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Occupational Diversity of Immigrants in the United States

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This paper employs IPUMS United States Census data to study the occupational distribution of immigrants between 1850 and 2000. Examining occupational diversity is crucial to understanding how immigrants adjust to a host economy and affect growth. I use occupations as a way of measuring assimilation. I analyze whether or not the spread of immigrants across occupations looks like the spread of natives over time. To do this, I create a unique measure of diversity based on the fractionalization index. I construct occupational diversity indices for each immigrant group and decade. Results from a case study examination indicate that relative occupational diversity has increased over time as immigrants have a greater ability to enter a wide array of occupations. I use empirical models to show that a positive relationship exists between relative occupational diversity and the immigrant to native ratio.

Introduction

Information on the occupational distribution of immigrants and how it changes over time in a host economy is central to understanding how immigrants affect economic growth and how they adjust to a host country both in economic and social terms (Green 1999). The assimilation process, or the convergence between immigrants and natives, is thus a very important phenomenon to study. This is especially true when looked at through the lens of the United States, the "melting pot" of our world. Much of the prior research that has been done to examine immigrants in the labor market has considered wages or unemployment to make inferences about the assimilation of immigrants, while very few have looked at occupations. Occupation, however, is just as important a measure of the skill set of an individual that is used to convey the socioeconomic status of the worker. The occupational attainment of immigrants is an inherent part of their socioeconomic adjustment. Initially, immigrants may have an occupational disadvantage because they lack knowledge about how to find employment, or their pre-migration skills may not be fully transferable. But with a longer stay in the U.S. and more investment in U.S. specific skills, their socioeconomic status can be expected to improve and resemble more closely that of natives (Toussaint-Comeau 2004). Researchers have proposed several theories to explain why immigrants select and change jobs. These provide insight into the extent to which immigrants may or may not assimilate in their occupational profiles. These theories include human capital accumulation, the host country's immigration policy regarding the type of skills required for entry, and the importance of ethnic concentration in shaping the occupational distribution of immigrants, to name a few.

Most people, when studying assimilation, ask whether immigrants are taking jobs more similar to natives over time or if they are catching up to the performance of natives in regards to skills or wages. Unlike this assimilation literature focusing on the catch-up question, I am asking a different question from another angle. I am looking at whether the spread, or distribution, of immigrants across occupations looks more like the spread of natives across time. My emphasis is on whether or not immigrants have been stuck in a low number of occupations over time or if they have been able to break free from certain classifications. Rather than studying if immigrants are in "better" occupations, I seek to find if they are in a variety of occupations to make sure they have not been pigeon-holed in particular categories. To explore this idea, I employ the concept of occupational diversity. Occupational diversity can be defined as the probability that two people, drawn at random, are of different occupations. The question of occupational diversity is thus extremely important, especially when viewed as one type of assimilation. A focus on occupational distribution contributes to the importance of understanding the immigrant experience upon arrival to the U.S. Here, I examine how immigrants assimilate, at least occupationally, as their group's residency in the U.S. increases. I use a blend of quantitative and qualitative analysis to get to the root of this question. Through a mini-case study approach, I am able to delve into the immigration history and experience of several of the largest foreign-born populations in an attempt to explain changes in occupational diversity. To do this, I compare natives, or U.S. born, to those who are foreign-born. I consider a variety of immigrant groups, including Mexicans, Irish, Germans, Puerto Ricans, Cubans, Chinese, Filipinos, and Indians. I look at trends in occupational diversity over time, from 1850 to 2000, for each group. I analyze how they are different from each other and from natives. Thus, I attempt to take a new approach to the assimilation question. I seek to find if occupational diversity has increased over time and if so, why that has been the case.

The paper is organized as follows. The next section describes the motivation behind the paper and the literature related to the topic. Section 3 describes the data, while section 4 explains the measurement index used. Section 5 presents the results and interpretation of the mini-case studies. Section 6 introduces the empirical model and section 7 provides the regression results and analysis. Section 8 concludes the study.

Motivation

In the past, there have been several studies done about occupational assimilation and mobility of immigrants. Amuedo-Dorantes and De La Rica (2006) analyze the employment and occupational assimilation of recent immigrant waves to the Spanish labor market as their residencies lengthen and find evidence that occupational assimilation varies by gender, origin, and educational attainment. They examine immigrants' employment assimilation as captured by changes in the employment

probability differential between similar immigrants and natives as immigrants' stay in Spain lengthens. Their omitted variable, or comparison group, is natives. They rank occupations on the basis of their average earnings. 40% of recent immigrants were concentrated in the 5 worst paid occupations compared to 30% of non-recent immigrants and 12% of natives. The fact that non-recent immigrants are better off occupation-wise than their recent counterparts suggests upward occupational mobility as migrants' residencies lengthen. In terms of educational attainment, the assimilation of less educated immigrants seems to take place at a slower pace. Thus, assimilation may vary according to human capital. They found that there were significant differences in the occupational attainment and mobility of immigrants by origin.

Toussaint-Comeau (2004) investigates whether Hispanic immigrants assimilate in occupational status with natives and the factors that determine occupational status. She models occupational status and convergence of Hispanics relative to U.S. born non-Hispanics as a function of human capital and demographic exogenous variables, U.S. experience (assimilation effects) and periods of migration (cohort effects). Her results show that the length of time spent in the U.S. narrows the occupational gap and that the level of human capital affects the rate of occupational mobility and determines whether convergence occurs in occupational status. Immigrants who arrived to the U.S. in different periods may have different propensities to assimilate due to human capital levels. She cites the Cohort Quality Model (Borjas 1995) which suggests that there are differences between groups, or cohorts, of immigrants who enter the U.S. in particular time periods. A higher skill set, or a more transferable one, changes the occupational path for each cohort in different times.

Previous research has also shown the importance of ethnic concentration in shaping the occupational distribution of immigrants. Patel and Vella (2007) study the occupational allocation of immigrants. They examine the relationship between the occupational choice of recently arrived immigrants with those of established immigrants of the same country. They use a simple model of the search behavior of immigrants. They find evidence of a network system in the immigrant labor market. Evidence shows that new arrivals are locating in the same occupations as their established countrymen. Thus, they highlight the importance of immigrant networks in developing occupation niches, or channeling immigrants of certain ethnic backgrounds into specific occupations. Occupational choice of immigrants is not based purely on comparative skill advantages.

Data

I was able to draw all of my data from the IPUMS-USA website. IPUMS-USA (Integrated Public Use Microdata Series) is dedicated to collecting and distributing United States census data. Using variables from this data base, I was able to create a new dataset that is unique to my purposes. I gathered the following variables for each decade

between 1850 and 2000 to examine the full spectrum during which the bulk of migration to the U.S. occurred. However, there is no census data for the decade 1890. My variable, Age, limits the data to those who are between 16 and 65, or those who are of age to be considered in the labor force. In addition, my variable for Sex limits the data to males because occupational patterns of females are likely to be very different and would thus skew my results. The variable Perwt (person weight) indicates how many people in the U.S. population are represented by a given person in the IPUMS sample. The variable GQ (group quarter) classifies households under the 1970 definition and additional households under the 1990 definition. The variable Laborforce limits the data to those who are in the labor force.

I also include the variable BPL (birthplace) for the following countries: Mexico, Ireland, Germany, Puerto Rico, Cuba, China, Philippines, India, and the U.S. states. I chose these 8 countries in order to perform a more in-depth analysis of each group's experience. I wanted to examine a wide range of immigrant groups that were representative of different regions and sizes, whose migration waves started at different points and have spanned across the majority of the 150 year period that I am looking at. In addition, I was interested to see if certain immigrant groups had different levels of occupational diversity due to factors such as race, language, or having been a colony of the United States. Non-white immigrants or those from a country where English is not the first language spoken might face discrimination or other barriers in regards to occupational options. On the other hand, perhaps immigrants from countries with colonial status may have an easier time entering into a wide array of occupations.

I compute the occupational diversity of employed non-agricultural civilian workers for each ethnic group. I use the variable OCC1950, which applies the 1950 Census Bureau occupational classification system to occupational data, in order to increase the comparability of occupations over time. This variable reports the primary occupation of census participants. Occupations are classified by job title within the following categories: Professional and Technical; Managers, Officials, and Proprietors; Clerical and Kindred; Sales workers; Craftsmen; Operatives; Service Workers; Laborers. In order to provide a representation of how these occupations are coded, I included a list of all of the job titles within three of these categories in Appendix A. For example, it can be seen that two people working in an accounting office, one as an accountant and one as a secretary, would be coded differently. In this way, the variable provides data that shows how occupational diversity is changing in regards to job title and hierarchy, rather than solely industry.

