THE ECONOMIC DISADVANTAGES OF ASIAN IMMIGRANTS: CREDENTIALISM OR DISPARITIES IN HUMAN CAPITAL?

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ABSTRACT

This dissertation examines whether a degree earned abroad is less valuable for Asian immigrants in the U.S. labor market than for White immigrants, and, if so, the reasons for such disparities. Many studies have documented the existence of a foreign education penalty. However, the underlying mechanisms for the lower returns to foreign education are still being determined. Building on the demographic heterogeneity framework, this study aims to advance our understanding of immigrants' experience in the labor market by investigating whether the lower earnings returns for Asian immigrants with foreign education stem from lower educational quality/transferability, as suggested by the human capital approach, or from biased practices in the labor market, as proposed by credentialism. Methodologically, this study will compare the earnings outcomes of Asian immigrants to those of U.S. born Whites as well as foreign-educated white immigrants.

Using ACS data from 2015-2019 on White and Asian workers aged 25-64 with bachelor's degrees or higher, I analyze the impact of STEM majors and the English-speaking proficiency of the sending country to explore the effect of human capital transferability. Then, I examine the effect of a country's GDP per capita and the rates of tertiary education to capture the effect of educational quality. To access credentialism, I compare the earnings differences for Asian immigrants who earn degrees in regions more culturally or historically similar to the U.S. to those degrees earned in other regions. Then, I examine the residual earnings difference between foreign-educated White and Asian immigrants to access queuing theory. Finally, I separate the study population into subsamples of men and women to investigate whether Asian immigrants' labor market disadvantages are contingent on gender.

Chapter 2 to 5 can be read as a stand-alone study that uses nationally representative survey data to study the aspects listed above. Results from these analyses show that the earnings disadvantage of Asian immigrants educated in foreign countries is largely due to the limited transferability of their human capital in the U.S. labor market rather than to credentialism. Returns to foreign education are higher for immigrants with STEM degrees or from countries where English is an official language. In addition to the human capital transferability, this study also shows that White immigrants seem to have an advantage over Asian immigrants if they were educated in places with longer linguistic and cultural differences compared to the United States. In addition, my findings support the explanation that female immigrants' varied family experiences and migration paths are different from their male counterparts, thus leading to their notable disadvantages in the labor markets. The results indicate establishing clear and transparent processes for recognizing foreign academic and professional credentials is a critical way to alleviate the lower returns to Asian immigrants' foreign credentials.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure Page

CHAPTER 1

INTRODUCTION, LITERATURE REVIEW, RESEARCH DESIGN AND HYPOTHESES

Introduction

During the past decades, the population of the United States has become increasingly racially and ethnically diverse, with the Asian population being one of the fastest-growing minority groups. By the year 2020, the Asian population reached an estimated 20.6 million, or 6.2 percent of the total population (U.S. Census Bureau 2020). Asian Americans are often characterized by the mainstream media as a high-achieving, well-adjusted model minority. Compared to other minority groups, Asian Americans enjoy a relatively high socioeconomic standing in the United States (Zeng and Xie 2004). They usually attain high levels of education, work in professional occupations, and earn relatively high wages. However, a simple summary of Asian Americans' socioeconomic success masks important variations within this community. Asian Americans are not a homogeneous group. They are stratified by economic class, place of origin, generation, and even the date of entry into the United States. While some members of this group enjoy a relatively high socioeconomic status, many still live below the poverty line. Meanwhile, there are also relatively higher proportions of individuals with no education.

Two theoretical frameworks have attempted to uncover the underlying causes of stratification between Asian Americans and whites. According to the racialized hierarchy framework, discrimination against Asian Americans is deemed one major factor in explaining different economic outcomes among this group (Hirschman and Wong 1984;Tang 1993; Kim and Sakamoto 2010). Research of this kind generally argued that

the existence of artificial barriers and unfair treatment leads to their worse economic outcomes. For instance, researchers found that there are differences in career achievements between whites and Asians (Hirschman and Wong 1984; Tang 1993; GF. De Jong, and Madamba 2002; Lee 2002). Specifically, Asian Americans were found to be disadvantaged in gaining access to jobs for which they are educationally qualified (Hirschman and Wong 1984; Kim and Sakamoto 2010), and are less likely to be promoted to managerial positions (Tang 1993). In addition, with increasing racial and ethnic equality in recent decades, studies still reported that Asian Americans suffered from earnings disadvantages (Kim and Sakamoto 2010), and researchers concluded that discrimination might be the reason (Kim and Sakamoto 2010).

On the other hand, based on the demographic heterogeneity framework, more recent studies have argued that Asian Americans' economic disadvantage is rooted in immigration, rather than race. Studies showed that U.S.-born Asian Americans have acquired similar or even better earnings outcomes than whites, and it is only Asian immigrants that suffer from earning disadvantages. Studies try to discover why immigrants receive lower earnings than their U.S. born counterparts (Gordon and Anna 2002; Mattoo, Neagu, and Özden 2008; Lancee and Bol 2017b). The central question is why foreign birth is associated with economic disadvantage. To uncover the underlying causes, researchers expand the existing human capital framework by incorporating the idea of the source of human capital into the analysis. This concept is important since it indicates human capital is imperfectly transferable. Under this framework, the value of foreign education is commonly deemed lower than the value of domestic education (Friedberg 2000; Reitz 2001; Zeng and Xie 2004). As a result, the lower value associated with a foreign education

leads to immigrants' economic disadvantages in the U.S. labor market. Once the source of human capital is included, economic differences by race and nativity are found to decline.

Many studies have demonstrated the existence of a foreign education penalty. However, it is still being determined why the returns to foreign education are lower. In this study, I attempt to further our understanding of immigrants' labor market experience by investigating the mechanisms underlying the lower returns to foreign credentials. I take another step in this literature by considering whether Asian immigrants who earn degrees abroad differ from not only U.S.-born Whites but also White immigrants who earn degrees abroad. I aim to explore if a foreign education is less valuable for Asian immigrants in the U.S. labor market than for White immigrants, and, if so, the reasons for such disparities.

In my dissertation, I draw from two prominent theoretical approaches in the literature to explain why the degrees of Asian immigrants may be rewarded less in the U.S. labor market: human capital theory and credentialism. Human capital theory suggests that degrees from particular regions might be less valued in the U.S. labor market because they are either of lower quality or because the skills learned in these places are less transferable to the U.S. labor market. Credentialism suggests that degrees earned abroad in a particular region may be afforded less status than those earned in the U.S., regardless of the human capital that is gained from them. It is unclear whether the lower return to a foreign education is due to the lower quality/transferability of foreign education as the human capital approach implies, or is due to the 'unfair' treatment in the labor market, as credentialism entails (Lancee and Bol 2017; Fellini et al. 2018).

I assess human capital theory by asking: 1) whether the lower return to a foreign education is because foreign-educated immigrants' pre-migration human capital is of

poorer quality or 2) is because education and training acquired in the origin country are less than perfectly transferable across national boundaries.

Next, to account for credentialism, I investigate whether Asian immigrants who earn degrees in regions more culturally or historically similar to the U.S., like Canada, Australia, and the English-speaking countries in Europe, have earnings returns that are more comparable to those of White immigrants. It is possible that even when home country credentials are of similar quality to those from the U.S., foreign credentials are discounted by employers either by maintaining barriers to recognizing them, or by disregarding their value outright (Tesfai 2017).

Then, I look for evidence of discrimination in the labor market. I examine: do Asian immigrants who earn degrees abroad experience more severe earnings disadvantages than White immigrants who earn degrees abroad, even after accounting for the characteristics of a foreign education. Among individuals who were educated abroad, U.S.-born employers may prefer White immigrants whom they may perceive to be more similar to themselves or perceive to have higher status. Thus, Asian immigrants educated abroad are less likely to be hired or promoted.

Finally, I explore whether Asian immigrants' labor market disadvantage is contingent on gender. Previous studies generally showed that the female immigrant population was the most disadvantaged group. Researchers speculate that female immigrants' varied family experiences and migration paths contribute to their notable disadvantages in the U.S. labor market (Lopez-Gonzalez et al., 2005).

The analysis of Asian Americans' economic disadvantages is both timely and necessary. Even though Asian Americans have been the fastest-growing racial minority in

the United States during the last two decades, there is still a lack of understanding of the mechanisms that lead to their economic outcomes due to their relatively smaller population size and shorter immigration history.

Literature Review

In recent decades, Asian Americans have made great strides in closing the socioeconomic gap between themselves and whites. The significant socioeconomic gains Asian Americans made have greatly changed the perceptions of them in U.S. society, and this community is characterized by the mainstream media as a high-achieving, well-adjusted model minority. However, many scholars have challenged the model minority stereotype, and argued that Asian Americans have not achieved real socioeconomic equality with whites. A large portion of them still suffer from economic disadvantages (Lee and Edmonston 1994). For instance, some researchers argued that there is a higher rate of job/education mismatch for Asian Americans (Hirschman and Wong 1984; Kim and Sakamoto 2010). And the general underemployment rate for them is also higher than whites.

Based on extensive debates about the model minority stereotype, two theoretical perspectives further explore why a portion of Asian Americans suffers from economic disadvantage.

The Racialized Hierarchy Framework

It is well established that Asian Americans are more academically successful than other racial groups. However, not all group members can equally convert their educational achievements into other markers of success. Two important theoretical frameworks are used to explain the disparities in economic performance between Asian Americans and

whites within levels of education. The racialized hierarchy perspective argues that the existence of artificial barriers and unfair treatment of Asian Americans is a major factor contributing to their economic disadvantages (Zeng and Xie 2004; Kim and Sakamoto 2010).

Asians have experienced a long history of discrimination within the United States. Woo (1999) has provided a comprehensive discussion of how cultural stereotypes and institutional barriers have operated to constrain occupational choices for Asian Americans. As a group, early Asian immigrants were excluded from many human rights including citizenship, marriage, suffrage and land ownership (Kaduvettoor-Davidson and Inman 2013). In order to survive, Asian Americans concentrated in certain "niches" in the economy (Woo 1999). They either held jobs that whites did not want, or created ethnic economies in segregated neighborhoods.

Although explicit racial prejudice has diminished over time, a sizeable group of Americans still voice negative sentiments about Asian Americans (Gee et al. 2007). Today Asian Americans continue to be the subject of hate crimes: they are still often seen as perpetually foreign with their loyalties constantly in question (Louie 2004). More recent studies reported that Asian Americans experience hate crimes, racial profiling by police, and employment discrimination (Gee et al. 2007).

Ethnic stratification in the labor market has also been well documented in the studies of Asian Americans. Researchers generally find that Asian Americans face a systematic earnings disadvantage due to racial discrimination in the labor market, and thus have not attained occupational and earnings equality with whites (Duleep, Harriet, and Seth Sanders,1992; Tang 1993; Woo 1999; Lien 2004; Kaduvettoor-Davidson and Inman 2013).

Evidence shows that Asian Americans, including U.S. born and immigrants, are more likely than whites to face a glass ceiling in the course of their careers (Tang 1993; Woo 1999; Lien 2004; Kaduvettoor-Davidson and Inman 2013). They are channeled into lines of work that have lower returns in terms of long-term career mobility (Woo 1999), and are underrepresented in managerial position (Tang 1993; Lien 2004).

Moreover, evidence has shown that there is a higher rate of job/education mismatch for Asian Americans. Hirschman and Wong (1984) argued if Asian Americans were treated the same way as whites, their educational credentials should lead to occupational and earnings levels substantially higher than those of the majority population. In addition, with increasing racial and ethnic equality in recent decades, researchers still report Asian Americans suffer from job/education mismatch. Using the 2003 National Survey of College Graduates, Kim and Sakamoto (2010) confirmed the importance of Hirschman and Wong's (1984) over-education view. Their results showed that Asian American men (including U.S. born Asians) continue to overachieve in educational attainments, and most of them lag at least slightly behind white men in terms of full equality in the labor market. In sum, the racialized hierarchy perspective emphasizes endemic discrimination against minorities. A review of previous research generally shows the existence of economic and employment disadvantages experienced by Asian Americans as a racial minority in a variety of settings.

One limitation of previous work on Asian Americans' economic disadvantages is that, often, Asian immigrants and their U.S. born counterparts are treated the same way without further differentiation. A large number of studies compared the economic outcomes of immigrants and U.S born whites directly to demonstrate the ethnic

stratification in the labor market (Duleep and Regets 1997; Espenshade, Usdansky, and Chung, 2001; Kaushal 2011). Different from U.S. born Asian Americans, Asian immigrants are unique because race and immigrant status work in concert to influence their social experiences in the U.S. (Stewart and Dixon 2010). Gordon F. and Madamba B. (2002) argued that individuals who are both minority and immigrants are at a "double disadvantage". On the one hand, they have to face race-based discrimination in the labor market. On the other hand, they need to overcome many difficulties associated with their immigration status. The intersection of race and immigrant status forms a unique social space where minority group members and immigrants are denied the privileges that are routinely accorded to native-born, non-Hispanic whites (Stewart and Dixon 2010). While documenting earnings differentials between Asian Americans and the majority population is insightful, such analysis potentially conflates the race effect with that of being an immigrant.

Demographic Heterogeneity Framework

Different from the racialized hierarchy perspective, the demographic heterogeneity perspective argues Asian Americans' economic disadvantage is rooted in immigration experiences, not necessarily race. It attributes Asian Americans' economic disadvantages to their heterogeneous demographic characteristics and corresponding divergent human capital (Kim and Sakamoto, 2010). Researchers claim that it is variability in immigrant background and human capital resources that affect individuals' labor market competitiveness (Kim and Sakamoto, 2010). Many studies, in fact most recent ones, find that native-born Asian Americans have similar or better earnings outcomes than whites do after controlling year of education (Zeng and Xie 2004).

