CA	0.044
2	Stockton, CA	0.866	Sacramento--Roseville, CA	0.048
3	Chico, CA	0.865	New Orleans-Metairie-Kenner, LA	0.048
4	Lakeland, FL	0.864	Hartford, CT	0.051
5	Oxnard-Ventura, CA	0.863	Tampa-St. Petersburg-Clearwater, FL	0.053
6	Boise City-Nampa, ID	0.863	New York CBSA, NY-NJ-PA	0.061
7	Beaumont-Port Arthur, TX	0.863	Kansas City, MO-KS	0.064
8	McAllen-Edinburg-Mission, TX	0.863	Nashville-Davidson--Murfreesboro, TN	0.070
9	Santa Barbara-Santa Maria, CA	0.859	Indianapolis-Carmel, IN	0.072
10	Santa Cruz-Watsonville, CA	0.859	Portland-Vancouver, OR-WA	0.075
		Least Diverse		
1	Champaign-Urbana, IL	0.612	Hickory-Lenoir-Morganton, NC	0.432
2	Gainesville, FL	0.650	El Paso, TX	0.431
3	El Paso, TX	0.682	Yakima, WA	0.422
4	Ann Arbor, MI	0.696	Visalia-Porterville, CA	0.417
5	Hickory-Lenoir-Morganton, NC	0.713	Champaign-Urbana, IL	0.410
6	Atlantic City, NJ	0.742	Gainesville, FL	0.355
7	Pittsburgh, PA	0.757	Bakersfield, CA	0.352
8	Madison, WI	0.764	Ann Arbor, MI	0.338
9	Baton Rouge, LA	0.770	Fayetteville-Springdale, AR-MO	0.313
10	Visalia-Porterville, CA	0.771	Merced, CA	0.312

Source: Authors analysis of IPUMS Census data from 2000 and 2010.

Table 3. Predicting Occupational Diversity in 2000

Variable	Diversity Index, All Immigrants [1]	Diversity Index, Mexican Immigrants [2]	DI Differential Immigrants vs. Native Born [3]
Total CBSA population, 2000	-0.0002	-0.00003	-0.0002
	(0.000)	(0.000)	(0.000)
Share of Immigrants with a BA or Higher. 2000	-0.201***	-0.044	-0.201***
	(0.033)	(0.080)	(0.000)
Percent households linguistically isolated, 2000	-1.013***	-0.581	-0.81***
	(0.338)	(0.693)	(0.000)
Dissimilarity Index, foreign born, 2000	-0.002***	0.001	-0.001***
	(0.000)	(0.001)	(0.000)
CBSA percent home owners, 2000	0.085	0.201	0.059
	(0.069)	(0.131)	(0.000)
Industry Diversity Index, 2000	0.214***	0.084	0.161***
	(0.064)	(0.124)	(0.000)
Percent manufacturing,2000	-0.110***	-0.044	-0.185***
	(0.056)	(0.109)	(0.000)
Median Household Income, 1999	0.001	-0.005***	0.002***
	(0.000)	(0.000)	(0.000)
Median Rent, 2000 (in 2000$s)	-0.001	0.035***	0.0001
	(0.000)	(0.000)	(0.000)
Real Growth Median Household Income, 1980-00	0.166	-0.753	0.313
	(0.000)	(0.001)	(0.000)
CBSA 90-10 Income Ratio, 2000	0.007***	0.000	0.011***
	(0.002)	(0.004)	(0.000)
CBSA unemployment rate, 2000	-0.002	-0.001	-0.004
	(0.002)	(0.005)	(0.000)
Pro-Immigrant Policy Stance, 2013	0.005	-0.001	0.009
	(0.006)	(0.011)	(0.000)
Anti-Immigrant Policy Stance, 2013	0.007	-0.021	0.004
	(0.008)	(0.015)	(0.000)
% Vote for Bush, 2004	0.000	0.000	0.0001***
	(0.000)	(0.000)	(0.000)
Number of Immigrant Service NGOs PC, 2000	3.537	-77.204***	4.072
	(20.021)	(37.901)	(0.000)
Adjusted R-2	0.454	0.1991	0.4862