Measurement Index

In order to accomplish my task, I needed to create a unique measure of diversity. To do this, I based my model on the fractionalization index. Most studies about the impact of ethnic diversity on economic growth use a

measure of ethnic diversity called the ELF (Ethnolinguistic Fractionalization), which is the probability that two people drawn at random are of different ethnic groups. The fractionalization index's theoretical maximum is reached (at the value of 1) when each person belongs to a different group. Thus, values represent a range of complete homogeneity (an index of 0) to complete heterogeneity (an index of 1) (Alesina et al 2003). I use the same formula, applied to different underlying data, to compute my own measure of fractionalization:

$$\text{FRACT}_j = 1 - \sum_{i=1}^{N} s^2_{ij},$$

where s_{ij} is the share of each occupation i ($i = 1...N$) in birthplace j. Using this index, my new data set allows for the computation of an alternative measure of heterogeneity. I therefore used this same idea to construct occupational diversity indices for each group and decade. This created occupational diversity for immigrants from 8 countries, as well as for natives, across 16 decades. Thus, fractionalization can be viewed here as a measure of occupational diversity. One issue when measuring this type of fractionalization, however, is that the number of occupations varies every year. The problem with this is that if the number of occupations increases over time, it will automatically increase occupational diversity, thus eliminating the ability to observe whether occupational diversity is actually increasing due to other factors. To try to address this issue, I calculate the relative occupational diversity of each immigrant group in each decade compared to natives, or the Div(Immigrant Group)/ Div(Natives). A value of 1 implies equal diversity, while values below 1 imply that immigrants are clustered in fewer occupations than natives are. The results can be seen through the following mini-case study analysis.

Case Study Results and Analysis

In general, I found that the relative occupational diversity of immigrant groups increased over time from 1850 to 2000. This trend can be clearly seen as depicted in Figure 1. With just a few immigrants, occupational diversity is low because they are only represented in a few jobs. As the number of immigrants increases, however, they become more spread out. Thus, it appears as though all of the immigrant groups have spread out across occupations, like natives. However, despite an overall upward trend in diversity, many groups experience declines at certain points. Influxes of immigrants usually come with the same level of skills as a group, thus going into the same occupational area. This concentration is most often due to the fact that they are recruited for certain targeted purposes or they are restricted from entering the U.S. due to exclusionary policies. All of the above serve to produce an effect of decreased occupational diversity for short amounts of time. As time goes on, immigrants entering the U.S. are more skilled for the most part; this serves to reinforce the upward trend of occupational diversity since they are able to enter a wide array of occupations.

The one issue with these results is that while it is exciting that all of the immigrant groups appear to have broken free from their respective occupational classifications, it is slightly odd that they are all clustered around 1. This would essentially mean that they are just as occupationally diverse as natives. I attempted to control for the general increase in the number of occupations over time by using the OCC1950 variable and looking at the relative diversity of immigrant groups. However, I still may have failed to control for the fact that there are just more occupations over time.

Natives

In Figure 2, we see that the probability of randomly drawing 2 natives that were in different occupations was about 88% in 1850. Occupational diversity amongst natives increased over time with natives being represented in 144 occupations in 1850 to 188 occupations in 2000. Thus, the probability that natives were in different occupations in 2000 was about 95%. Occupational diversity amongst natives has been largely constant over time and can thus be used for comparison purposes. Due to this lack of variation, the fractionalization graphs for each country essentially look the same as their relative fractionalization graphs.

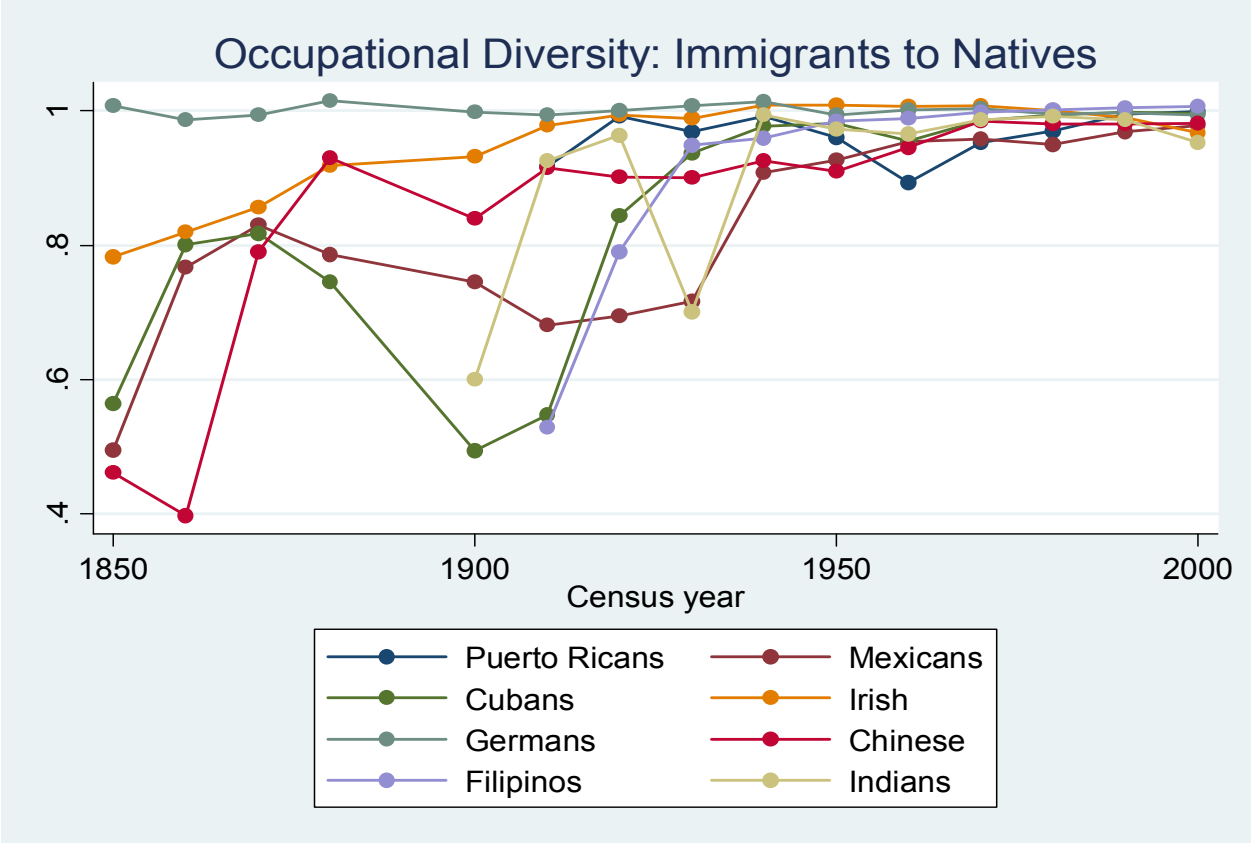

Figure 1

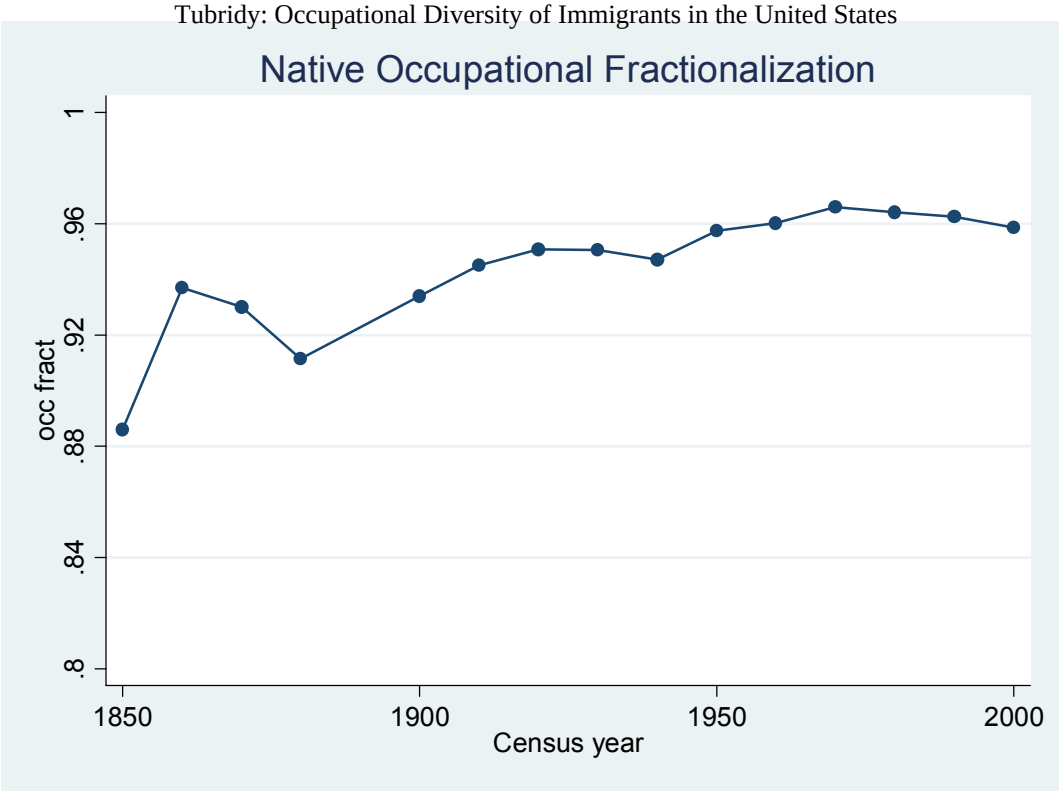

Figure 2

Therefore, I only included both graphs for Mexicans in order to illustrate this trend.