Specifically, the demographic heterogeneity perspective disaggregates the Asian American population by uncovering differences in immigration status and immigration related human capital. Immigration plays an important role in the stratification process of Asian American communities. Today, Asian Americans as a group are comprised of a large proportion of recent immigrants who gained entry after the 1965 Immigration Act (Min 2006). Recent arrivals have shifted Asian Americans from a native-born to a predominantly foreign-born population (Min 2006). By differentiating Asian Americans by immigration status and immigration related human capital, researchers manage to separate the effect of race from the effect of immigration.

Research generally finds that native-born Asian Americans do not experience a substantial net racial penalty in the labor market (Zeng and Xie 2004; Kim and Sakamoto, 2010). They have wages that are comparable to whites per year of education. On the contrary, Asian immigrants are more likely than their U.S. born counterparts and whites to face job mismatch, unemployment and lower earnings (GF. De Jong and Madamba 2002; Carliner 1996; Reitz 2001). When examining the mechanisms of such disadvantage, previous research has attributed this to their lower human capital because a portion of immigrants completed their education in their home countries before immigration (Tong 2010).

In sum, the demographic heterogeneity perspective adopts human capital theory to study the economic outcomes of various immigrant groups, their native-born counterparts and U.S. born whites. By differentiating Asian Americans by immigration status and immigration related human capital, studies of this approach argue that the economic disadvantage of Asian Americans is not rooted in race, but rather in their heterogeneous

demographic characteristics and corresponding divergent human capital. Studies generally find that Asian immigrants, more than their U.S. born counterparts, face economic disadvantages in U.S. labor market since the value of their human capital is deemed lower.

Human Capital Theory

Human capital theory is considered as one of the most influential economic approaches to explain differences in individual earnings (Buzdugan and Halli, 2009). The theory's central assumption is that individual skills determine labor market outcomes (Becker 1964; Lancee and Bol 2017b). Both individuals and society derive economic benefits from investments in people (Sweetland 1996). The theory extends Marxian tradition in treating labor as a means of production (Bowles and Gintis 1975). It rejects the simplistic assumption of homogeneous labor, centers attention on the differentiation of the labor force, and brings basic social institutions into the realm of economic analysis (Bowles and Gintis 1975).

Among various types of human capital investments such as on-the-job skills training, health care and migration, education emerges as the most important human capital investment (Becker 1964). Human capital analysis assumes that schooling will increase earnings and productivity primarily by providing knowledge, skills, and a way of analyzing problems, and therefore increases the market value of an individual's labor (Arrow 1973; Frazis 2002). Quantity of education is an important measure of human capital, which is commonly captured by years of education people accomplished. It is well established that the earnings of more educated people are almost always higher than people with less education. Education can benefit individuals in various ways: it can improve individual's health and nutrition, increase overall quality of life, provide the means to an enlightened

citizenry, and help to promote values such as equality, fraternity, and liberty at both private and social levels (Sweetland 1996). Even though numerous benefits can be derived from education, these qualitative benefits are difficult to measure quantitatively. In empirical studies, economic returns are widely adopted for measuring the benefits of investment in education (Woodhall 1987).

A growing body of studies incorporate human capital theory in explaining why Asian immigrants, rather than their U.S. born counterparts, experience economic disadvantages. Under this framework, immigrants' pre-migration human capital is either poorer or less useful, and thus is considered less valuable and productive than that acquired in the receiving country (Ferrer and Riddell 2008; Fellini et al. 2018). For instance, studies claimed that the quality of education in many immigrants' home countries is generally deemed lower than that in the United States (Zeng and Xie 2004; Hardoy and Schøne 2014). The lower educational quality received in their home countries contributes to their worse economic returns in the labor market. Moreover, the educational quality of those coming from developing countries is considered inferior compared to those from developed countries (Hardoy and Schøne 2014). In addition, some researchers attribute immigrants' lower human capital "quality" to changes in the immigration policy (Buzdugan and Halli 2009). They argue that the increasing quotas of family and refugee sponsored immigrants lead to the decrease in human capital (Coulson and Devoretz 1993; Buzdugan and Halli 2009). For instance, in Canada, the 1978 *Immigration Act* eased entry requirements for the family reunification class and restricted the total flow of skilled immigrants. The growth in the family reunification class precluded an education or human capital assessment criterion. As a result, the changing size and composition of immigrant flows led to a decline

in the value of immigrants' human capital which is measured as the marginal costs of obtaining an equivalent level of training in the destination country (Coulson and Devoretz 1993).

Human Capital Transferability

However, the question remains: do all immigrants including those from Asia fail to equally convert their educational achievements into other markers of success? In order to answer this question, researchers expanded human capital theory by incorporating one important concept, that is, the source of individuals' human capital.

The source of human capital is commonly measured by the place individuals received their education (Zeng and Xie 2004). Place of education is important since immigrants have been recruited to meet labor demands of receiving countries through two pathways (Woo 2000). First, they can be recruited as foreign trained professionals who directly enter the occupational pipeline shortly after arrival. Second, they can be recruited as domestic-trained students who later seek jobs in the host country upon their graduation. Based on these differences, immigrants can be further classified into two groups: domestic educated immigrants and foreign educated immigrants.

Studies have showed that place of education is the most significant factor determining the gap in the standard human-capital-corrected earnings of immigrants and natives worldwide (Pendakur 2000; Friedberg 2000; Zeng and Xie 2004; Kanas and van Tubergen 2009; Kim and Sakamoto 2010; Arbeit and Warren 2013; Fellini et al. 2018). Once place of education is included in the analyses, the earnings disadvantage attributed to nativity or ethnicity differences declines. In other words, the value attributed to education not only depends on the level of education, but also on the place of education

(Buzdugan and Halli 2009). For instance, using the census data in Israel, Friedberg (2000) found that education achieved outside Israel is compensated at a significantly lower rate than education obtained in the home country. In Netherlands, Kanas and van Tubergen (2009) found that immigrants who have obtained their education in the Netherlands have higher odds of being employed than immigrants who have obtained similar education abroad.

In more recent studies in the United States, researchers also found evidence that the source of education matters (Bratsberg and Fagan 2002; Kanas and van Tubergen 2009; Tong 2010; Arbeit and Warren 2013). Arbeit and Warren (2013) showed that the wage penalty associated with holding a foreign degree was about 17 percent for women and about 11 percent for men. Additionally, they found that compared to their American-educated peers, immigrants with foreign degrees are less likely to be working in fields related to their degrees. Tong (2010) also showed that within the group of non-U.S. college-educated immigrant scientists and engineers, those who received their college education in the United States have higher earnings than those who did not. Similarly, Kanas and van Tubergen (2009) also confirmed that returns to years of non-U.S. education are higher for immigrants who complete their schooling in the United States. Based on these findings, researchers argue that attending college and/or pre-college in the host country plays a substantial role in closing the earnings gap between immigrants and non-immigrants (Kanas and van Tubergen 2009; Tong 2010). For many immigrants, participation in the host country educational system is the way they become exposed to their host society (Duvander 2001). Host country schooling can provide the acquisition of formal and informal skills that are in demand among receiving country employers (Duvander 2001).

And most importantly, the higher quality of education that immigrants acquired in the receiving country is the main reason for the strong positive outcomes of host-country schooling (Kanas and van Tubergen 2009; Arbeit and Warren 2013).

In sum, research indicates the source of human capital helps to explain the economic disadvantage among the Asian American population. The value attributed to foreign education is generally deemed lower than the value attributed to domestic education. A host country education can improve immigrants' career opportunities and close the earning gaps between immigrants and natives. Access to host country education can help the integration of new immigrants facing economic challenges. These findings have broad implications for immigrant settlement policies in major immigrant destinations (Kaida 2013). Until now, education and training is not an integral part of settlement policies in the United States.

Language of Education. A foreign education is generally associated with a lower value and a lower economic return. Researchers attribute this to the limited transferability of human capital (Chiswick 1978; Bratsberg and Terrell, 2002; Ferrer and Riddell, 2008; Kahn 2004). Human capital is imperfectly portable. Education and training acquired in the origin country may contain large elements of region specific skills that are less than perfectly transferable across national boundaries. The region specific component may be especially large when cultural and social distances are long (Hardoy and Schøne 2014). The source countries that dominated recent immigration, such as China, may be more culturally distinct from the United States than source countries, such as Britain, that dominated earlier immigrant waves (Duleep and Regets 1997).

Researcher further explores whether the labor market penalties associated with holding a foreign education/degree depend on the specific country or region in which it was earned. A growing body of research has shown that the national origin of an individual's human capital is a crucial determinant of its value (Akresh, 2007; Friedberg, 2000; Zheng and Xie, 2004; Lancee and Bol 2017). The results repeatedly show that immigrants from different countries may be welcomed to different degrees in the labor market. Generally, immigrants educated in lesser developed, non-Western or non-English speaking countries are associated with a larger wage disadvantage than natives and immigrants from Western countries. This has been demonstrated for Israel (Friedberg 2000), Canada (Ferrer and Riddell 2008; Buzdugan and Halli 2009), European countries (Andersson and Guo 2009; Lancee and Bol 2017) and the United States (Zheng and Xie, 2004; Akresh 2006; Arbeit and Warren 2013). For instance, in the United States, foreign degrees are worth less to immigrants than U.S. degrees, except for degrees earned in Canada, the U.K. and Ireland (Arbeit and Warren 2013). In Canada, immigrants coming from developing countries experience the most acute devaluation (Buzdugan and Halli 2009). Only those coming from the U.S. and U.K. receive similar returns to both dimensions of education (Ferrer and Riddell 2008).

One of the most important country-specific skills is language. Generally, researchers study the effect of language from two aspects: the language of the country of origin and the destination language proficiency. These two aspects both play important roles in labor market assimilation for immigrants (Durvander 2001; Tong 2010). On the one hand, the language of the country of origin is closely related to national origin of an individual's human capital (Duleep and Regets 1997; Friedberg 2000; Durvander 2001;

Bleakley and Chin 2009; Kaida 2013). In the United States, there is an increasing immigration from Asia and Latin America. Compared to the language of countries that dominated earlier waves of immigration, there is a greater "linguistic distance" between English and the languages of today's dominant source countries (Duleep and Regets 1997). In empirical studies, as one important aspect of pre-migration human capital, individuals' native language is commonly used as a proxy for skill transferability (Akresh 2007). Studies consistently find returns to foreign education are higher for immigrants from countries in which English is an official language (Chapman and Iredale 1993; Bleakley and Chin 2009; Tong 2010). On the other hand, immigrants' host-country language ability helps them integrate economically into their new destination countries. The importance of host-country language ability for immigrants' earnings has been shown for the United States (Bleakley and Chin 2004; Tong 2010), Canada (Chiswick and Miller 2003), Australia (Chapman and Iredale 1993), and Israel (Chiswick 1993). Most research has shown that there is a positive relationship between host-country language ability and earnings (Chiswick and Miller 2003). For instance, in Canada and the United States, studies showed English proficiency raises wages, narrowing the wage gap between immigrants and U.S. natives (Bleakley and Chin 2009). Failing to speak English imposes a real cost on some immigrants, both by reducing observed earnings and by altering occupational opportunities (Kossoudji 1988). Chiswick and Miller (2003) explained that greater proficiency in a country's official language can enhance the effects on earnings from two aspects: the direct effect of greater proficiency and an indirect effect through the larger returns from schooling and pre-immigration experience. On the one hand, the direct effect of language includes a more efficient job search and communication with supervisors,

subordinates and etc. On the other hand, greater language skills are found to be positively associated with enrolling in formal schooling and vocational training (Akresh 2007). All of these enable immigrants to boost productivity and thus enhance earnings. The indirect effect of language advantage enables individuals to gain more productivity-enhancing skills from other forms of human capital, such as a given year of formal instruction or work experience (Friedberg 2000; Chiswick and Miller 2003). And researchers further find that the indirect effect of language especially benefits highly educated arrivals (Kaida 2013). Compared to poorly educated recent immigrants, it is much easier for highly educated immigrants to transform their pre-migration education to other forms of human capital. In addition, language skills can help immigrants to socially integrate into the society (Bleakley and Chin 2004; 2009). In the United States, English proficiency raises the probabilities of marrying a U.S. native, having a more educated and higher-earning spouse and, for some groups, living outside of ethnic enclaves (Bleakley and Chin 2009).

In sum, as one of the most important country-specific skills, language is closely related to national origin of an individual's human capital (Duleep and Regets 1997; Friedberg 2000; Durvander 2001; Bleakley and Chin 2009; Kaida 2013). Greater destination language proficiency helps immigrants integrate economically into the host countries.

STEM Fields. Field of study is an important dimensions of educational attainment. Some researchers even argued that major choices might be more important than education level in accessing certain types of jobs (Daymont and Andrisani 1984; Thomas and Zhang 2005; Morgan 2008; Kim, Tamborini, & Sakamoto 2015). Based on divergent philosophical differences around the purpose and value of a college education, university

curricula is divided into STEM fields and non-STEM fields: STEM fields and non-STEM fields. Generally, a STEM field of study involves research, innovation, or development of new technologies using engineering, mathematics, computer science, or natural sciences. The selection of STEM fields follows the U.S. Department of Homeland Security (DHS) STEM Designated Degree Program List.[1]The STEM fields generally reinforce advantages in nonlanguage intensive skills including math & science skills, problem-solving, analytical skills and etc. (Rangel and Shi 2019).

Previous literature indicates STEM fields are more universalistic than non-STEM education, in the sense that individuals' education may be evaluated more objectively. On the contrary, fields such as politics are more likely to be context and culture specific and require strong English skills. Researchers contend that the skills imparted by, for instance, liberal arts courses are quite obscure and are hard to measure, compared to courses in areas such as sciences and professional schools which are commonly believed to impart real skills valued in the market (Arrow 1973). In addition, previous literature showed that different fields of study are associate with divergent career outcome potentials (Xie and Goyette 2003). Graduates in engineering, business, and math are found to earn higher annual salaries while students in humanities tend to have lower earning potential.