Table 4. Predicting Occupational Index of Specialization

Variable	Index of Specialization, All Immigrants	Index of Specialization, Mexican Immigrants
Total CBSA population, 2000	0.00001	0.00001
	(0.000)	(0.000)
Share of Immigrants with a BA or higher, 2000	0.288***	0.414***
	(0.078)	(0.122)
Share of immigrants with "good" or better English, 2000	-0.003***	-0.001
	(0.001)	(0.001)
CBSA percent of immigrants that immigrated in the 90s, 2000	0.797***	-0.288
	(0.327)	(0.453)
CBSA, Dissimilarity Index, foreign born, 2000	0.001	-0.001
	(0.001)	(0.001)
Industry Diversity Index, 2000	-0.162	-0.224
	(0.117)	(0.165)
Percent of total employment in FIRE, 2000	-1.034***	-0.313
	(0.326)	(0.460)
Percent manufacturing,2000	0.253***	0.174
	(0.111)	(0.157)
Share of employment in High-tech, 2000-02 avg	-0.825***	-0.510
	(0.246)	(0.346)
Number of Immigrant Service NGOs/immigrant, 2000	67.713***	14.256
	(35.708)	(50.205)
Central City has a Pro-Immigrant Policy Stance, 2013	-0.018	-0.014
	(0.011)	(0.016)
Bush (43) Vote 2004	0.000	0.000
	(0.000)	(0.000)
Adjusted R2	0.461	0.202

Notes: All regressions include regions with at least 200,000 total population in 2000 and at least 10,000 immigrants in 2000. Sample size equals 124 for all three models. Standard errors in parentheses. * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table 5. Impact of Occupational Diversity Index on the Change in Unemployment Rate Among All Immigrants, 2000-2010.

Variable	(1)	(2)
Occupational Diversity Index, Immigrants, 2000	-0.1879***	
	(0.0573)	
Index Occupational Specialization , Immigrants, 2000		0.0584*
		(0.0331)
CBSA unemployment rate, 2000	-0.0086***	-0.0105***
	(0.0018)	(0.0018)
Total CBSA population, 2000	0.00001	0.00001
	(0.00001)	(0.00001)
CBSA, Dissimilarity Index, foreign born, 2000	-0.0009***	-0.001***
	(0.0003)	(0.0003)
CBSA percent households linguistically isolated, 2000	0.0133	0.004
	(0.0733)	(0.0774)
CBSA percent home owners, 2000	0.0994**	0.085*
	(0.0457)	(0.0470)
Percent manufacturing,2000	0.0312	0.017977
	(0.0385)	(0.0421)
Median Rent, 2000 (in 2000$s)	-0.0301	-0.0317
	(0.0249)	(0.0259)
CBSA Real Growth Median Household Income, 1980-00, Regional CPI	0.0006**	0.0005*
	(0.0002)	(0.0002)
CBSA 50-10 Income Ratio, 2000	0.0049	0.0089
	(0.0055)	(0.0056)
Adjusted R-squared	0.46	0.42

Notes: All regressions include regions with at least 200,000 total population in 2000 and at least 10,000 immigrants in 2000. Sample size equals 124 for all three models. Standard errors in parentheses. * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table 6. Impact of Occupational Diversity Index on the Real Wage Income Change among Immigrants, 2000-10.

Variable	(1)	(2)
Occupational Diversity Index, Immigrants, 2000	13,482.2*	
	(7448.7)	
Index Occupational Specialization , Immigrants, 2000		-2,713.5
		(3570.4)
CBSA percent of immigrants that immigrated in the 80s, 2000	70579.1***	66632.5***
	(16804.5)	(16869.0)
CBSA 90-10 Income Ratio, 2000	-572.2***	-523.1***
	(172.3)	(172.1)
CBSA percent home owners, 2000	-22551.1***	-21864.2***
	(4902.4)	(4946.7)
Share of Immigrants with a BA or higher, 2000	-6903.3*	-9171.4**
	(3652.5)	(3514.0)
Metro rate of "good" or better English language ability among immigrants, 2000	75.7**	69.8*
	(38.02)	(41.8)
Total CBSA population, 2000	0.0005*	0.0005*
	(0.000)	(0.000)
Industry Diversity Index (employment based), 2000	-9315.9*	-7309.3
	(5354.0)	(5258.5)
Median Household Income, 1999 (in 2000$s)	-0.049	-0.036
	(0.040)	(0.0401)
Adjusted R-squared	.41	.40

Notes: All regressions include regions with at least 200,000 total population in 2000 and at least 10,000 immigrants in 2000. Sample size equals 124 for all three models. Standard errors in parentheses. * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

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