Mexicans

After the Treaty of Guadalupe Hidalgo ended the war with Mexico in 1848, about 55,000 Mexican workers immigrated to the United States over the next 30 years to become field hands in regions that had, until very recently, belonged to Mexico (Takaki 1998, 239). The presence of Mexican workers in the American labor scene was also reinforced with the construction of the railroad between Mexico and the U.S. That presence grew between 1880 and 1900. When the United States entered World War II in 1942, labor was drawn from all areas of U.S. industry and poured into those which supported the war efforts. Thus, there was high demand for Mexican laborers in a variety of areas (Takaki 1998, 241). In that year, the United States also signed the Bracero Treaty, which reopened the floodgates for legal immigration of Mexican laborers. Between the period of 1942 and 1964, millions of Mexicans were imported into the U.S. as "braceros" under the Bracero Program to work temporarily on contract to United States growers and ranchers ("Mexican Immigrant Labor History"). At the end of World War II, Mexican workers were ousted from their jobs by returning servicemen and those who were coming out of wartime industries ("Mexican Immigrant Labor History").

In Figure 3, Mexican fractionalization shows that the probability of randomly drawing 2 Mexicans that were in different occupations was about 43% in 1850. Occupational diversity within the group increased over time with Mexicans being represented in 10 occupations in 1850 to

Figure 3

175 occupations in 2000. Thus, the probability that Mexicans were in different occupations in 2000 was about 93%. Figure 4 shows that Mexicans were half as occupationally diverse as natives in 1850, but were only 3% less diverse in 2000.

On the graphs, we see low occupational diversity in 1850 which was most likely due to the fact that most workers were field hands at that time.

Figure 4

We see a rise but then a decrease in occupational diversity in the period from 1880 to 1900, most likely due to the fact that workers were being concentrated in the building of railroads. We see increased diversity in the 40s as Mexicans were recruited for a wide range of occupations in both the industrial and agricultural sectors during the WWII period. Diversity continues on an upward trend after the war as they were forced to scatter into various occupations when soldiers returned to their jobs after the war.

Irish

The main reason that the Irish immigrated to the United States was to escape the widespread Potato Famine that plagued the country beginning in 1845 (Takaki 1998, 112). Over the next seven years, more than one million Irish came to the United States. This strained the resources of New York City and Boston as they struggled to manage the large influx of immigrants. Hence, competition for employment with the existing population was fierce and employment discrimination against the Irish became common (Takaki 1998, 113). These peasants had arrived without resources or capital to start farms or businesses. In addition, very few of them had ever accumulated the resources to make any meaningful choices about their way of life. Fortunately for them, the expansion of the American economy created heavy demands for labor. At this time, thousands of miles of rail were being laid and so Irish laborers became a part of the construction gangs that did this grueling work (Takaki 1998, 114). Thus, the first generations were in largely unskilled and semiskilled occupations, but their children found themselves working in increasingly skilled trades. By 1900, when Irish Americans made up about a thirteenth of the male labor force, they were almost a third of the plumbers, steamfitters, and boilermakers. Industry working Irish soon found themselves lifted up into manager positions as more and more common laborers arrived from southern and eastern Europe ("Immigration: The Journey to America").

Irish fractionalization indicates that the probability of randomly drawing 2 Irishmen that were in different occupations was about 69% in 1850. Occupational diversity within the group increased over time with the Irish being represented in 81 occupations in 1850 to 91 occupations in 2000. Thus, the probability that Irish were in different occupations in 2000 was about 92%. Figure 5 shows that the Irish were at 78% of the occupational diversity level of natives in 1850, but were up to 96% of the native diversity level in 2000.

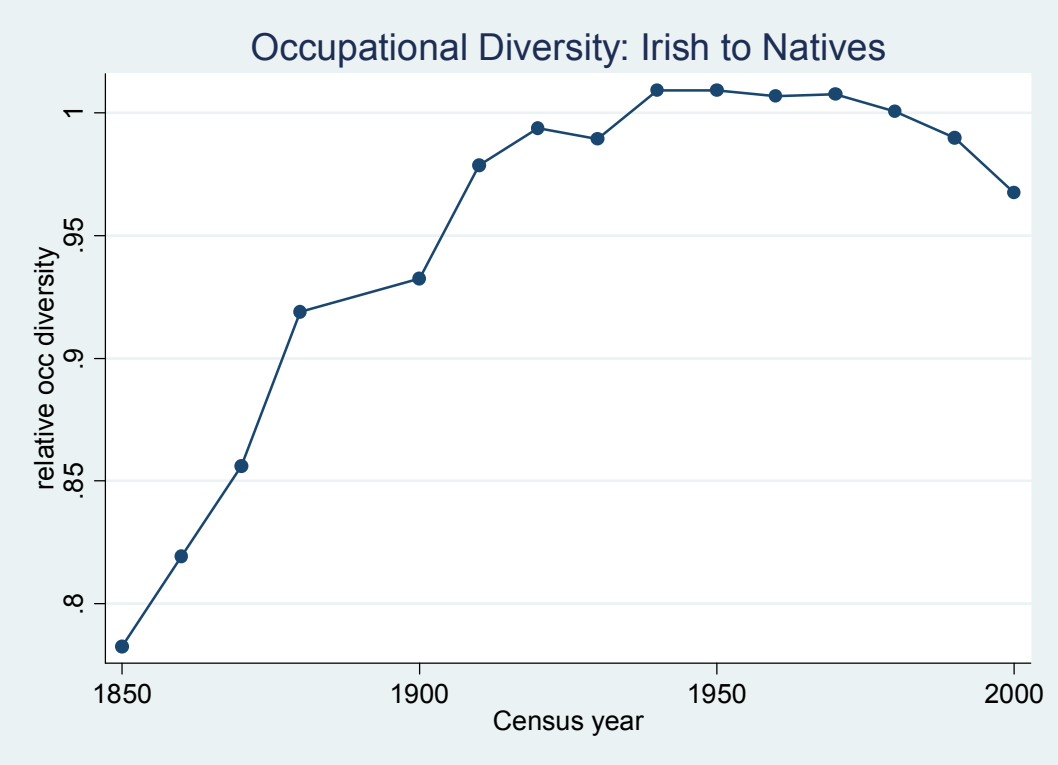

Figure 5

On the graph, we see relatively low occupational diversity in 1850 which was most likely due to their lack of skills and the discrimination that they faced when they landed in America. Thus, they were concentrated in certain sectors of the labor market. Over time, however, we see a largely consistent upward trend in occupational diversity. Thus, it appears that after their initial troubles, the Irish faced very few problems in terms of entering a wide array of occupations. Perhaps this was because the Irish may have been aided by their white race and capability of speaking the English language.

Germans

Many German individuals had already been in the United States for quite some time before the mid-nineteenth century. However, nearly one million German immigrants entered the United States in the 1850s for different reasons than earlier generations. Increasing industrialization and the use of machines to perform tasks previously done by manual labor forced many Germans from their respective family businesses ("History of German-American Relations"). In these later phases of German immigration, newcomers joined established settlers. Germans in America had a strong influence on the labor movement in the United States. Thus, labor union membership enabled German immigrants to improve their working