Researchers that explore differences in Asian American and White students' choices of fields have posited that degrees in the STEM fields have standards that are more objectively measurable, so perhaps more desirable to recent immigrants and those without mainstream social networks (Xie and Goyette 2003). These fields may rely less on

[1] The STEM Designated Degree Program list is a complete list of fields of study that DHS considers to be science, technology, engineering or mathematics (STEM) fields of study for purposes of the 24-month STEM optional practical training extension described at 8 CFR 214.2(f).
Details can be found at: https://www.ice.gov/sites/default/files/documents/Document/2016/stem-list.pdf

particular cultural norms and national or local policies. These fields may also be more accessible to those who do not speak English, as the "language" of many sciences and math may be used more universally. STEM fields may translate more directly to careers because the standards are clearer than those used in other fields (Goyette and Mullen 2006). Foreign degrees earned in fields that rely on "hard skills" that can be more easily assessed and measured may be more transferable to appropriate careers in the U.S. Degrees in science, technology, engineering, and math (STEM) may lead more easily to careers because the skills learned across countries are similar. It may also be that occupations in these categories are favored by immigration policies that privilege particular occupations with skills deemed necessary for the U.S. labor market.

For these reasons, I suggest that degrees in the STEM fields may provide human capital that is more transferable across national boundaries. Employers in the U.S. may more readily recognize the skills these degrees provide and so may reward them similarly to those who achieved STEM degrees in the U.S.

The Quality of Human Capital

Researchers try to find out why immigrants educated in lesser developed and non-Western countries experience heavy wage penalties. In addition to larger cultural and social distances, the lower skills transferability among economically developing countries could also be attributed to the differences in their industrial structures and in the types of skills that are rewarded in their labor markets (Mincer and Ofek, 1982; Borjas, 1992b). Thus, knowledge and skills acquired in school may be hard to translate into greater productivity in the receiving countries.

Besides, some researchers have argued that different foreign human capital transfer patterns reflect differences in human capital quality across continents of origin (Friedberg 2000; Bleakley and Chin 2009; Aly and Ragan 2010; Hardoy and Schøne 2014). Immigrants educated in non-Western countries face wage penalties because skills and education acquired in these countries are inferior. In empirical studies, countries' economic development, as measured by GDP per capita, and pupil/teacher ratios are widely used as proxies for the quality of education received abroad (Bleakley and Chin 2009; Aly and Ragan 2010). Bleakley and Chin (2009) found that returns to schooling depend significantly on economic development. A $1,000 increase in per capita GDP raised the earnings of men without a U.S. education by 2.3 percent. Similarly, Aly and Ragan (2010) confirmed that economic returns to education are related to economic development in the source country and to pupil/teacher ratios by using U.S. census data. Their result showed a higher per capital GDP and a lower pupil/teacher ratio are both associated with higher returns to education for Arab immigrants with more than 12 years of schooling.

Moreover, researchers have adopted the human capital perspective to explain the decline in the education-adjusted entry earnings of immigrants in the United States (Duleep and Regets 1997). Compared to earlier immigration, recent immigrants come predominantly from Asian and Hispanic countries. Researchers assumed that the lower quality of human capital of recent immigrants contributes to the decline in their entry earnings.

However, some researchers refute this explanatory framework. Rather, they argue that skills and education acquired in countries with lower levels of economic development are not necessarily inferior to those acquired in schools in developed countries. For

instance, after comparing students' mathematical skills internationally, Rivera-Batiz (1996) argued that the skills and education acquired in less economically developed countries are not inferior to those taught in the United States, and are in some cases superior. Duleep and Regets (1997) also claimed that recent immigrants from Asian and Latino countries do not necessarily have lower abilities since their low entry earnings are associated with high earnings growth. There may be some other factors at work.

Credential Theory: Disadvantage of a Foreign Education

Besides the lower quality of immigrants' pre-migration human capital, credentialing theory is also used to explain the lower value of a foreign education. Credential theory argues that the value of education depends less on specific content and more on having acquired a formal credential (Walters 2004). Under this logic, better-educated individuals are assumed to perform better in the labor market not necessarily because they are more skilled or productive, but simply because they have more education or acquire certain certifications (Walters 2004; Fellini et al. 2018). In other words, individuals are rewarded for their educational degrees, not for their skills learned in school (Bol and van de Werfhorst 2011; Lancee and Bol 2017;Fellini et al. 2018).

Educational credentials play a role in the job market independent of the intrinsic value of education (Zeng and Xie 2004; Lancee and Bol 2017). Studies highlight the importance of differentiating between years of schooling and educational degree in analyzing the effect of education (Ferrer and Riddell 2008; Anon 2013). Researchers found that an educational degree increases individual's labor market position, and this "diploma effect" or "sheepskin" effect has been generally proved in a large number of economic studies (Frazis 2002; Bol and van de Werfhorst 2011). For instance, using the U.S. Current

Population Survey, Frazis (2002) found there is a non-linear effect of education. Specifically, he found low returns to the interval immediately preceding college graduation, which contrasts to the high return to college graduation.

For foreign educated immigrants, researchers generally find that foreign credentials carry a penalty compared to individuals with domestic education. For instance, Chapman and Iredale (1993) reported that only 42 percent of skilled immigrants who chose to subject their overseas qualifications to local assessment were recognized as being equivalent to their Australian counterparts. In a study of immigrant professionals in Vancouver, Basran and Zong (1998) reported that only 18.8 percent respondents worked as professionals after immigrating to Canada. They discovered that the non-recognition or devaluation of immigrants' foreign credentials is the most important factor for their inability to access professional occupations and resulting downward social mobility. Lancee and Bol (2017) found that both skills and educational degrees acquired in a non-Western country are imperfectly transferable after analyzing data from 11 European countries. They argued that the "net" effect of having a foreign degree should be interpreted as credentialing since individuals' skills are controlled. Andersson and Guo (2009) also found that in Canada and Sweden, many immigrant professionals experienced either 'non-recognition' or 'de-qualifying' recognition of their competence. For instance, the assessment and recognition of foreign nurses' prior learning may only result in recognition as an assistant nurse. As a result, a large number of working immigrants failed to have a job corresponding to their formal qualification. Lack of recognition leads to job mismatch among immigrants, especially for those originating from Africa and Asia. These studies indicate that immigrants' earnings disadvantages may not due to differences in skills, but due to lack of

recognition of their foreign education (Lancee and Bol 2017). Foreign credentials fail to be acceptable, transferable, or recognizable since experiences and credentials acquired in foreign countries are deemed different, deficient and inferior.

Moreover, researchers found that the effect of credentials is more prominent among immigrants than comparable natives (Ferrer and Riddell 2008). In Canada, while immigrants generally experience lower returns to years of schooling, they normally receive higher returns to completing educational programs, especially postgraduate degrees (Ferrer and Riddell 2008). Specifically, the gains in immigrant earnings associated with postgraduate degrees are more than double the size of the equivalent estimates for natives. Additionally, Anon (2013) argued that credentials are more important for highly educated immigrants since they are likely to be employed in positions where the quantity or quality of their education matters. Kaida (2013) also showed that for highly educated immigrants, additional host country education can be a viable option to achieve economic advancement in a relatively short period of time. On the contrary, host country education shows no significant effect in the earnings growths of lower educated immigrants and thus fails to lift them out of poverty.

Building on the credential theory, researchers have tried to explain why a foreign education suffers from limited transferability. First, education can be used as a screening device to select employees (IB Tucker III,1985). Screening theories of education suggest that educational signals such as grades and degrees are believed to convey information about individuals' underlying abilities, persistence, and other valuable traits (Bol and van de Werfhorst 2011; Fellini et al. 2018). In the labor market, the information is asymmetrical between employers and employees. And employers use education as a signal to proxy

workers' unobservable expected productivities and performances (Brown 2001). According to this perspective, employers have less information on the quality of foreign education and degrees, and they rely on the "label" of a domestic credential, not the knowledge of an educational degree to select employees (Reitz 2001; Ruzdugan and Halli 2009). As a result, qualified individuals are screened out because a foreign educational degree in a parallel field is not considered to be equal to the domestic degree.

Second, the lack of recognition of foreign credential by professional organizations is another form of foreign credential devaluation (Ruzdugan and Halli 2009). According to labor market shelters theory, educational degrees are formal means to regulate the access to certain occupations (Fellini et al. 2018). Educational prerequisites are demanded for many high socioeconomic status jobs including the licensed trades and professions and semi-professions (Reitz 2001). Employers rely on formal educational qualifications or certifications to determine whether someone is permitted to undertake a task or work in a certain field. For foreign educated individuals, lacking formal recognition in the receiving country either prevents their entry into certain professions or pushes them into secondary labor markets (Ruzdugan and Halli 2009). Recognition of foreign credential is important. In the United States, at least 18 percent of the workforce is affected by occupational licensing, exceeding both minimum wage coverage and membership in unions (Kugler and Sauer 2005).

Discrimination and Queuing

Finally, some researchers closely associated wage disadvantage with having a non-Western education to racial/ethnic differences (Friedberg 2000; Arbeit and Warren 2013). They hypothesized some hosting countries may assign less value to degrees earned in

countries in which most people are not racially/ethnically similar and/or do not speak English. Li (2001) claimed that racial characteristics of holders of credentials cannot be separated from the credentials themselves, since they produce complicated interaction effects. Additionally, Duvander (2001) found that in Sweden, country-specific capital improved labor market positions to some extent but did not go all the way in accounting for the labor market disadvantage of immigrants. He argued the residual may be due to discrimination. Andersson and Guo (2009) also reported that the effect of national origin is stronger in Sweden. They found that even with a Swedish education, a foreign-born citizen is much less likely to have a qualified job compared with native citizens. All these studies hint that different earning patterns may reflect some degree of discrimination against immigrant workers from countries that are more racially distinct.

Asian Americans of various ethnicities in the U.S. have been "racialized" into the pan-ethnic group of "Asian Americans" (Jiménez and Horowitz 2013; Lee and Zhou 2015; Okamoto 2014). Asian Americans recognize that stereotypes—not only of them as a "model minority" but also as "foreign," of "limited English proficiency," and "technically oriented"—inform perceptions of the types of careers that are available and the acceptable ways to achieve them. There is much research that suggests Asian Americans face a "bamboo ceiling;" that is the likelihood of achieving promotions to management positions may be blocked (e.g. Chin 2020; Takei and Sakamoto 2008; Tang 1993). It is possible then that earnings returns, especially those of later-career Asian Americans who may have been passed over for promotions to supervisory positions, are lower than comparable White immigrants, who may be perceived to have better English-speaking ability and knowledge of cultural nuance than Asian American immigrants (whether or not they do), or who may

not be subjective to the stereotyping of Asian Americans as reserved and diffident. Native-born employers may prefer those who have been educated in the U.S. first, but among those who were educated abroad, they may prefer White immigrants whom they may perceive to be more similar to themselves or whom they perceive to have higher status. Thus, Asian immigrants educated abroad are are less likely to be hired or promoted.

In sum, credentialism is distinct from the productivity-adding human capital theory but is not in total contradiction to it (Arrow 1973). In a competitive market, employers prefer to employ and pay higher wages to employees who are more skilled. From the viewpoint of an employer, if an individual's educational credential is certified to be more valuable, it is a good thing since it indicates the higher skills that employees bring to the labor market (Arrow 1973; Frazis, 2002). However, the two theories differ with respect to the mechanisms that result in lower wage returns to foreign degrees (Arbeit and Warren 2013). From the perspective of human capital theory, employers tend to act rationally when evaluating different degree holders. They may have learned over time that foreign postsecondary institutions impart fewer skills and/or less knowledge to degree holders. On the contrary, from the perspective of credentialing theory, employers tend to act irrationally by devaluing what are essentially comparable degrees (Arbeit and Warren 2013).

Gender Differences in the Labor Market

When studying immigrants' earnings disadvantage, researchers should also take gender differences into consideration. Although there is a growing number of studies examining earnings disparities among immigrants, most research has focused on immigrant men. Any discussion of immigrants' labor force outcomes is incomplete if gender differences are ignored. Gender differences are important because immigrant

women are found to be very different from their male peers (Pedraza 1991). For immigrant women, their labor force experiences are quite special since factors of race, gender, and immigration intersect. Not only will they face the "double" disadvantages as other immigrant men do, but also they need to deal with the difficulties of being a woman. On the one hand, compared to men, women receive lower pay and work in a fairly small number of relatively low-paying, predominantly female jobs, including administrative support and service positions (Blau and Kahn 2000, 2006;Tong 2010). On the other hand, women become the most vulnerable group when factors of gender and immigration intersect(Goyette and Xie 1999; Adsera and Chiswick 2004; Tong 2010). A large body of research has consistently shown that compared to their male peers, immigrant women tend to receive lower pay, and have fewer chance to be employed and promoted (Goyette and Xie 1999; Tong 2010). For instance, Goyette and Xie (1999) used the 5 percent PUMS data from the 1990 U.S. Census and the longitudinal 1982-1989 Survey of Natural and Social Scientists and Engineers to systematically study the effect of immigrant status and gender on the labor force participation, earnings, and promotion of immigrant scientists and engineers. Their results showed that foreign-born woman scientists and engineers are less likely to be employed and promoted than both their male counterparts and native-born women. Building on the study of Goyette and Xie, Tong (2010) further investigated the effect of place of education on earnings among immigrant scientists and engineers. Their results showed that women overall are at an earnings disadvantage regardless of their nativity, and the most vulnerable group is immigrant women who do not have a U.S. degree.

Researchers have tried to figure out the special disadvantages experienced by female immigrants. They speculated that their labor force outcomes are influenced by their varied family experiences and migration paths (Lopez-Gonzalez et al., 2005). Female migration is more likely to be secondary to male migration; that is to say, women are more likely to come to the United States as secondary immigrants, joining their husbands (Goyette and Xie 1999; Shan, Pullman, and Zhao 2016).