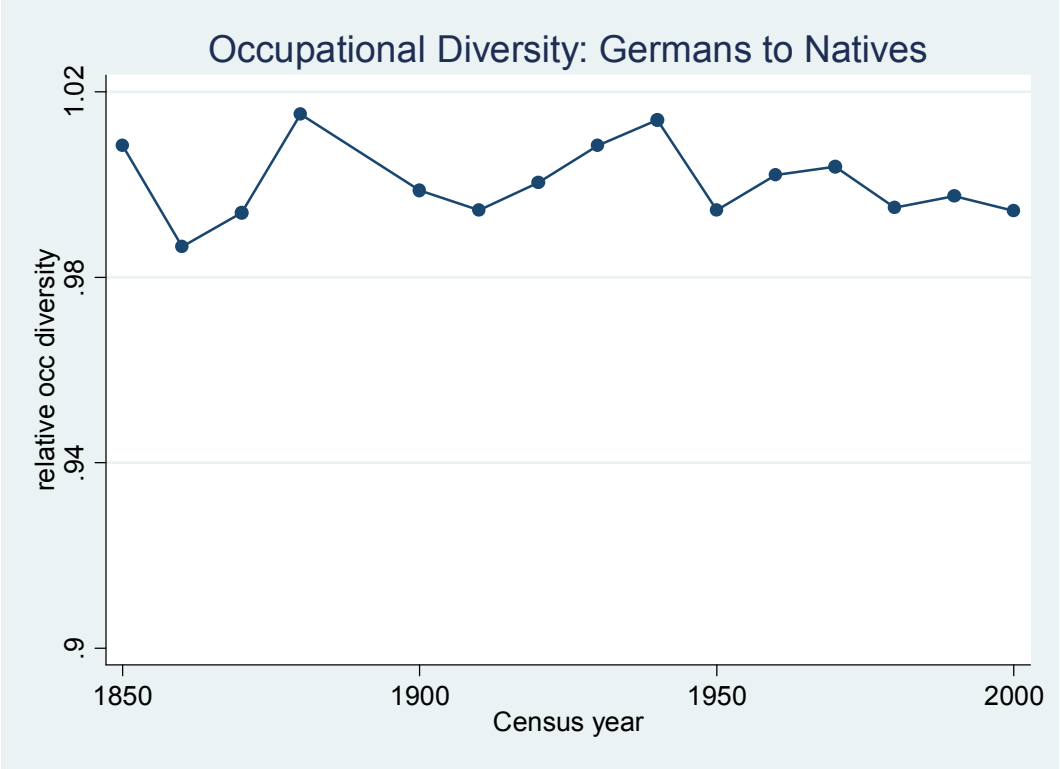

Figure 6

conditions and integrate into American society as a whole. Originally strong in such occupations as baking, carpentry, and brewing, they were also laborers, farmers, musicians, and merchants ("History of German-American Relations").

German fractionalization indicates that the probability of randomly drawing 2 Germans that were in different occupations was about 89% in 1850. Occupational diversity within the group increased over time with Germans being represented in 73 occupations in 1850 to 163 occupations in 2000. Thus, the probability that Germans were in different occupations in 2000 was about 95%. Figure 6 shows that Germans were actually about 1% more occupationally diverse relative to natives in 1850 and about 1% less diverse in 2000.

On the graph, we see largely consistent occupational diversity over time for Germans. Immigrants who came in 1850 appear to have almost immediately assimilated to natives and had similar, if not higher, levels of occupational diversity. This is probably due to the fact that they not only had skills when they got to the U.S., but they also had an established network already in the U.S. to turn to for help. Thus, they have remained in a diverse array of occupations over time.

Puerto Ricans

Puerto Ricans have migrated to the United States since the late nineteenth century. The Spanish American War officially ended on December 10, 1898. The Treaty of Paris stated that Spain was to cede Puerto

Rico, Guam and the Philippines to the United States. Puerto Rican migration to the United States really began, however, during World War I when the United States government needed both soldiers and workers (Takaki 1998, 292). On March 17, 1917, Congress passed the Jones Act making the Puerto Rican people United States citizens. As citizens, Puerto Rican men were drafted into the United States army to fight in the war. In addition, due to the scarcity of workers in the United States to construct ships and armaments, the federal government actively encouraged and recruited Puerto Ricans for that purpose. During 1917 and 1918, the government transported thousands of men from Puerto Rico to industrial complexes ("Historical Background"). Again at the end of World War II, United States companies began looking to Puerto Rico for cheap labor, and they sent agents there to recruit workers. Abundant jobs and active recruitment increased the average yearly migration of Puerto Ricans from 1,800 between 1930 and 1940 to 31,000 from 1946 to 1950, and to 45,000 from 1951 to 1960 ("Historical Background"). The history of Puerto Rican American assimilation has been one of great success mixed with serious problems. Many Puerto Rican mainlanders hold high-paying white collar jobs. Outside of New York City, Puerto Ricans often boast higher college graduation rates and higher per capita incomes than their counterparts in other Latino groups ("Historical Background").

Puerto Rican fractionalization indicates that the probability of randomly drawing 2 Puerto Ricans that

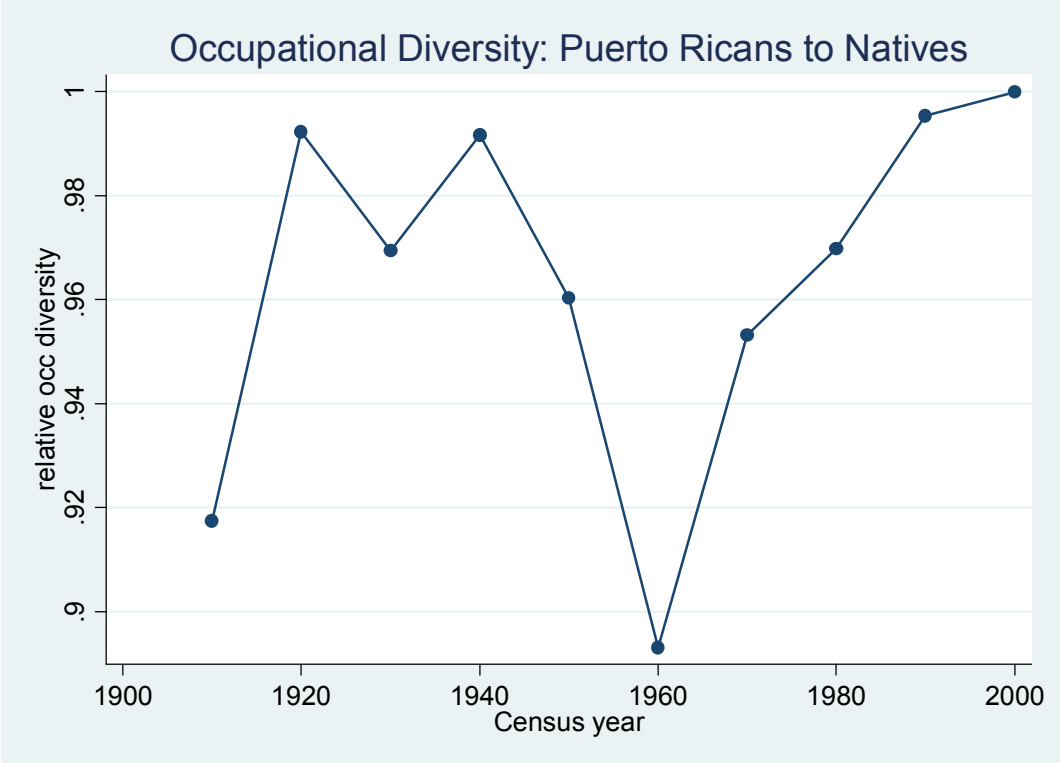

Figure 7

were in different occupations was about 86% in 1910. Occupational diversity within the group increased over time with Puerto Ricans being represented in 12 occupations in 1910 to 153 occupations in 2000. Thus, the probability that Puerto Ricans were in different occupations in 2000 was about 95%. Figure 7 shows that Puerto Ricans were only 9% less occupationally diverse relative to natives in 1910 and about 1% less diverse in 2000.

Before 1900 and the influx of Puerto Rican immigrants after the Spanish American war, the only occupation that Puerto Ricans were in was laborers. Thus, they had no occupational diversity. However, on the graph, we see a large jump in diversity after this event as immigrants began to flow in. Occupational diversity drops during WWI though because Puerto Ricans were drafted into the war since they were now U.S. citizens. Active recruitment of targeted Puerto Rican labor occurred in the period from 1940 to 1960 and so there was a huge influx of immigrants, thus drastically lowering occupational diversity during this time. After 1960, however, occupational diversity has been on an upward trend as Puerto Ricans have successfully entered a variety of occupations.

Filipinos

In 1898, the United States defeated Spain in the Spanish American War and the Philippines became a U.S. territory, so the U.S. began to recruit Filipinos into the Navy. Between 1903 and 1934, 500,000 Filipino students came to the U.S. to study in American schools; this was considered the first wave of Filipino immigration ("Countries and Their Cultures"). Also during this time, plantation workers were recruited to work in Hawaii on sugar plantations. In 1934, the U.S. made the Philippines a commonwealth and limited immigration to the U.S. to 50 Filipinos a year. The largest immigration wave arrived after the passage of the 1965 Immigration Act which eliminated country specific quotas. Changes in American immigration law in 1965 significantly altered the type and number of immigrants coming to the United States. Unlike pre-war immigrants who largely worked as unskilled laborers in West Coast and Hawaiian agriculture, the third wave was composed of larger numbers of well-educated Filipinos between the ages of 20 and 40 who came looking for better career opportunities than they could find in the Philippines. This highly skilled third wave population had a command of the English language, allowing them to enter a wide range of professions ("Countries and Their Cultures").

Filipino fractionalization indicates that the probability of randomly drawing 2 Filipinos that were in different occupations was about 49% in 1910. Occupational diversity within the group increased over time with the Filipinos being represented in 5 occupations in 1910 to 144 occupations in 2000. Thus, the probability that Filipinos were in different occupations in 2000 was about 96%. Figure 8 shows that Filipinos were only about half as occupationally diverse as natives in 1910, but were actually .7% more diverse than natives in 2000.