In sum, all these studies highlight the importance of considering gender differences when studying earnings disadvantages of immigrants. Tong (2010) even argued that gender may play a more salient role in wage disparity than immigrant status. Thus, more research attention should be devoted to the special circumstances experienced by female immigrants. Consideration of gender leads to a fuller understanding of immigrants' labor force outcomes (Goyette and Xie 1999), and prevents us from making erroneous conclusions. In this study, I explore whether Asian immigrants' labor market disadvantages are contingent on gender.

Overall, in this study, I attempt to further our knowledge of the labor market experience of immigrants by investigating the mechanisms underlying the lower returns to foreign credentials. Most research only documents the existence of a foreign education penalty, but it is still unclear why the returns to foreign educations are lower (Chiswick & Miller, 2008; Ferrer & Riddell, 2008; Friedberg, 2000; Arbeit and Warren 2013). For instance, Friedberg (2000) found that education acquired abroad is associated with lower wages, but the author did not further evaluate the underlying mechanism. Frazis (2002) contended that this is because it is empirically difficult to evaluate signaling theory and credentialism. Such knowledge is important because the policy implications for the

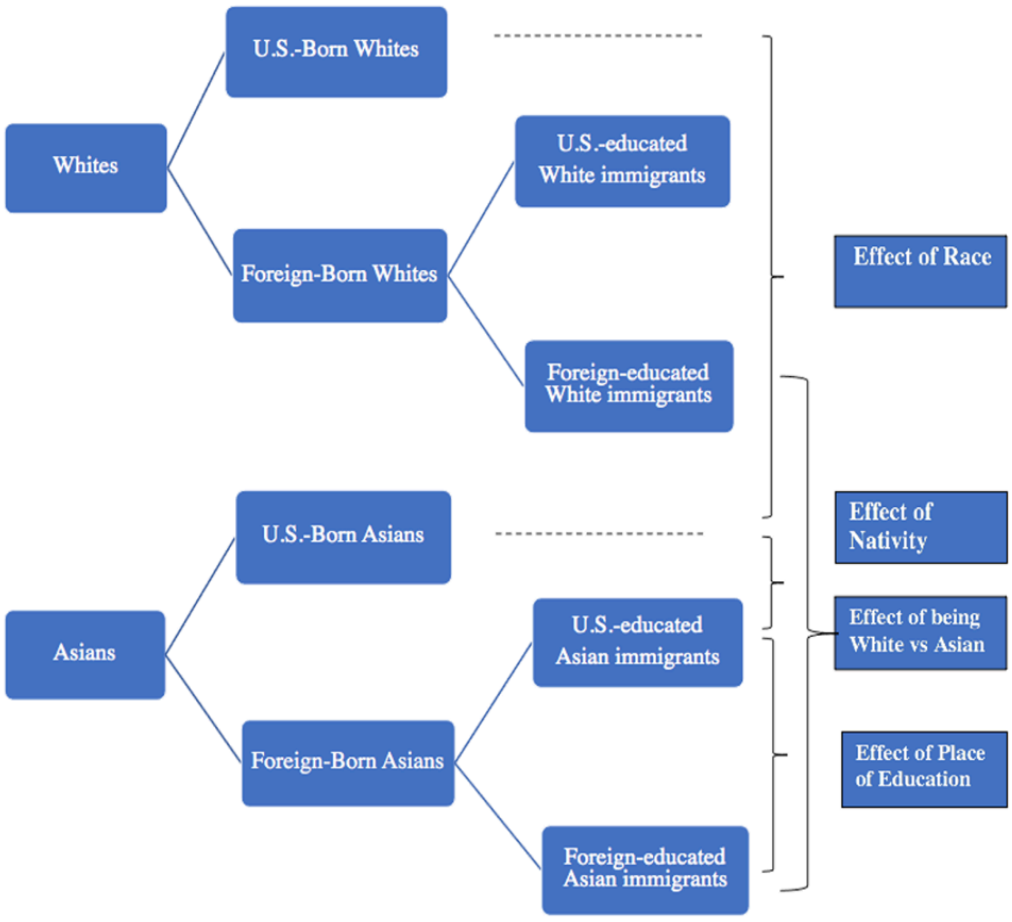
disadvantages due to disparities in human capital are fundamentally different from those rooted in credentialism (Lancee and Bol 2017).

Research Design and Hypotheses

Building on the study of Zeng and Xie (2004), I will disaggregate both whites and Asian Americans by uncovering differences in immigration status and immigration related human capital. I layout a detail analytical plan in Figure 1. Specifically, Asian immigrants and non-U.S. born whites are further classified into U.S. educated and foreign educated individuals based on the place they received their education. Under this research design: the earnings differences between U.S. born Asian Americans and U.S.-born whites are associated with the effect of race; the differences between U.S. educated Asian immigrants and U.S. born/U.S.-educated Asian Americans are associated with the effect of nativity; the differences between foreign educated Asian immigrants and U.S. educated Asian immigrants are associated with the effect of place of education. Additionally, the differences between foreign educated Asian immigrants and foreign educated white immigrants could test whether there is a "double" disadvantage for immigrant minorities. By differentiating Asian Americans and whites by immigration status and immigration related human capital, I can better understand whether the economic disadvantages of Asian Americans are rooted in race or in their heterogeneous demographic characteristics and corresponding divergent human capitals.

While much research has found that education abroad leads to lower earnings returns generally among immigrants and for specific groups of immigrants, little work has compared earnings returns among those immigrants who have earned degrees abroad.

Figure 1-1: Research Design: Disentangling the Effects of Race, Nativity, and Place of Education.



Here we compare the earnings disadvantage for Asian and White immigrant workers who have earned degrees abroad. Based on previous research that finds that non-White groups suffer larger disadvantages, I hypothesize:

(H1) Asian immigrants who earn degrees before immigrating to the U.S. will have lower returns to their education than other groups in the study including their U.S.-educated counterparts, their U.S.-born peers, and White immigrants who earned degrees in the U.S. and abroad.

Then, I draw from two prominent theoretical approaches in the literature to explain why the degrees of Asian immigrants may be rewarded less in the U.S. labor market: human capital theory and credentialism. I assess human capital theory by asking: 1) whether the lower return to a foreign education is because foreign-educated immigrants' pre-migration human capital is of poorer quality or 2) is because education and training acquired in the origin country are less than perfectly transferable across national boundaries.

Researchers posit that the human capital gained in foreign programs can be of lower quality, which is accrued in the native-born workers' countries. This may be particularly true for immigrants who have been educated in less developed countries (El-Araby Aly and Ragan 2010; Friedberg 2000; Hardoy and Schøne 2014). Educational quality is tough to capture, even with access to a range of measures. Educational quality across countries has been proxied by the countries of origin or regions from which immigrants arrive (e.g. Freidberg 2007). In this research, I attempt to capture some aspects of educational quality by including a country's GDP per capita, which has been correlated with educational quality, and by measuring the percentage of young adults in a country enrolled in tertiary education.

(H2) The differences between Asian and White immigrants' earnings returns to a foreign degree will be mediated by education quality.

The transferability across countries of foreign education is another essential explanation for how human capital earned in other countries influences wages. Education and training acquired in the origin country may contain large elements of region-specific skills that are less than perfectly transferable across national boundaries. It is possible that degrees earned abroad may be of similar quality, but due to differences in necessary

qualifications or standards across fields of study, or simply because of differences in language, foreign human capital is hard to transfer to another country. I explore the effect of human capital transferability by examining 1) the effect of college major transferability and 2) language transferability. Specifically, I ask if the earnings gap between Asian and White immigrants and between Asian immigrants and U.S.-born Whites in STEM is smaller than among non-STEM majors. It might suggest that the human capital earned in STEM fields is more transferable to the U.S. I also account for whether the country in which an immigrant presumably earned their degree is English-speaking to gauge the transferability of human capital.

(H3) Asian immigrants who earn STEM degrees abroad will experience a lower earnings' penalty compared to Asian immigrants who earn non-STEM degrees from abroad.

(H4) The gap in earnings between Asian immigrants educated in English-speaking versus non-English-speaking countries will be greater than it is for White immigrants.

Next, to account for credentialism, I ask: are the penalties for Asian immigrants who earn degrees in regions more culturally or historically similar to the U.S., like Canada, Australia, and the English-speaking countries in Europe, lower than they are for degrees earned in other regions? It is possible that when home country credentials are of similar quality to those from the U.S., foreign credentials are discounted by employers either by maintaining barriers to recognizing them or by disregarding their value outright.

(H5) Asian immigrants who earn bachelor's degrees in regions that are more historically or culturally similar to the U.S. (Canada, Australia, and Europe) have earnings returns that are more comparable to White immigrants' returns.

Then, I look for evidence of discrimination in the labor market. It is possible among individuals who were educated abroad, U.S.-born employers may prefer White immigrants whom they may perceive to be more similar to themselves or perceive to have higher status. To access Discrimination and Queuing, I examine:

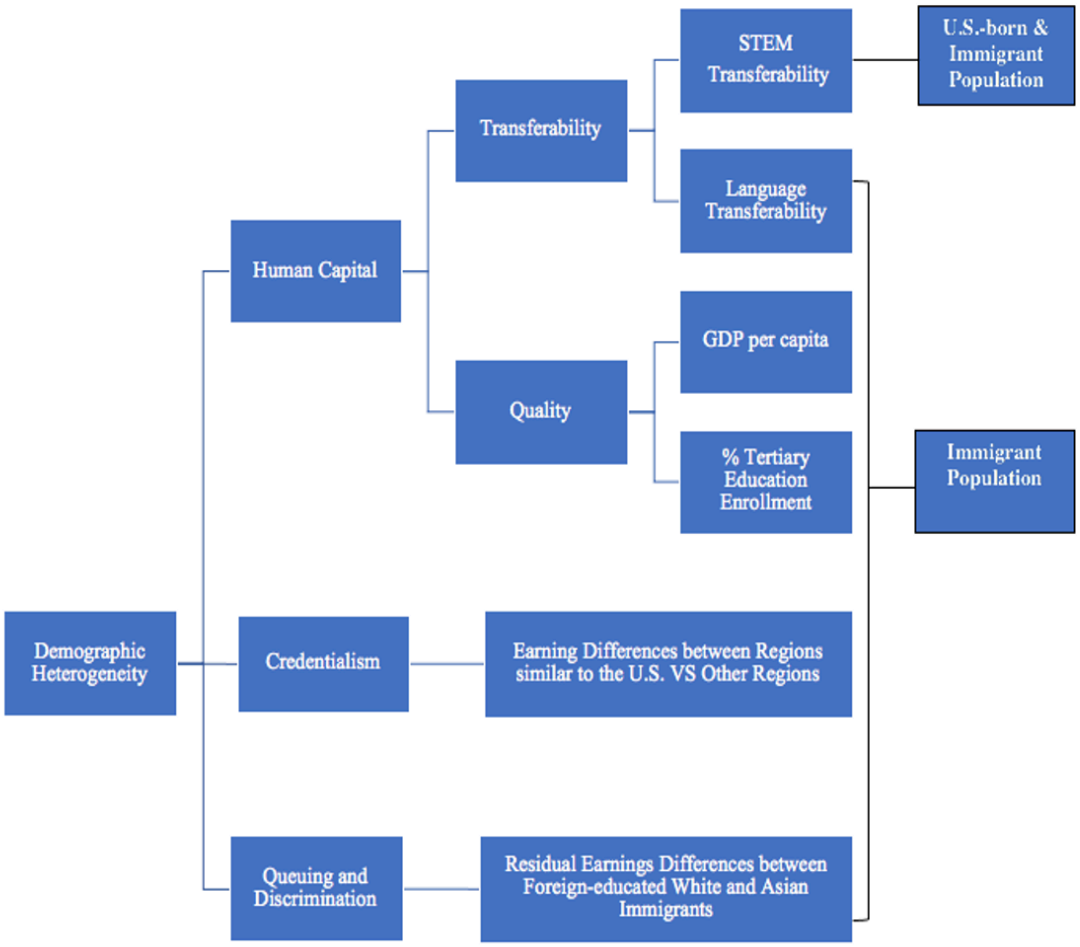
(H6) Even after controlling for the characteristics of a foreign education, Asian immigrants who earn their degrees abroad will experience more earnings disadvantage than White immigrants who earn their degrees abroad.

Finally, I explore whether Asian immigrants' labor market disadvantages are contingent on gender. Previous studies generally show that the female immigrant population is the most disadvantaged group. Researchers speculate that female immigrants' varied family experiences and migration paths contribute to their notable disadvantages in the U.S. labor market (Lopez-Gonzalez et al., 2005).

In sum, I aim to explore whether the lower return to a foreign education is due to the lower quality/transferability of foreign education as the human capital approach implies, or is due to the 'unfair' treatment in the labor market, as credentialism entails.

The data for this dissertation come from the American Community Survey (ACS) for the period 2015 to 2019 accessed through the Integrated Public Use Microdata Series. The ACS is a nationwide survey designed to provide reliable and timely information needed by local communities. Fully implemented in 2005, the ACS is the largest household survey that collects detailed demographic, socioeconomic, and housing information annually for all geographic areas with a population of 65,000 or more.

Figure 1-2: Research Theoretical Framework



Data and Method

The ACS sociodemographic variables mainly include gender, age, ethnicity, nativity status, years lived in the US, US citizenship, education, major choice, occupational classification, earnings, marital/partnership status, and employment status. The data provide a large, rich and varied pool of immigrants to observe. In the ACS, major was measured by the field in which the person received a bachelor's degree. 184 detailed subfields are included in the dataset. Moreover, in the dataset, 252 detailed race categories are differentiated.