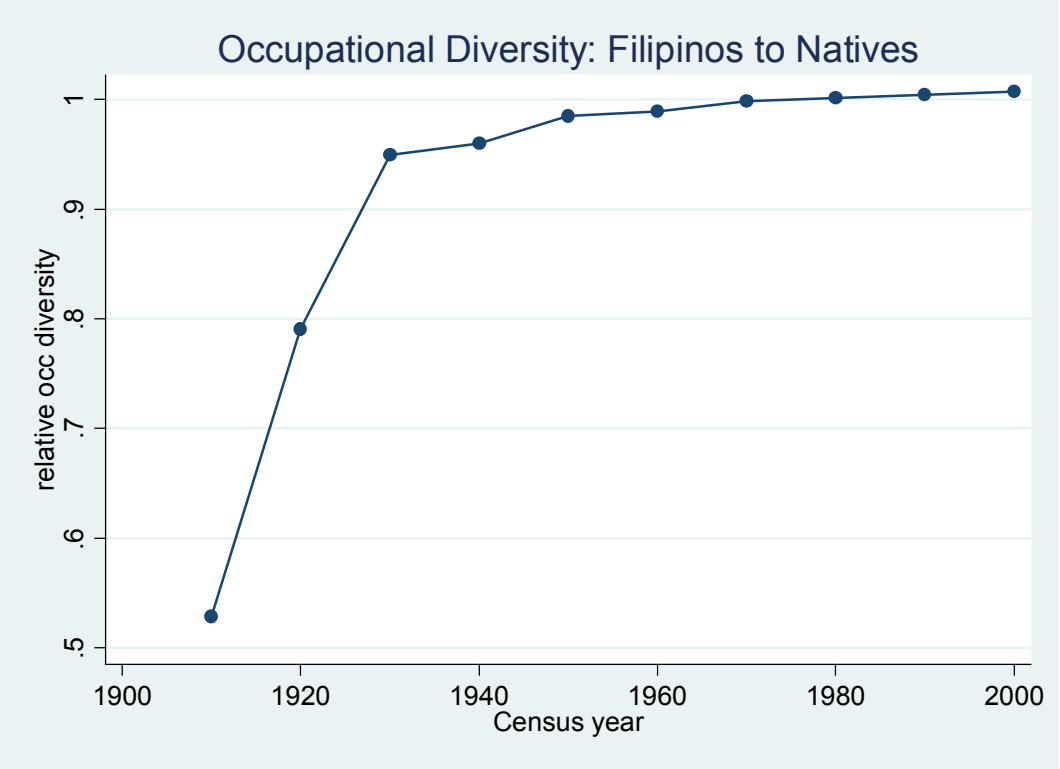

Figure 8

Before 1910 and the influx of Filipino immigrants after the Spanish American war, the only occupation that Filipinos were in was farmers. Thus, they had no occupational diversity. However, on the graph, we see a large jump in diversity after this time as Filipinos flooded into America as students especially in the second and third decades of the 20th century, and began to enter into an increasingly diverse array of occupations thereafter. When the U.S. government limited the immigration of Filipinos in the 1930s, we see occupational diversity leveling out for the time being. Diversity continues on an upward trend especially after the 1960s when a large wave of highly skilled immigrants was allowed into the U.S. and thus went into a wide scope of occupations.

Cubans

In the latter part of the 1800s and early 1900s, many Cubans moved freely between Cuba and the U.S. The two countries traded sugar, coffee, and tobacco. Cigar factories from Cuba began to move to Florida ("Countries and Their Cultures"). There have also been at least four distinct waves of Cuban immigration to the United States since 1959. The first of these recent migrations began immediately after Castro's victory and continued until the U.S. government imposed a blockade of Cuba at the time of the Cuban missile crisis ("Countries and Their Cultures"). The second major migration started in 1965 and continued through 1973. Cuba and the United States agreed that Cubans with relatives residing in the United States would be transported from Cuba. The third

migration, known as the Mariel Boat Lift, occurred in 1980 after Fidel Castro permitted Cubans residing in the United States to visit relatives in Cuba ("Countries and Their Cultures"). Economic conditions have worsened since the fall of Cuba's principal economic supporter, the Soviet Union, and so in recent times many Cubans have left Cuba in makeshift boats for Florida. Over the years, just as the migration "push factors" have changed, so has the composition of the migrant population. While the earliest migrants were drawn from the highly educated and conservative middle and upper classes, more recent migrants have been poorer and less educated. However, for the most part, the Cuban American community today is well assimilated in the United States. Cuban Americans enjoy greater economic security than other Hispanic groups and the community as a whole is known to be highly educated ("Countries and Their Cultures").

Cuban fractionalization indicates that the probability of randomly drawing 2 Cubans that were in different occupations was about 50% in 1850. Occupational diversity within the group increased over time with the Cubans being represented in 2 occupations in 1850 to 139 occupations in 2000. Thus, the probability that Cubans were in different occupations in 2000 was about 95%. Figure 9 shows that Cubans were only at 56% of the occupational diversity level of natives in 1850, but were up to 99% of the native diversity level in 2000.

On the graph, we see low occupational diversity in the period from 1850 to 1900 which was most likely due to the fact that most Cubans were

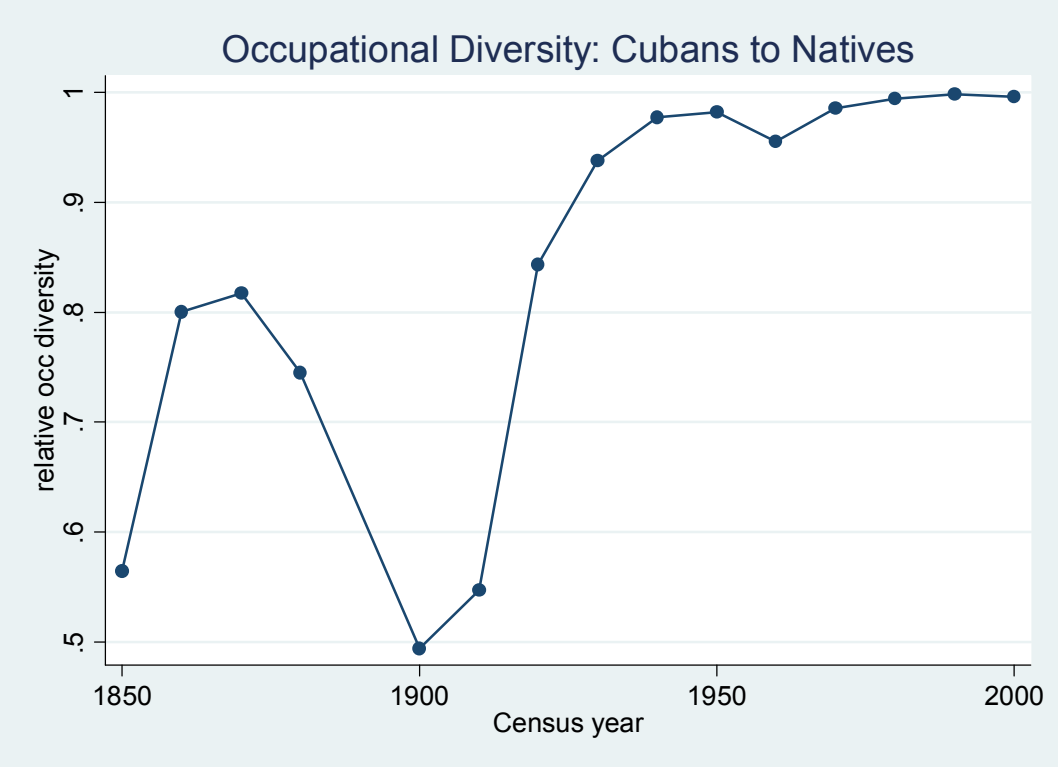

Figure 9

concentrated in the trading business during this time. After the Spanish American war when Cuba became a protectorate of the U.S., the first real wave of Cubans migrated to the U.S., thus bringing Cubans from a diverse array of occupations into the U.S. We can see a slight decline in 1960 which is aligned with the election of Castro in Cuba and the influx of immigrants that occurred as a result. Most Cuban immigrants have been highly educated and thus appear to have spread out across occupations quite nicely relative to natives.