The analytical sample consists of individuals between the ages of 25 and 65, are not in school or self-employed, are able-bodied full-time workers. Full-time workers are defined as those who worked at least 35 hours per week and 48 weeks annually. Because this project focuses on examining the international transferability of higher education, so only respondents with a bachelor's degree or higher are included in the analysis.

My study is based primarily on an analysis of the American Community Survey data. However, unfortunately for my study, it does not contain a direct measure of a key variable of interest—place of education. To remedy this deficiency, I follow the study of Xie and Zeng (2004) and construct a proxy measure of place of education using information from other variables available. The basic idea of my proxy measure is that place of education can be predicted with reasonable accuracy from a few variables available including age, ethnicity, education, and year of immigration. For instance, most college graduates complete their education at age 22. If a person immigrated to the United States at age 20 and reported having a college education, it is highly likely that he/she attained college education in the United States. On the other hand, if he/she immigrated at age 28 and reported having a college education, his/her education was probably attained abroad prior to immigration.

Chapter Outline

In Chapters 2 to 4, I attempt to explore the underlying mechanism of why a foreign education is correlated with economic disadvantages. I want to find out whether earnings penalties/inferior occupational placement associated with a foreign education is because of lower human capital or because of credentialism in the host country.

Chapter 2:The Effect Of Field Of Study On Earnings Among White And Asian Americans

Including both the U.S.-born and immigrant population, I examine the moderating effect between individuals' major choices and my measure of race/nativity and place of education. I aim to determine whether immigrants' major choices facilitate their economic integration in the U.S. at different rates. Based on divergent educational philosophies, I divide university curricula into two broad groups: STEM fields and non-STEM fields.

Previous literature have shown that STEM fields are more universalistic than non-STEM education, in the sense that individuals' education can be evaluated more objectively. I speculate in fields where objective criteria predominate, it is relatively easy to transfer knowledge across countries, and thus, earnings penalties in these areas are lower. On the contrary, in fields where subjective criteria predominate, it would be relatively difficult for immigrants to apply the knowledge they received from their home countries to the U.S. job market, resulting in higher earnings penalties in these areas. In Chapter 2, I found the magnitude of the differences between foreign-educated Asian immigrants and U.S.-born Whites, as well as between foreign-educated Asian immigrants and their U.S.-educated counterparts, decreases among STEM degree holders. The results support the 'strategic adaptation perspective' that Asian Americans, particularly the immigrant population, consciously and strategically pursue particular educational paths to avert disadvantages as newcomers and succeed with marketable credentials.

Chapter 3: Country-Of-Origin Influences On The Earnings Differences Of Asian And White Immigrants

Focusing on the immigrant population, I explore whether the labor market penalties associated with holding a foreign education/degree depend on the specific country or region in which it was earned. I hypothesize that Asian immigrants educated in less developed countries experience larger economic disadvantages than immigrants from Western countries. My results show that the existence and magnitude of the disadvantage of foreign education depend on the immigrants' origin countries. For both foreign-educated Asian and white immigrants, degrees acquired in non-Western countries are less transferable to the U.S. labor market than those obtained in Western countries.

Chapter 4: The English-Speaking Proficiency Of The Sending Country And Earnings Differences Between Asian And White Immigrants In The U.S.

Focusing on the immigrant population, I investigate whether labor market penalties associated with holding a foreign education/degree are contingent on their language skills. Immigrants' native language, an important aspect of pre-migration human capital, affects the transferability of their skills. The "linguistic distance" between English and immigrants' native languages varies significantly among countries. I hypothesize that immigrants from countries where English is an official language experience higher returns to their foreign education. My data suggests that Asian immigrants educated in Canada, Australia, or English-speaking European countries have an advantage over those from non-English-speaking countries. The results confirm previous studies indicating that returns to foreign education are higher for immigrants from countries where English is an official language.

In sum, the statistical analyses in Chapters 2-4 predict different outcomes, but these analyses address the same fundamental question: why a foreign education matters. The

analyses in these three chapters help me determine whether earnings penalties associated with a foreign degree stem from a lower imparted human capital of foreign education itself or from the higher 'status' of a U.S. education, thus supporting the credentialism explanation. Overall, my results indicate that the earnings disadvantage of Asian immigrants educated in foreign countries is largely due to the limited transferability of their human capital in the U.S. labor market.

Chapter 5: Gender Wage Disparities Among Asian And White Immigrant Workers

In this chapter, I want to explore whether immigrants' labor market disadvantages are contingent on gender. The gender pay gap is well established. For immigrants, the labor force experiences of immigrant women are unique, as factors of race, gender ,and immigration intersect. Female immigrants have to face the 'double' disadvantages of being a minority and an immigrant, similar to other immigrant men, in addition to the challenges specific to being a woman. My data confirms previous research that immigrant women are at a disadvantage compared to their male counterparts. The results supported the explanation that female immigrants' varied family experiences and migration paths contribute to their notable disadvantages in the U.S. labor market. For Asian immigrant women, they are more likely to gain skills after they have immigrated. They tend to convert the knowledge they learned in the U.S. after migration into the labor market and achieve better economic returns. Thus, women are more likely to come to the United States as secondary immigrants.

Studying Asian Americans is essential for promoting diversity, challenging stereotypes, and understanding the complexities of American society. Asian Americans have intersecting identities based on factors such as immigration history, socioeconomic

status, educational attainment, and gender. This diversity contributes to the richness of the Asian American experience and highlights the significance of acknowledging the unique challenges and opportunities faced by Asian American communities. Efforts to reduce barriers and promote inclusion can help Asian Americans, particular the Asian immigrant population, fully contribute to and benefit from the US economy.

CHAPTER 2

THE EFFECT OF FIELD OF STUDY ON EARNINGS AMONG WHITE AND ASIAN AMERICANS

Introduction

The purpose of this study is to extend previous research published on immigrants and minority workers' economic outcomes by exploring whether the earning disadvantages experienced by Asian immigrants are rooted in immigration, as the demographic heterogeneity perspective implies, or in race, as the racialized hierarchy framework suggests. Besides, this study also tries to find out whether the earnings penalty associated with a foreign education is due to less human capital or credentialing. The study design disentangles the effects of race, nativity, and place of education in explaining the earnings and occupational disadvantages of Asian immigrants and articulates the main research questions of the project: How does a foreign education influence earnings/occupation among Asian Americans and Whites? More specifically, do college-educated Asian immigrants face a systematic earnings/occupational disadvantage due to the place they receive their education? Do foreign, college-educated White immigrants also face earnings penalties? By differentiating the effect of race, immigration status, and immigration-related human capital, the results discern whether the economic disadvantages of Asian Americans are rooted in race or in their heterogeneous demographic characteristics and corresponding divergent human capital.

Chapter 2 examines the moderating effect of individuals' major choices on earnings. Rooted in demographic heterogeneity theory, this chapter explores whether immigrants' major choices can facilitate their economic integration in the U.S. at different

rates. In the research design, university curricula are divided into STEM fields and non-STEM fields based on divergent philosophical differences around the purpose and value of a college education Under the framework of human capital theory, literature generally agrees that STEM fields are more universalistic, in the sense that individuals' education may be evaluated more objectively. Hypothetically, the expected earnings penalties in these areas are lower than in non-STEM fields since it is relatively easy to transfer knowledge in STEM fields across countries. Thus, by comparing the earning differences between STEM and non-STEM fields, the results help to separate human capital explanations from credentialism.

Data and Method

My study is based on analyses of the pooled 2015 to 2019 ACS accessed through the Integrated Public Use Microdata Series. The analytical sample consists of individuals between the ages of 25 and 64, who are not in school or self-employed and are able-bodied full-time workers. Full-time workers are defined as those who worked at least 35 hours per week and 48 weeks annually. Because this project focuses on examining the international transferability of higher education, so only respondents with a bachelor's degree or higher are included in the analysis.

Dependent Variable

The dependent variable for this study is the natural logarithm of the annual salary of a respondent for each survey year. All annual wages have been standardized to dollars as valued in the year 2019. For all multivariate analyses, I take the natural log (ln) of the annual wage. This transformation allows model coefficients or slopes to be interpreted as

percent changes in annual wages. For example, a .10 log increase is the same as a 10% increase in wage income.

Independent Variable

The main primary explanatory variable of this study is the place of education. Unfortunately the ACS data does not contain a direct measure of place of education. To remedy this deficiency, I followed the method proposed by Zeng and Xie (2004) to construct a proxy measure of place of education using a few variables available from the ACS: age, ethnicity, education, and year of immigration. The basic idea is that place of education can be predicted with reasonable accuracy by comparing immigrants' age at immigration, calculated as immigrants' age minus their years spent in the U.S., against his/her age at completing the highest level of schooling, calculated as years of schooling plus six years. Immigrants are labeled as foreign educated when the age at immigration is higher than the estimated age of education completion. On the other hand, if an immigrant's age at immigration is greater than or equal to his/her age at completing the highest level of schooling, his/her education was probably attained abroad before immigration.

Another critical variable in my study is the field of study. In ACS, the variable "field of study" reports the field in which the person received a bachelor's degree. In the study design, university curricula are divided into two categories: STEM fields and non-STEM fields. Generally, a STEM field of study involves research, innovation, or development of new technologies using engineering, mathematics, computer science, or natural sciences. In addition, it reinforces advantages in nonlanguage intensive skills including math & science skills, problem-solving, analytical skills and etc. (Rangel

and Shi 2019). The selection of STEM fields follows the U.S. Department of Homeland Security (DHS) STEM Designated Degree Program List.[2]

Differentiating STEM-designated degrees from Non-STEM degrees is essential because 1) The United States has become more dependent on STEM graduates to support its technology-based economy (Moakler and Kim 2014). In order to attract international students studying STEM fields in the U.S., international students with STEM degrees are allowed to have more time and flexibility to seek ways to stay in the U.S. legally. Effective May 2016, international students with STEM-designated degrees are allowed to apply to receive up to 12 months of Optional Practical Training (OPT) employment authorization and an extra 24 month OPT extension (previous 17-month STEM OPT extension) for a total of 36 months of work authorization3. On the other hand, for Non-STEM students, the OPT program period is 12 months, with no further extension allowed. 2) Research showed that, for Asian Americans, achieving a higher education and choosing a STEM- related degree and occupation have become two main "strategic" choices that maximize the educational return to their future status (Xie and Goyette 2003). They consciously choose STEM designated degrees that aid them in achieving high status.

Educational attainment is measured as attained degrees rather than years of schooling (bachelor's degree, graduate degree). For a study of earnings, the attained degree is preferred because the corresponding years of schooling do not fully capture earnings premiums to degrees (Zeng and Xie 2004).

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[2] The STEM Designated Degree Program list is a complete list of fields of study that DHS considers to be science, technology, engineering or mathematics (STEM) fields of study for purposes of the 24-month STEM optional practical training extension described at 8 CFR 214.2(f).
Details can be found at: https://www.ice.gov/sites/default/files/documents/Document/2016/stem-list.pdf

[3] U.S. Citizenship and Immigration Services, https://www.uscis.gov/working-in-the-united-states/students-and-exchange-visitors/optional-practical-training-opt-for-f-1-students

Occupational classification is measured based on calculated average annual earnings and mean years of schooling within each occupation. The detailed occupational groups are listed as follows: Managerial; Computer and Mathematical; Architects (Except Naval); Scientist/Life Physical and Social Sciences; Legal; Healthcare Practitioners and technical; Technicians, sales, Office and Healthcare support; Arts, design, entertainment, sports and media-multimedia; Protective Services; Education and Community/social Services; service, farming, production, and other.

I also include additional covariates found to be predictive of wages: age (in years) and age squared, sex, English proficiency (measured in five categories: No English, speaks not well, speaks well, speaks very well, and only English), and region of residence (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central and West South Central).

I use ordinary least squares regression (OLS) to estimate wages for Asian Americans and Whites based on nativity and place of education. Earnings are modeled as a function of place of education, major choices, and demographic characteristics that includes English language ability, occupation, residence.

Model 2 tests the moderating effect of the field of study, where I allow the effect of field of study to vary by group. I am interested in whether field of study can facilitate foreign-educated immigrants' economic integration at different rates. Descriptive statistics for respondents with college degrees and regression results can be found in the tables listed below.

Descriptive Statistics

I first highlight differences in characteristics of respondents based on race, nativity and place of education. My analysis involves comparing levels of earnings for six groups of workers[4]: U.S.-born non-Hispanic whites (UBW), Foreign-educated white immigrants (FEWI), U.S.- educated white immigrants (UEWI), U.S.-born and educated Asian-Americans (UBA), U.S.-educated Asian immigrants (UEAI), and foreign-educated Asian immigrants (FEAI). The primary objective of my study is to compare the earnings of white workers and Asian workers while controlling for the place of education, major choices and other related variables.

Table 2-1 reports summary statistics for the six groups of workers with a bachelor degree or higher, ages 25-64. Demographically, immigrants made up the main population of Asian Americans. Asian immigrants were predominately bilingual, and FEAI had the lowest rate of using only English(8.01%).

Socioeconomically, differences across the six groups of workers are prominent. Most notably, all immigrants and minority populations including FEAI, received higher earnings than U.S.-born Whites. FEAI on average, earned $105166.6 per year, which is 3.2 % points higher than UBW. FEWI ranked the highest, with the mean wage of $132190, followed by UEWI ($125262.1) and UEAI ($119385.5). Among Asian Americans, UEAI had the highest proportion of individuals (53.95%) hold a graduate degree, 5.96% points than FEAI (47.99%) and 13.88% points higher than UBA. Particularly interesting is the difference between white and Asian immigrants. Among Asian immigrants, U.S.-educated individuals have an average higher schooling and earnings. Quite the opposite, among

[4] Because less than 1% of the U.S.-born respondents (both whites and Asians) were educated in a foreign country, I excluded foreign-educated U.S. born population from my sample.

white immigrants, foreign-educated immigrants have better educational attainments and higher wages than their U.S.-educated counterparts.

Equally noticeable, Asian immigrants had the highest concentration in majors and occupations that related to STEM while under-represented in positions with supervisory responsibilities. Specifically, over fifty percent of FEAI (56.68%) and UEAI(54.78%) received a STEM degree. While only 39.65% of UBA majored in the STEM field, this number is still significantly higher than UBW (25.75%). Meanwhile, about 23.75 % of FEAI worked in computer science& mathematical-related occupations, which is 6% points higher than UEAI and 17.73% points higher than UBW. On the contrary, all three Asian groups including immigrants and their U.S.-born counterparts, had the lowest concertation in managerial positions. FEAI were especially disadvantaged, with 15.19%, which is 6.62% points lower than UBW (21.81%). Overall, the data confirms previous research that Asian Americans are over-represented in STEM-related majors and occupations, but under-represented in managerial positions (Kim and Sakamoto 2010; Xie and Goyette 2003).

Among white immigrants, FEWI was also over-represented in STEM-designated fields (50.32%), and they are more likely to be in positions with supervisory responsibilities (24.4%). Again, compared to U.S.-educate white immigrants, their foreign-educated counterparts have better educational attainment, higher wages, a higher likelihood of holding STEM-designated degrees and a better representation in managerial positions. Overall, the preliminary analyses show that earnings differ both by place of education and by nativity among Asian-Americans and Whites. It appears that being Asian (vs. white) by itself is not a disadvantage, but foreign birth and foreign education are. Summary statistics for the six groups of workers can be found in Table 2-1 listed below.

Table 2-1.Descriptive Statistics for Respondents With College Degrees

Variable	UBW	UEWI	FEWI	UBA	UEAI	FEAI
Mean years of Schooling	16.88 (1.22)	17.39 (1.45)	17.42 (1.45)	17.02 (1.33)	17.39 (1.42)	17.18 (1.35)
Educational Attainment						
% BA+	37.38	52.52	54.23	40.07	53.95	47.99
Mean annual wage (in $ 2019)	101891 (92990)	125262 (113621)	132190 (123546)	108929 (97430)	119386 (98437)	105167 (85193)
Mean age	43.65 (11.11)	42.28 (10.7)	46.06 (9.81)	37.57 (9.81)	40.13 (9.40)	44.96 (9.71)
% of Male	51.96	55.26	61.88	50.96	54.29	56.96
Language						
% English only	97.34	43.37	35.09	63.95	22.62	8.01
% no English	0	.05	.23	.02	.09	.32
%Very well	2.41	52.63	50.02	32.85	63.51	66.03
%Well	.16	3.52	12.43	2.54	12.70	21.79
%Not well	.08	.42	2.23	.64	1.09	3.84
Major						
STEM	25.75	41.18	50.32	39.65	54.78	56.68
Occupation						
Managerial……	21.81	22.47	24.4	17.98	17.76	15.19
Business	10.66	10.67	8.38	13.26	12.53	8.84
Computer &Math	6.02	9.48	11.37	11.16	18.56	23.75
Architects	4.24	6.3	6.62	5.43	8.67	6.66
Social/ Sciences…	2.14	3.74	5.17	3.1	4.31	4.51
Legal	2.86	2.98	1.23	3.2	1.58	.47
Healthcare	9.41	10.72	7.92	15.52	12.27	13.51
Practitioner						
Technician, sales, office	16.18	13.34	12.68	14.33	11.24	12.25
Arts, sports, media	2.78	2.82	2.88	3.27	2.07	1.33
Protective Services	2.5	1.65	1.55	1.79	1.11	1.57
Educ & Social	16.75	11.94	10.87	7.79	6.73	5.88
Service						
Other……	4.64	3.9	6.93	3.18	3.16	6.03
Urban residence						
New England	7.03	8.82	8.36	3.85	4.96	4.75
Middle Atlantic…	14.81	22.61	21.08	15.90	18.41	18.19
East North Central	16.24	11.09	10.14	6.42	7.34	9.39
West North Central	7.84	2.24	2.19	1.40	1.97	2.09
South Atlantic…	19.64	18.57	19.42	10.80	13.76	15.97
East South Central	5.5	1.86	1.88	.83	1.09	1.6
West South Central	9.63	6.32	7.76	6	8.62	9.89
N	1,103,874	24,062	39,275	34,784	51,414	71,799

Data: ACS 2015-2019

Results

Table 2-2 presents regression results for models 1 and 2. Because of the log transformation of the outcome—annual wages—coefficients can be interpreted as percent differences in wages, compared to the reference category of a predictor.

For my baseline model, model 1, the result shows: The ordering of the six groups from the highest to the lowest earnings is UEWI,UEAI, FEWI, UBA, UBW and FEAI. FEAI ranked the lowest. Their average earnings were 6.6% lower than UBW. Except for FEAI, other minority and minority and immigration groups' annual wages are higher than UBW. FEAI disadvantage occurs among both STEM and non-STEM majors, but it is largely alleviated among the STEM majors.

Furthermore, model 1 confirms previous research that educational degrees and major choices are two crucial factors differentiating labor market outcomes. For example, individuals earned 22.6% more with a graduate degree and 12.1% points less if they had non-STEM degree. Besides, the results reveal that holding a job with supervisory responsibilities earned significantly more than those without such responsibilities, except individuals who worked in law-related occupations. Model details can be found in the table listed below.

Table 2-2.Estimated Regression Coefficients from Earnings Estimates By Field of Study

	Model 1		Model 2	
	Coefficient	SE	Coefficient	SE
Race/Nativity/Place of educ (reference= UBW)				
UEWI	0.086***	.005	0.095***	.008
FEWI	0.039***	.005	0.046***	.006
UBA	0.033***	.004	0.036***	.007
UEAI	0.064***	.004	0.093***	.005
FEAI	-0.066***	.004	-0.016***	.005
Education (reference=BA)				
BA+……	0.226***	.001	0.224***	.001
Major choice (reference=STEM)				
Non-STEM……	-0.121***	.002	-.110	.002
Language Skills (reference= English only)				
No English……	-0.337***	.047	-0.322***	.048
Very well……	-0.050***	.003	-0.051***	.003
Well ……	-0.262***	.005	-0.261***	.005
Not well ……	-0.398***	.011	-0.389***	.011
Female	-0.259***	.001	-0.258***	.001
Occupation (reference= Managerial)				
Business	-0.101***	.002	-0.101***	.002
Computer &Math	-0.093***	.002	-0.097***	.002
Architects	-0.131***	.003	-0.130***	.003
Social/ Sciences…….…….	-0.311***	.004	-0.312***	.004
Legal	0.087***	.005	0.087***	.005
Healthcare Practitioner	-0.048***	.002	-0.045***	.002
Technicians, sales, office	-0.341***	.002	-0.341***	.002
Arts, sports, media……	-0.316***	.004	-0.316***	.004
Protective Services…..…	-0.507***	.004	-0.506***	.004
Educ & Social Services.	-0.558***	.002	-0.559***	.002
Other……	-0.603***	.004	-0.602***	.004
Age ……	0.087***	.000	0.087***	.000
Age^2 …….	-0.001***	.000	-0.001***	.000

Table 2-2. (continued)

Urban residence: Division (reference= New England)				
Middle Atlantic…	0.019***	.003	0.019***	.003
East North Central	-0.116***	.003	-0.116***	.003
West North Central……	-0.160***	.003	-0.160***	.003
South Atlantic……	-0.097***	.003	-0.097***	.003
East Sout..	-0.216***	.004	-0.216***	.004
West Sout..	-0.074***	.003	-0.074***	.003
Mountain ..	-0.145***	.003	-0.145***	.003
Pacific D..	0.051***	.003	0.052***	.003
Major * Race/Nativity/Place of educ				
Non-STEM*UEWI			-.011	.010
Non-STEM*FEWI			-.008	.008
Non-STEM*UBA			-.002	.008
Non-STEM*UEAI			-.054***	.007
Non-STEM*FEAI			-.106***	.006
Cons	9.613***	.010	9.604***	.010
R^2	.293		.293	

Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

Then, I compare groups' earnings differences after controlling for all the other variables in model 1, as shown in Table 2-3. Among Asian Americans, UBA earned 3.3% more than UBW on average, UBA earned 3.1% less than UEAI, UEAI earned 13% more than FEAI. Among white immigrants, both UEWI and FEWI earned significantly more than their U.S.-born counterparts. UEAI ranked the highest among all the six groups, which contradicts the descriptive statistics which showed FEWI is the most advantaged group. It indicates a U.S. education prevents Asian immigrants from experiences severe earning disadvantage. The *t*-tests of pairwise group differences indicate that the differences between all the comparison groups listed are statistically significant. Overall, the results

indicate that the effect of place of education remains substantial on the earnings of immigrants, especially for those coming from Asian countries.

Table 2-3. Effect of Place of Education, Nativity, and Race in Model 1 and Model 2

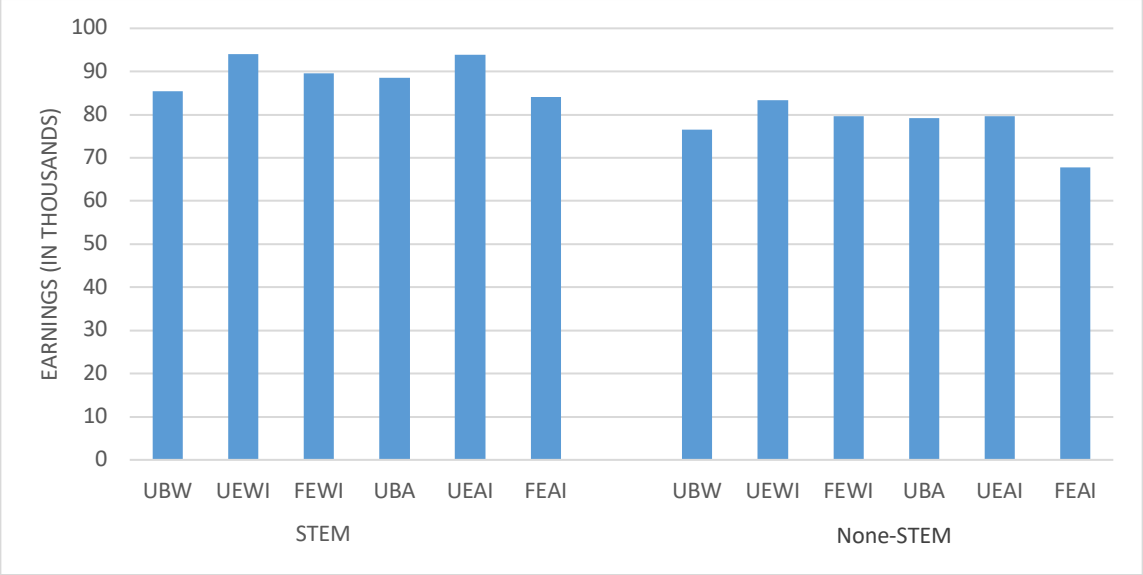
	Comparison Group	Reference Group	Model 1	Model 2 STEM	Model 2 Non-STEM
Effect of place of education	UEAI	FEAI	.13 ***	.11 ***	.165***
	UEWI	FEWI	.047***	.048***	.041***
Effect of being native-born vs foreign-born	UBA	UEAI	-.031***	-.057***	.005
	UBW	UEWI	-.086***	-.095***	-.080***
Effect of being White vs Asian (US born)	UBW	UBA	-.033***	-.036***	-.030***
Effect of being Asian vs White (foreign-educ immigrants)	FEAI	FEWI	-.105***	-.063***	-.079***
Effect of being Asian vs White (US-educ immigrants)	UEAI	UEWI	-.022***	-.001***	-.054***

Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

In Model 2, I examine the moderating effect of individuals' major choices. I aim to see whether STEM-designated degrees can facilitate foreign- educated immigrants' economic integration at a different rate. I speculate in STEM fields where objective criteria predominate, it is relatively easy to transfer knowledge across countries, and thus earnings penalties in these areas are lower. The results reveal the magnitude of the differences between FEAI and UBW and between FEAI and UEAI decrease among STEM degree holders. Figure 2-1 plots the moderating effect of field of study on earnings for the six groups based on model 2. While FEAI ranked lowest among STEM and non-STEM degree holders, their earning disadvantage is more salient among non-STEM degree holders. Specifically, among STEM degree holders, FEAI earned 1.6% points lower than UBW, and 11% points lower than their U.S.- educated counterparts. On the contrary, among non-STEM degree holders, FEAI earned 12.2% points (-.106-.016) lower than UBW, and 15.4% points (-.106-.048) lower than their U.S. -educated counterparts.

Besides, the earnings disadvantage between UEAI and UEWI, and between FEAI and FEWI is more salient among non-STEM degree holders than those majored in STEM fields when comparing the "double disadvantage" effect (Table 2-3). The results again indicate that STEM degrees help alleviate the earnings disadvantage of Asian immigrants in the U.S. labor market.

Figure 2-1: Predicted Earnings for Whites and Asian-Americans By Field of Study (based on Model 2)



Because graduate degree and occupations are "post-treatment" variables, they are arguably occurring after individuals get a bachelor degree. The negative side of including a consequence of treatment as a control variable in the regression models is that some of the variation in the outcome due to a bachelor degree will be explained away by the post-treatment control variable (graduate degree and occupation). So I run two separate models (model 3 and model 4) excluding educational degree and occupation to see whether the results hold up.

The result from model 3 show that only FEAI's annually wages was significantly lower than U.S. born whites. However, after the interaction term between place of education and field of study was included in model 4, all immigration and minority population majoring in STEM-related fields including FEAI receive a higher earnings than UBW. On the other hand, different from their foreign-educated counterparts, the earnings of UEAI exceeded UEWI and ranked highest among all the groups. In sum, model 3 and 4 confirm previous findings that place of education has a substantial effect on the earnings of immigrants, and holding a STEM-related degree significantly alleviated the earning disadvantage due to a foreign certificates in the U.S. job market.