Chinese

In many respects, the motivations for Chinese to come to the United States are similar to those of most immigrants; some came to the United States to seek better economic opportunities, while others were compelled to leave China either as contract laborers or refugees. However, their collective experience as a racial minority, since they first arrived in the mid-nineteenth century, differs significantly from the European immigrant groups and other racial minorities. Chinese were singled out for discrimination through laws enacted by the states in which they had settled. Chinese immigration can be roughly divided into three periods: 1849-1882, 1882-1965, and 1965 to the present. The first period, also known as the first wave, began shortly after the Gold Rush in California and ended abruptly with the passage of the Chinese Exclusion Act of 1882, the first race-based immigration law (Takaki 1998, 131). Thousands of Chinese left their homes to become contract laborers in the American West. They were recruited to extract minerals and construct a vast railroad network during the Gold Rush period (Takaki 1998, 129). Throughout most of the second period (the period of exclusion; 1882-1965), only diplomats, merchants, and students and their dependents were allowed to travel between the United States and China ("Countries and Their Cultures"). The Civil Rights movement in the 1960s finally ushered in a new era, the third period in Chinese American immigration history. Chinese Americans were liberated from a structure of racial oppression. Under new immigration laws, thousands of Chinese came to the United States each year to reunite with their families.

Chinese fractionalization indicates that the probability of randomly drawing 2 Chinese that were in different occupations was about 40% in 1850. Occupational diversity within the group increased over time with the Chinese being represented in 2 occupations in 1850 to 138 occupations in 2000. Thus, the probability that Chinese were in different occupations in 2000 was about 94%. Figure 10 shows that Chinese were only at 46% of the occupational diversity level of natives in 1850, but were up to 98% of the native diversity level in 2000.

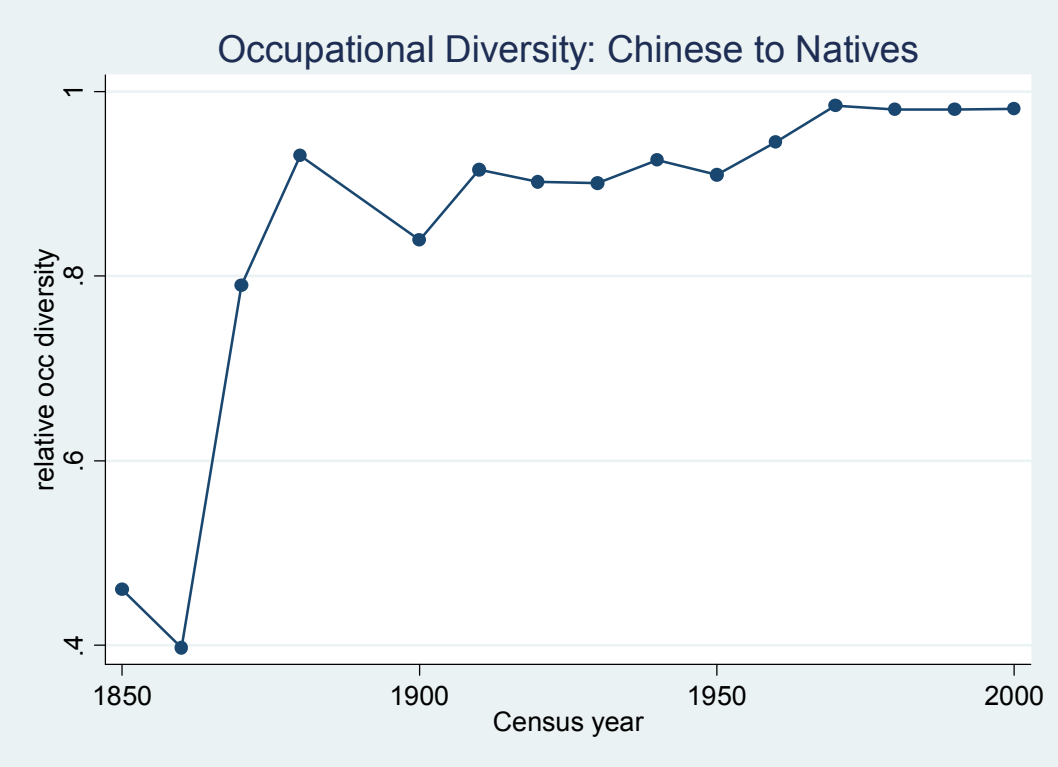

Figure 10

On the graph, we see low occupational diversity in 1850 because most of the Chinese were concentrated in occupations dealing with the Gold Rush in California. We see occupational diversity rise, but then fall beginning in 1880 due to the Chinese Exclusion Act which only allowed certain occupational groups of Chinese into the United States. Occupational diversity then remains fairly constant with a continued increase especially after the 1960s due to the Immigration Act which brought new Chinese immigrants into the U.S. from a diverse array of occupations.

Indians

The first Asian Indians arrived in America as early as the late nineteenth century. The majority of Indians worked in agriculture and construction (Takaki 1998, 281). However, several pieces of legislation were introduced in the United States such as the Congressional Exclusion Law of 1923, which attempted either to restrict the entry of Indians or to deny them residence and citizenship rights in America. Another significant wave thus followed in the 1950s which mainly included students and professionals. From 1965 onward, a second significant wave of Indian immigration began, spurred by a change in U.S. immigration law that lifted prior quotas and restrictions and allowed significant numbers of Asians to immigrate (Takaki 1998, 281). With the technology boom of the 1990s, the largest influx of Indians arrived between 1995 and 2000. The occupational profile presented by the Asian Indian community today is one of increasing

diversity. Although a large number of Asian Indians are professionals, others own small businesses or are employed as semi- or non-skilled workers.

Indian fractionalization indicates that the probability of randomly drawing 2 Indians that were in different occupations was about 55% in 1900. Occupational diversity within the group increased over time with the Indians being represented in 3 occupations in 1900 to 141 occupations in 2000. Thus, the probability that Indians were in different occupations in 2000 was about 91%. Figure 11 shows that Indians were only at 59% of the occupational diversity level of natives in 1900, but were up to 95% of the native diversity level in 2000.

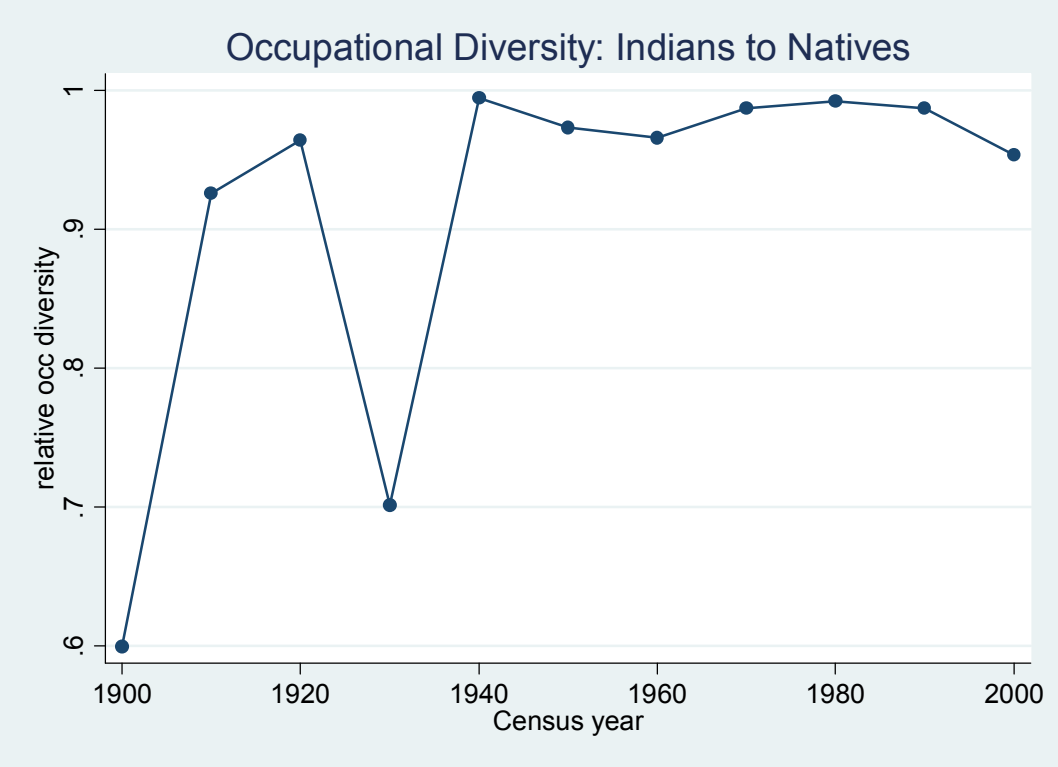

Figure 11

The first immigrants from India were recorded in 1870 and they were all here as private household workers. Thus, they had no occupational diversity. However, on the graph, we see a large jump in diversity after 1900 as many Indians came to America to work in certain sectors of the labor market. We

then see a significant drop in diversity in the 1920s which was most likely due to the Exclusion Act of 1923 which prevented immigrants of different skill levels from entering the U.S. We see a slight decline in diversity in the 1990s, when a significant number of technologically-oriented Indians immigrated in reaction to the tech boom. Overall, however, the Indian American community is highly diverse, representing both skilled and unskilled fields.