Overall, I draw two substantive conclusions from the previous analysis. First, the place of education has a substantial effect on the earnings of immigrants, and the impact of foreign education is more substantial for Asian immigrants than white immigrants. The results confirm the previous findings that Asian immigrants with foreign education experience earnings disadvantage in the United States.

Second, holding a STEM degree significantly alleviates FEAI's earnings disadvantages in the U.S. labor market. It indicates STEM degrees are relatively universalistic: the education and knowledge acquired in a foreign country can be objectively measurable and valued, and thus comparatively easy to transfer in the U.S. labor market. On the contrary, the earning penalty in non-STEM fields is higher since knowledge is more context and culture-specific and thus hard to transform across countries. Overall, the result suggests the human capital transferability affects foreign-educated immigrants' earnings experiences.

Table 2-4: Estimated Regression Coefficients from Earnings Estimates Without "Post-Treatment" Variables

``	Model 3		Model 4	
	Coefficient	SE	Coefficient	SE
Race/Nativity/Place of educ (reference= UBW)				
UEWI	.132***	.006	0.143***	.009
FEWI	.066***	.005	0.076***	.006
UBA	.085***	.005	0.094***	.007
UEAI	.143***	.004	0.184***	.005
FEAI	-.014***	.004	0.05***	.005
Major choice (reference=STEM)				
Non-STEM……	-.194	.002	-.178	.002
Major * Race/Nativity/Place of educ				
Non-STEM*UEWI			-.014	.011
Non-STEM*FEWI			-.013	.009
Non-STEM*UBA			-.01	.009
Non-STEM*UEAI			-.078***	.007
Non-STEM*FEAI			-.14***	.006
Cons	9.306	.011	9.293***	.011
R^2	.171		.171	

Note: Models also control for gender, language, age, age squared, educational attainment, state of residence
Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

Occupational Differences

The previous regression analyses produced compelling evidence that foreign-educated Asian immigrants receive lower earnings compared to U.S.-born While earnings is a relatively reliable measure of individuals' status and achievement, it has been recognized that foreign- educated immigrants' labor market disadvantage stretches beyond earnings. Therefore, In order to gain a holistic and effective understanding of Asian immigrants' labor market experience, this study also explores whether occupational distribution varies significantly by race, nativity and place of education. Different from

earnings which represents the point estimate of monetary evaluation of workers worth to the employer, occupation is a good indicator of individuals' long-term career achievements (Burgard, Stewart, and Schwartz 2003; Williams and Collins 1995). It is a multi-dimensional factor that potentially aggregates the information on earnings, educational requirements and power (Kifle, Kler and Fleming 2018). Previous regression analysis confirms that those holding a job with supervisory responsibilities earned significantly more than those without such responsibilities.

In the research design, occupation, the dependent variable is dichotomized into two categories: managerial position and non-managerial position. Asian and whites are disaggregated based on nativity and place of education. Covariates include sex, age (in years) and age squared, educational attainment, major choices, English proficiency, and region of residence.

The results from the logistic regression showed Asian Americans, especially Asian immigrants are under-represented in positions with supervisory responsibilities. The results on supervisory responsibilities are reported in Table 2-5. Most noticeable, the results from both model 5 and 6 shows all three Asian American groups, including Asian immigrants and their U.S.-born counterparts had a lower concentration in supervisory positions than any other group in the analysis. FEAI was most vulnerable among the Asian community, even with a STEM-related degree.

Moreover, the results indicate that holding a STEM certificates did not increase individuals' opportunities to work in managerial positions among highly educated individuals. Individuals with a graduate degrees did not bolster their chances to get supervisory responsibilities. The effect of STEM degree works very differently for FEAI

and other Asian American population. For FEAI, while they are least likely to work with supervisory responsibilities even with a STEM-designated degree, their career advancements are harder with a non-STEM degree.

Table 2-5. Estimated Coefficients of Logistic Regression Models Predicting Working with Supervisory Responsibilities

	Model 5		Model 6	
	Coefficient	SE	Coefficient	SE
BA+	-0.039***	0.005	-.039***	.005
Race/Nativity/Place of educ (reference= UBW)				
UEWI	0.075***	0.02	-.047***	.031
FEWI	0.12***	0.017	.08***	.023
UBA	-0.102***	0.018	-.250***	.029
UEAI	-0.121***	0.017	-.17***	.022
FEAI	-0.342***	0.017	-.26***	.021
Major choice (reference=STEM)				
Non-STEM*	0.112***	0.006	.104***	.007
Major Race/Nativity/Place of educ				
Non-STEM*UEWI			.198***	.039
Non-STEM*FEWI			.072***	.03
Non-STEM*UBA			.233***	.036
Non-STEM*UEAI			.098***	.029
Non-STEM*FEAI			-.211***	.027

Note: the model control for sex, age (in years) and age squared, English proficiency, and region of residence.
Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

Overall, the results confirm previous findings that there are differences in career achievements between whites and Asians (Hirschman and Wong 1984; Tang 1993; GF. De Jong, and Madamba 2002; Lee 2002). Asian immigrants and their U.S.- born counterparts are more likely to experience the glass ceiling effect that prevents them from rising to the highest ranks in a corporation. Foreign-educated Asians immigrants are the most

disadvantaged group. They are more likely to be confined to employment along the periphery of a profession, where mobility opportunities are rather limited. They tend to suffer from significant earnings loss and occupational stagnation and even downward mobility (Zeng and Xie, 2004).

Discussion and Conclusion

Why do Asian-Americans experience an earnings disadvantage? In this article, I attempt to further our knowledge of the labor market experience of immigrants by investigating the mechanisms underlying the lower returns to foreign credentials.

A key finding from the preceding regression analyses is that place of education is an important factor stratifying labor market experiences of immigrants, especially for foreign-educated Asian immigrants. In general, Asian Americans are more likely to experience occupation stagnation. However, this occupational disadvantage does not necessarily translate to wage disadvantage in the U.S. labor market. Only foreign-educated Asian immigrants tend to suffer from significant earnings loss and occupational stagnation. Their U.S.-educated counterparts and native-born Asian Americans receive earnings similar to or even higher than U.S.-born Whites.

Except for Asian Americans, the place of education also significantly affects white immigrants' earnings experiences. While the descriptive results showed FEWI have a better education, occupation and earnings status than UEWI, the regression results revealed that their U.S.- educated counterparts enjoy a relatively higher earnings status in the U.S. labor market. Thus, the results indicated that the effect of place of education remains substantial on the earnings of immigrants, especially those coming from Asian countries.

Second, the results further extend the previous study and find that while foreign-educated Asian immigrants are economically disadvantaged, holding a STEM degree significantly alleviates their earnings disadvantage in the U.S. labor market. Similarly, for U.S. educated Asian immigrants, even though they do not experience earning penalties, STEM certificates significantly decrease the earnings gap between them and UEWI, the top-ranked earnings group.

The results indicate that a STEM major aids Asian immigrants in maximizing the educational return to their future status and attenuating earning disadvantage. Compared to non-STEM fields, STEM degrees are relatively universalistic. The related education and knowledge acquired in a foreign country can be objectively measurable and valued in the host country, and thus comparatively easy to transfer in the U.S. labor market. Overall, the results support the strategic adaptation perspective that Asian Americans consciously and strategically choose STEM- related degrees and occupations. By achieving marketable credentials, they can effectively cope with potential discrimination and other disadvantages (Xie and Goyette 2003).

In addition, while the magnitude of Asian immigrants' earnings disadvantage varies by individuals' major choices, sizable earnings differentials by place of education persist after controlling for measures of field of study. This implies that human capital theory alone does not fully explain the earing disadvantage of Asian immigrants.

CHAPTER 3

COUNTRY-OF-ORIGIN INFLUENCES ON THE EARNINGS DIFFERENCES OF ASIAN AND WHITE IMMIGRANTS

Introduction

Nativity is an essential dimension of immigrants' socioeconomic heterogeneity. Numerous studies have established that immigrants' labor market performance varies substantially across countries of origin (Akresh 2007; Friedberg 2000; Zheng and Xie, 2004; Lancee and Bol 2017). Immigrants from lesser developed, non-Western countries are commonly associated with a larger wage disadvantage than natives and immigrants from Western countries. This has been demonstrated for Israel (Friedberg 2000), Canada (Ferrer and Riddell 2008; Buzdugan and Halli 2009), European countries (Andersson and Guo 2009; Lancee and Bol 2017), and the United States (Zheng and Xie, 2004; Akresh 2006; Arbeit and Warren 2013).

Studies aim to discover why immigrants educated in less developed and non-Western countries experience heavy wage penalties. Researchers argue that nativity variation reflects differences in human capital quality across continents of origin, leading to differences in foreign human capital transfer patterns (Friedberg 2000; Bleakley and Chin 2009; Aly and Ragan 2010; Hardoy and Schøne 2014). Overall, researchers generally agree that the earnings disadvantage associated with a foreign degree suggests that human capital from lesser developed countries is perceived as inferior (Friedberg 2000; Bleakley and Chin 2009; Aly and Ragan 2010; Hardoy and Schøne 2014). In other words, it is the lower education quality associated with the education received in less developed countries that leads to the earnings disadvantage in the U.S. job market. In empirical studies,

countries' economic development, as measured by GDP per capita and pupil/teacher ratios are widely used as proxies for the quality of education received abroad (Bleakley and Chin 2009; Aly and Ragan 2010). Bleakley and Chin (2009) found that returns to schooling depend significantly on economic development. A $1,000 increase in per capita GDP raised the earnings of men without a U.S. education by 2.3 percent. Similarly, Aly and Ragan (2010) confirmed that economic returns to education were related to economic development in the source country and to pupil/teacher ratios by using U.S. census data. Their result showed a higher per capita GDP and a lower pupil/teacher ratio were both associated with higher returns to education for Arab immigrants with more than 12 years of schooling.

In Chapter 3, building on the previous research, I expand on previous research by examining the moderating effect of country of origin on the well-documented association between place of education and earnings among foreign-educated and U.S.-educated immigrants who self-identified as Asian and White. I aim to investigate whether the earnings differences between these two immigrant groups are attributable to individual-level differences, disparities in educational quality across countries, or variations in the regions of their countries of origin. Specifically, I examine:

1) whether the earnings penalties associated with nativity and the source of human capital are more pronounced among foreign-educated Asian immigrants in the U.S. labor market. In other words, does obtaining a U.S. education alleviate the wage disadvantage associated with nativity among Asian immigrants? If the results indicate that the wage disadvantage attributed to nativity has a more negative effect among foreign-educated

immigrants compared to their U.S.-educated counterparts, it may suggest that the value of a foreign college education is not perfectly transferable to the U.S. job market.

2) whether Asian immigrants who earn degrees in economically developing countries are experience a more considerable wage disadvantage than immigrants from developed countries. Hypothetically, the skills and education obtained in either developed or Western countries are superior to that acquired in developing countries. Among developed countries like Europe and the United states, the industrial structures and in the types of skills that are rewarded in their labor markets are similar, and thus the knowledge and skills acquired in school may be easier to translate into greater productivity in the receiving countries (Chiswick, 1979; Mincer and Ofek, 1982; Borjas, 1992b). In this chapter, I include the country of origin, as well as two measures of a country's education quality, as controls: the logged GDP per capita and the logged average of a country's 1990 and 2000 gross tertiary enrollment ratio. Immigrants educated in non-Western countries may face wage penalties because skills and education acquired in these countries are perceived as either inferior or less transferable to the U.S. labor market.

3) Comparing the effect of the nativity on earnings between foreign-educated Asian and white immigrants helps to disentangle the 'double' disadvantages associated with immigration and minority status faced by Asian immigrants. If the impact of nativity on earnings is consistent between foreign-educated Asian and white immigrants, it implies that wage differences are primarily attributed to a foreign education and that the value of a foreign education is lower in the U.S. job market.

Data and Method

My study is based on analyses of the pooled 2015 to 2019 ACS accessed through the Integrated Public Use Microdata Series. To better understand the effect of country of origin, the analytical sample consists of college-educated white and Asian individuals who were not citizens at birth[5].The respondents are between the ages of 25 and 64, are not in school or self-employed, are able-bodied full-time workers. Based on the place immigrants received their education, my analysis involves comparing levels of earnings for four groups of workers: Foreign- educated white immigrants (FEWI), U.S.- educated white immigrants (UEWI), U.S.-educated Asian immigrants (UEAI), and foreign-educated Asian immigrants (FEAI).

Dependent Variable

The dependent variable for this study is the natural logarithm of the annual salary of a respondent for each survey year. All annual wages have been standardized to dollars as valued in the year 2019.

Independent Variable

Place of education: I construct a proxy measure of place of education using a few variables available from the ACS: age, ethnicity, education, and year of immigration. I assume that place of education can be predicted with reasonable accuracy by comparing immigrants' age at immigration, calculated as immigrants' age minus their years spend in the US, against his/her age at completing the highest level of schooling, calculated as years

[5] Individuals born abroad of American parents and born in outlying U.S. territories (Guam, the U.S. Virgin Islands, the Northern Marianas) and the Commonwealth of Puerto Rico are excluded because of the possession of U.S. birthright citizenship.

of schooling plus six years. Immigrants are labeled as foreign-educated when the age at immigration is higher than the estimated age of education completion.

Explanatory Independent Variables

Region of birth: The ACS lists 187 countries of education outside the United States. To reflect the distribution of the white and Asian immigrant population's countries of origin, the country of origin is broken down into three categories: Western countries/Oceania, Asia, and all other countries.