Empirical Model

Through my case studies, I have seen a general theme regarding the apparent effect of large immigrant influxes on relative occupational diversity as well as the idea that immigrant groups are inherently different. The persisting problem with my approach is that there are changes in measurement over time. These issues can be addressed in a model looking at the effect of the immigrant to native ratio on relative occupational diversity after controlling for year and country fixed effects. This would give me the ability to observe if occupational diversity is increasing due to other factors. The regression analysis of this study is thus based on the following empirical models of relative occupational diversity:

(1) $\text{RelativeDiversity}_{c,t} = B_0 + B_1(\ln(\text{Immigrant/Native ratio})_{c,t}) + \text{Year FE}_t + \text{Country FE}_c + u_{c,t}$

(2) $\text{RelativeDiversity}_{c,t} = B_0 + B_1(\text{lagged } \ln(\text{Immigrant/Native ratio})_{c,t}) + B_2(\Delta\ln(\text{Immigrant/Native ratio})_{c,t}) + \text{Year FE}_t + \text{Country FE}_c + u_{c,t}$

Both regressions look at the relationship between relative occupational diversity and a ratio variable measuring the number of immigrants relative to the number of natives, within the U.S. population, for each country and decade. In equation (1), I use the contemporary natural log of this ratio, while in equation (2) I use the lagged natural log of the ratio in addition to examining the change in the natural log of the ratio. The change ratio represents the change in the immigrant ratio from the previous decade in order to capture large immigrant influxes. In both regressions I control for year fixed effects to control for occupational changes over time as well as country fixed effects to control for permanent immigrant group differences. To do country fixed effects, I omit Germany because it has the most constant occupational diversity across time.

Regression Results and Analysis

The following table shows the regression results for equations (1) and (2).

Table 1

ln(ratio)	.061*** (.009)	
lagged ln(ratio)		.035*** (.009)
Δln(ratio)		.010 (.021)
dy1 (1850)	-.025 (.091)	
dy2 (1860)		

dy3 (1870)	-.045 (.085)	.075 (.074)
dy4 (1880)	.035 (.087)	-.018 (.073)
dy5 (1900)	.031 (.086)	
dy6 (1910)	.194** (.084)	.081 (.070)
dy7 (1920)	.279*** (.084)	.188*** (.071)
dy8 (1930)	.275*** (.084)	.186*** (.070)
dy9 (1940)	.364*** (.084)	.263*** (.073)
dy10 (1950)	.357*** (.084)	.263*** (.071)
dy11 (1960)	.334*** (.083)	.255*** (.069)
dy12 (1970)	.337*** (.083)	.265*** (.068)
dy13 (1980)	.309*** (.083)	.253*** (.067)
dy14 (1990)	.291*** (.082)	.243*** (.067)
dy15 (2000)	.272*** (.082)	.225*** (.068)
dbpl2 (Puerto Rico)	-.010 (.064)	-.002 (.055)
dbpl3 (Mexico)	-.095* (.054)	-.097** (.046)
dbpl4 (Cuba)	.064 (.063)	.019 (.055)
dbpl5 (Ireland)	-.009 (.052)	-.011 (.045)
dbpl7 (China)	-.015 (.056)	-.035 (.049)
dbpl8 (Philippines)	-.010 (.067)	.007 (.059)
dbpl9 (India)	.040 (.072)	.007 (.064)
Number of Observations 110	95	
R-squared	.6551	.5459

*Note: *** Significant at 1% level; ** Significant at 5% level; * Significant at 10% level*

These results highlight the effect of the number of immigrants on relative occupational diversity. It appears that the ratio of immigrants to natives has a statistically significant relation to the occupational spread of immigrants. The results show that as the number of immigrants in the population increases relative to the number of natives, the relative occupational diversity increases. Both of the coefficients on ln(ratio) and lagged ln(ratio) are highly significant and positive. The high r-squared values for both regressions reaffirm the strength of these results. For equation (1), the coefficient on ln(ratio) shows that if the immigrant to native ratio increases by 1%, then the relative occupational diversity increases by .06 percentage points. For equation (2), the coefficient on lagged ln(ratio) illustrates that if the immigrant to native ratio increases by 1%, then the relative occupational diversity increases by .03 percentage points. These findings support my individual country case studies because as the number of immigrants increases over time, convergence with natives actually does begin to occur as immigrants' occupational diversity trends upward. I have shown that this convergence is statistically significant and that relative occupational diversity is indeed increasing. This can be seen graphically as illustrated in Figures 12 and 13. A clearly positive linear relationship can be seen between the ratio and occupational diversity here.

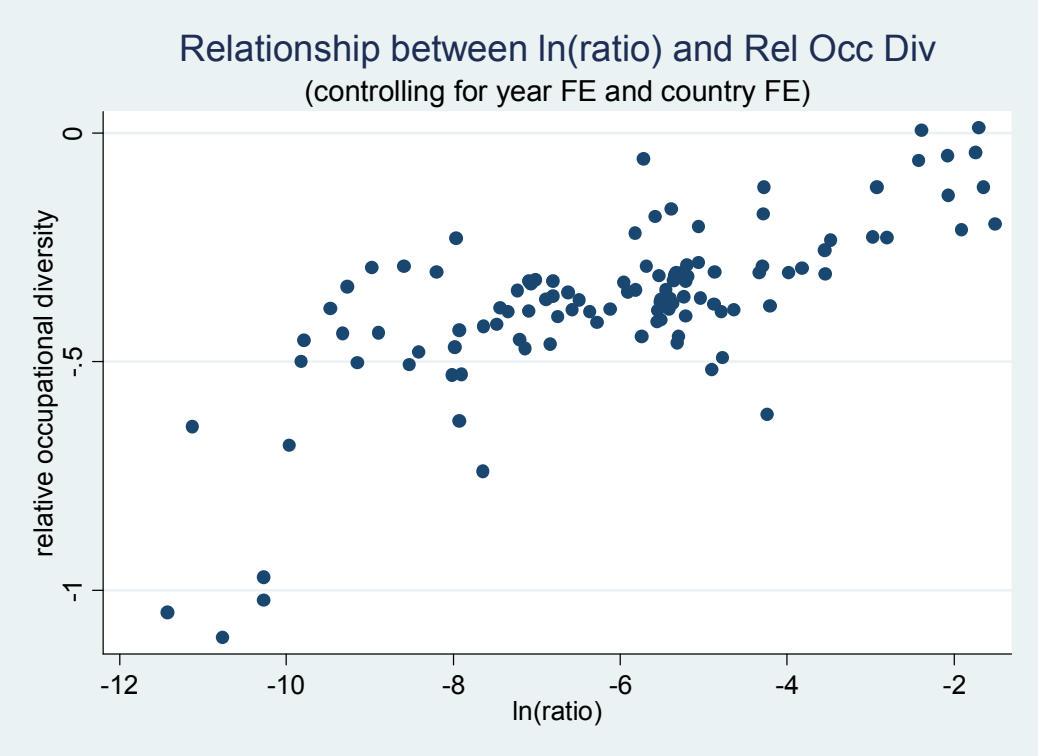

Figure 13

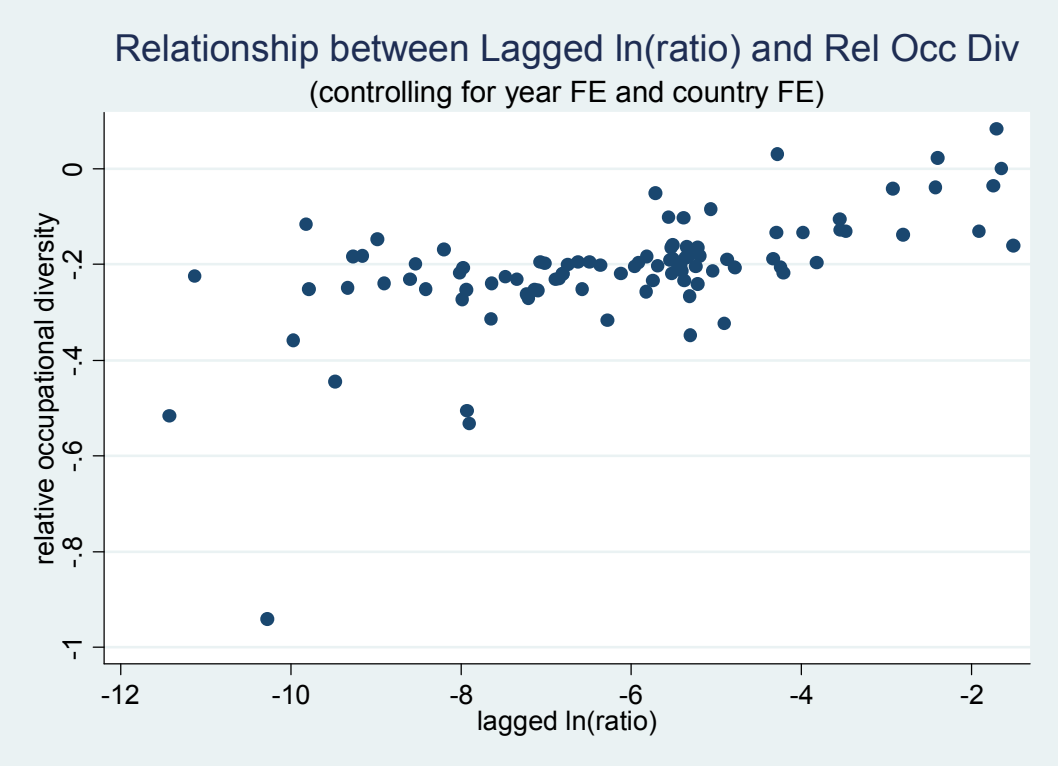

Figure 12

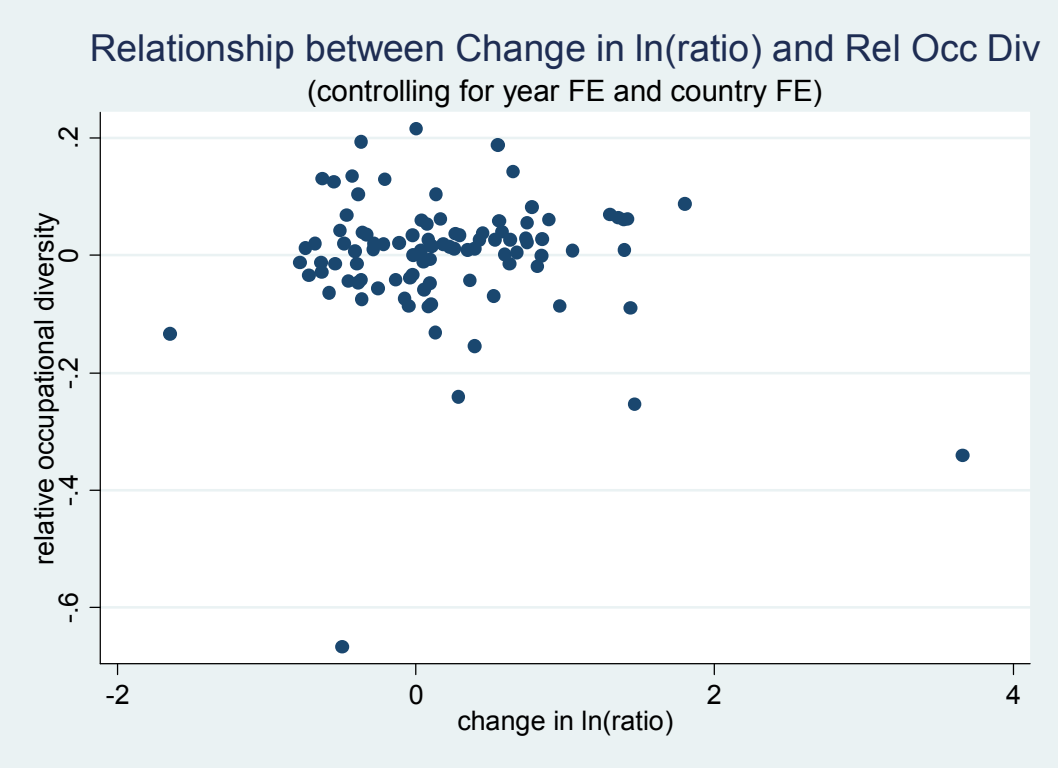

Figure 14

In equation (2), the coefficient on the change in ln(ratio) is insignificant. Therefore, the change ratio is unrelated to relative occupational diversity. Through this regression, it can be seen that there is no evidence for a relationship between immigrant influxes and relative occupational diversity. This can be seen graphically as illustrated in Figure 14. Thus, it appears that once I control for year and country fixed effects, immigrant influxes actually do not matter.

In regards to the country fixed effects which control for the size of the immigrant population, the coefficient on the Mexico dummy is significant in both regressions. Mexican immigrants are thus the only group to exhibit a significant difference from Germans (the omitted group) in occupational diversity. This considerable 9 percentage point gap suggests that there is an innate country difference that is affecting relative occupational diversity. In regards to year fixed effects, as time goes on the coefficient values on the year dummies increase and they become increasingly significant. So, by including year fixed effects I am able to control for higher occupational diversity in later years.

Conclusion

This paper documents the occupational diversity of immigrants in the United States in the period between 1850 and 2000. The study looks at immigrants from the following countries: Mexico, Ireland, Germany, Puerto Rico, Cuba, China, Philippines, and India. A case study examination of the

occupational diversity indices for each group and decade reveals that the relative occupational diversity of immigrants has increased over time. By looking at the immigration experience of each group both quantitatively and qualitatively, we can attempt to explain the reasons for various trends in occupational diversity across time. These results do not explicitly show any one significant overarching difference in occupational diversity of immigrants that can be explained by individual factors such as race, language, or colonial status. Both the Irish and Germans, who are white, had fairly consistent high occupational diversity across time. Puerto Ricans were similar in this respect, which was possibly due to their initial colonial status. However, no conclusive evidence can be drawn in this regard. Overall, the occupational spread of immigrants came to look more like that of natives over time. In fact, most of the immigrant groups had about the same level of occupational diversity in 2000 and were able to break free from certain occupational classifications. Statistically, relative occupational diversity has indeed increased. A clear positive relationship exists between relative occupational diversity and the immigrant to native ratio. The Mexican immigrant group is the only one that appears to have an innate difference in occupational diversity.

A recent *New York Times* article, "Work Force Fueled by Highly Skilled Immigrants", released in April 2010 actually discusses the new analysis of census data and highlights its findings regarding immigrant occupations. The data shows that "about two-thirds of all immigrants in the country are nearly evenly distributed across the job and income spectrum" (Preston 2010). This data therefore directly supports my findings. The United States is receiving a more diverse and economically important flow of immigrants than many people realize. The fastest economic growth over the past two decades has actually been in cities that have received "large influxes of immigrants with a mix of occupations" (Preston 2010). Occupational diversity is thus proven to be highly significant in regards to economic health. This data serves to offer a new perspective on the immigration debate as it refutes the common perception that the U.S. is overwhelmed with solely low wage foreign-born workers. Thus this data, which my results complement, can be used to inform Congress as they seek to reform immigration policy moving into the future.

Appendix A

Professional and Technical Occupations:	**Clerical and Kindred Occupations:**
Accountants and auditors	Attendants and assistants, library
Actors and actresses	Attendants, physician's and dentist's office
Airplane pilots and navigators	Baggagemen, transportation
Architects	Bank tellers
Artists and art teachers	Bookkeepers
Athletes	Cashiers
Authors	Collectors, bill and account
Chemists	Dispatchers and starters, vehicle
Chiropractors	Express messengers and railway mail clerks
Clergymen	Mail carriers
College presidents and deans	Messengers and office boys
Professors and instructors	Office machine operators
Dancers and dancing teachers	Shipping and receiving clerks
Dentists	Stenographers, typists, and secretaries
Designers	Telegraph messengers
Dietitians and nutritionists	Telegraph operators
Editors and reporters	Telephone operators
Engineers, aeronautical	Ticket, station, and express agents
Engineers, chemical	Clerical and kindred workers (n.e.c.)
Engineers, civil	
Engineers, electrical	**Service Worker Occupations:**
Engineers, industrial	Attendants, hospital and other institution
Engineers, mechanical	Attendants, professional and personal service (n.e.c.)
Engineers, metallurgical, metallurgists	Attendants, recreation and amusement
Engineers, mining	Barbers, beauticians, and manicurists
Entertainers (n.e.c.)	Bartenders
Foresters and conservationists	Bootblacks
Funeral directors and embalmers	Boarding and lodging house keepers
Lawyers and judges	Charwomen and cleaners
Librarians	Cooks, except private household
Musicians and music teachers	Counter and fountain workers
Nurses, professional	Elevator operators
Agricultural scientists	Firemen, fire protection
Biological scientists	Guards, watchmen, and doorkeepers
Geologists and geophysicists	Housekeepers and stewards, except private household
Mathematicians	
Physicists	Janitors and sextons

Optometrists Osteopaths Personnel and labor relations workers Pharmacists Photographers Physicians and surgeons Radio operators Recreation and group workers Religious workers Social and welfare workers Economists Psychologists Statisticians and actuaries Miscellaneous social scientists Sports instructors and officials Surveyors Teachers (n.e.c.) Technicians, medical and dental Technicians, testing Technicians (n.e.c.) Therapists and healers (n.e.c.) Veterinarians	Marshals and constables Midwives Policemen and detectives Porters Practical nurses Sheriffs and bailiffs Ushers, recreation and amusement Waiters and waitresses Watchmen (crossing) and bridge tenders Service workers, except private household (n.e.c.)

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