Education quality: The quality of a foreign country's education is captured with two measures. The first measure is the logged GDP per capita of the country. GDP is measured as the log of source-country per capita gross domestic product (in U.S. dollars).To better capture differences in educational quality when immigrants attended school, this variable is lagged for 20 years (Bratsberg and Terrell 2002).The second measure is the logged average of a country's 1990 and 2000 gross tertiary enrollment ratio which is calculated as the proportion of students enrolled in tertiary education regardless of age to the population of the age group which officially corresponds to tertiary education[6].Countries that have missing information are assigned a dummy variable.

Field of study: In ACS, the variable "field of study" reports the field in which the person received a bachelor's degree. In the study design, university curricula are divided into two categories: STEM fields and non-STEM fields.

[6] The World Bank defines tertiary education as universities as well as colleges, technical training institutes, community colleges, nursing schools, research laboratories, centers of excellence, distance learning centers, and other pots-secondary education. Data can be found here: https://databank.worldbank.org/Tertiary-Education/id/2c670ebf

Individual-level Characteristics

Years in the United States and its square. This variable reports how long a foreign-born individual has been living in the United States. The square of years since migration is also included to reflect the nonlinear relation between earnings and duration in the destination.

Citizen: In ACS, individuals without birthright citizenship are further classified into two groups: naturalized citizens and non-citizens. In theory, naturalized citizens in the United States are entitled to the same privileges as the native-born (Massey and Bartley, 2005).

I include additional control variables found to be predictive of wages. English proficiency is measured in five categories: No English, speaks not well, speaks well, speaks very well, and only English. Age is measured in years, and we include only those between ages 25 to 64 in our sample. I include a squared term to account for diminishing income returns as a worker ages. Gender is divided into two categories, female and male. Region of residence is measured in the following categories: New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, and West South Central.

Analytic Strategy

To explore the earnings returns to a degree earned abroad, I run linear regression models with logged, positive earnings as the dependent variable. Model 1 provides baseline differences in wages between four immigrant groups. In model 2, individual-level controls for age and age squared, years in the U.S. and its square, English-language proficiency, and citizenship status are included to see if the differences between the four immigrant

groups persist. Then, I include two measures of educational quality -- country GDP per capita and the percentage of post-secondary degree holders in a country-- to see if educational quality mediates any of the relationships. Model 3 includes STEM degrees to investigate whether a STEM major mediates the earnings disadvantage of foreign-educated Asian immigrants. In Model 4, immigrants' countries of origin are added. Finally, in Model 5, I add interactions between my categories of race/place of education and country of origin to see if these influence Asian and White (foreign) immigrants differently.

Descriptive Statistics

Table 3-1 reports data on the distribution of white and Asian immigrants with bachelor's degrees or higher and between the ages of 25 and 64. Generally, for white and Asian immigrants, foreign-educated immigrants outnumber their U.S.-educated counterparts in the U.S. job market.

Geographically, the primary sending countries vary substantially between Asian and white immigrants. The white immigrants working in the U.S. mainly originated from North America and Western Europe. The top five sending countries are Russian Empire, Canada, the United Kingdom/Ireland, Germany and Poland. On the contrary, Asian immigrants predominately come from southwest and east Asia. The top five sending counties are India, China, Philippines, Korea , and Vietnam. Moreover, white immigrants mainly reside in the Pacific, Middle and South Atlantic division. While a large body of Asian immigrants live in the Middle and South Atlantic, this community predominately resides in the Pacific region.

Table 3-1. Descriptive Statistics for Immigrants with College Degrees

	US-educated White immigrants	Foreign Educated White immigrants	US-educated Asian immigrants	Foreign educated Asian immigrants
Mean years of Schooling	17.39	17.424	17.39	17.187
	(1.457)	(1.45)	(1.421)	(1.351)
Mean annual wage (in $ 2019)	125262	132190	119386	105167
	(113621)	(123546)	(98437)	(85193)
Mean age	42.278	46.063	40.134	44.964
	(10.701)	(9.808)	(9.396)	(9.713)
% of Male	55.26	61.88	54.29	56.96
Language				
% English only	43.37	35.09	22.62	8.01
% no English	0.05	0.23	0.09	0.32
%Very well	52.63	50.02	63.51	66.03
%Well	3.52	12.43	12.7	21.79
%Not well	0.42	2.23	1.09	3.84
Major				
STEM	41.18	50.32	54.78	56.68
Urban residence				
New England	8.82	8.36	4.96	4.75
Middle Atlantic…	22.51	21.08	18.41	18.19
East North Central	11.09	10.14	7.34	9.39
West North Central	2.24	2.19	1.97	2.09
South Atlantic	18.57	19.42	13.76	15.97
East South Central	1.86	1.88	1.09	1.6
West South Central	6.32	7.76	8.62	9.89
Mountain Division	5.22	4.85	3.37	3.99
Pacific Division	23.27	24.32	40.49	34.12
Mean years of immigration	29.304	14.123	25.82	14.312
Country				
Europe/Oceania	70.88	75.11	1.84	0.97
Asia	8.69	4.89	95.65	97.66
Other	20.43	20	2.52	1.37
Citizenship				
Naturalized citizen	80.91	49.91	77.17	50.65
Not a citizen	19.09	50.09	22.83	49.35
N=186,550	24,062	39,275	51,414	71,799

Data: ACS 2015-2019

Demographically, Asian immigrants have a lower English language proficiency than white immigrants. FEAI had the lowest rate of solely English speaking(8.01%), which is 14.29 percentage points lower than their U.S.-educated counterparts (22.3%). On the contrary, over one- third of USWI (43.37%) and FEWI (35.09%) are solely English-speaking. In addition, for both Asian and white immigrants, the male working population surpasses females, and FEWI had the highest proportion of male respondents (61.88%). Moreover, for both White and Asian immigrants, U.S.-educated individuals, on average, reside significantly longer periods in the United States than their foreign-educated counterparts.

Socioeconomically, foreign-educated Asian immigrants ranked lowest among the four immigrant groups, with a mean wage of $105,167and an average 17.19 years of schooling. Compared to their foreign-educated peers, U.S.-educated Asian immigrants, on average, have better education and earnings. However, the results are still significantly lower than both U.S. educated and foreign-educated white immigrants. FEWI ranked the highest among the four immigrant groups, with a mean wage of $132,190 and an average 17.42 years of schooling, followed by their U.S.- educated counterparts, with an annual salary of $125,262.1 and 17.39 years of education. In addition, both white and Asian immigrants have a higher concentration in STEM majors. Except for USWI (41.18%), over half of the respondents in all other three groups obtain STEM-designated degrees.

Overall, the preliminary analyses show 1) white and Asian immigrants vary substantially in the counties where they originate from, their usage of English language, and their related human capital. Compared to white immigrants, Asian immigrants mainly originate from developing countries and typically have relatively low English proficiency.

2) The effect of place of education differs among white and Asian immigrants. Among Asian immigrants, U.S.-educated individuals have higher average schooling and earnings. In contrast, among white immigrants, foreign-educated immigrants have better educational attainments and higher wages than their U.S.- educated peers.

Results

Table 3-2 presents the regression results for model 1 to 4. Table 3-3 reports the *t*-tests of pairwise group differences in each model. Model 1 tests the effect of place of education on earnings among white and Asian immigrants. The bivariate model shows that, though not significant, Asian immigrants without a U.S. education ranked the lowest among all four groups. U.S.-educated Asian immigrants earned significantly more than their foreign-educated counterparts, as shown in Table 3-3. The results indicate that a foreign education mainly affects Asian immigrants' earnings.

Model 2 adds individual-level controls for age, years in the U.S., language proficiency, citizenship and region of residence. Though not significant, when these variables are included, the differences in earnings between Asian immigrants educated abroad and White immigrants educated in the U.S. decrease. The results indicate that many of the differences can be attributed to the demographic differences shown in the model. The data suggest that Asian immigrants may have spent less time in the U.S., are less likely to be citizens, and speak English less proficiently than White immigrants.

Table 3-2: Estimated Regression Coefficients from Earnings Estimates

	Model 1		Model 2		Model 3		Model 4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Race/Nativity/Place of educ (reference= UEWI)								
FEWI	-.003	.049	.03	0.05	.026	.05	.013	.047
UEAI	-.002	.054	.025	0.032	.001	.025	.051	.039
FEAI	-.125	.082	-.02	0.05	-.041	.04	.016	.051
Educational attainment (reference=BA)								
BA+			.319***	.031	.284***	.027	.271***	.019
Major choice (reference=non-STEM)								
STEM……					.212***	.024	.211***	0.023
Language Skills (reference= English only)								
No English…			-.505***	.066	-.474***	.064	-.46***	.047
Very well……			-.09**	.029	-.104***	.028	-.084***	.018
Well ……			-.359***	.042	-.367***	.041	-.353***	.03
Not well ……			-.621***	.061	-.601***	.057	-.589***	.044
Female			-.3***	.017	-.241***	.019	-.239***	.02
Age ……			.096***	.006	.096***	.006	.095***	.006
Age^2 ……			-.001***	0	-.001***	0	-.001***	0
Citizen								
Not a citizen			.04	.017	.03	.017	.008**	.023
Years in the US			.008*	.003	.009*	.003	.009**	0.003
Years in the US Squared			0*	0	0*	0	0**	0

Table 3-2. (continued)

Urban residence:								
Division (reference= New England)								
Middle Atlantic			.018	.023	.035	.022	.042	.023
East North Central			-.114***	.012	-.11***	.012	-.101***	.011
West North Central……..			-.167***	.031	-.168***	.029	-.161***	.027
South Atlantic…			-.115***	.014	-.107***	.012	-.097***	.011
East South Central.			-.251***	.028	-.244***	.03	-.236***	.028
West South Central.			-.076***	.016	-.075***	.015	-.065***	.014
Mountain ..			-.194***	.026	-.183***	.024	-.174***	.02
Pacific Division..			.064	.032	.068*	.029	.076**	.023
Log of GDP per capita							.053**	.016
Log of Gross enrollment ratio							-.099**	.032
Gross enrolment ratio dummy							-.4**	.136
Country (reference=Euro/Oceania								
Asian							-.105**	.038
Other							-.076	.047
Cons	11.43***	.022	9.21***	0.11	9.10***	.024	9.05***	.126
R^2	.007		0.193		0.212		0.217	

Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

Model 3 examines the effect of college majors on earnings. Though not significant, the differences between foreign-educated Asian and others increase when STEM-designated degrees are added to the model. Besides, the results show that individuals with STEM-designated degrees earn significantly more than those without. This indicates that STEM majors suppress larger differences between the four immigrant groups.

Model 4 adds country of origin and education quality. Though not significant, when controlling for country of origin, foreign-educated Asian immigrants received higher

earnings than U.S.-educated white immigrants, and their U.S.-educated counterparts ranked the highest among the four groups. Compared to those who come from Western countries such as Europe, Australia and New Zealand, college-educated immigrants originating from Asia receive significantly lower earnings. In addition, contrary to what I expected, there is a negative relationship between the gross enrollment in tertiary education ratios of immigrants' countries of origin and earnings, while log GDP per capita is positively related to earnings. It may be that those immigrants coming from countries with lower rates of tertiary education are more selective.

Table 3-3: Estimated Earnings Differences Between Immigrant Groups

Comparison Group	Reference Group	Model 1	Model 2	Model 3	Model 4	Model 5
FEAI	UEWI	-0.003	0.03	0.026	0.013	0.048
UEAI	UEWI	-0.002	0.025	0.001	0.051	0.062
FEWI	FEAI	0.122	0.05	0.067	-0.003	-0.113**
UEAI	FEAI	0.123***	0.045	0.042	0.035	-0.099

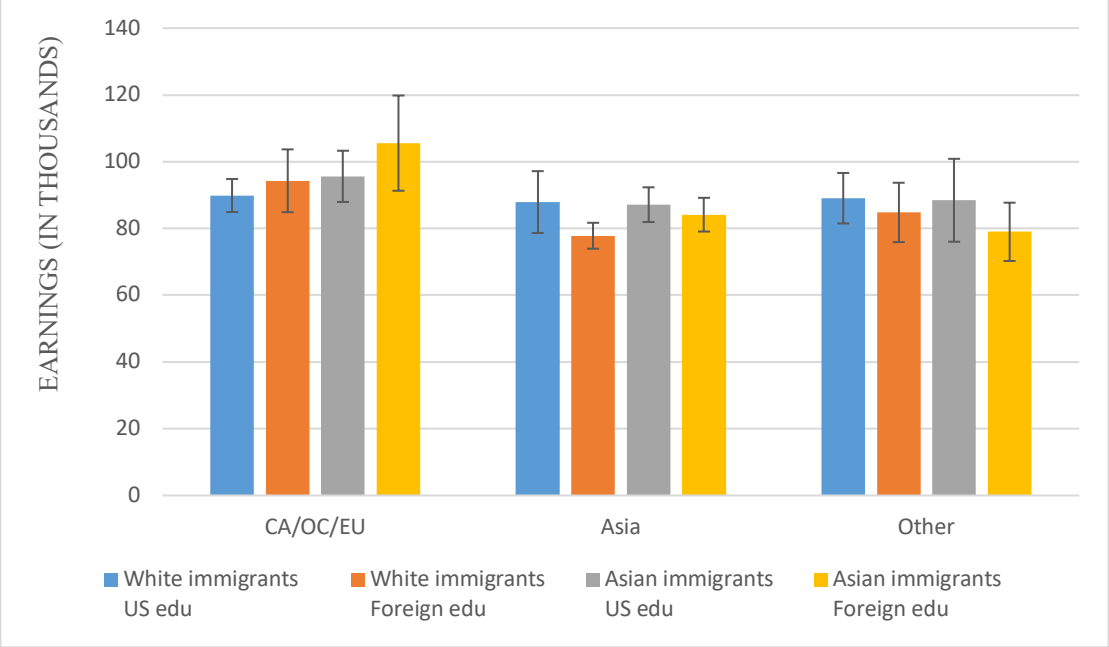
Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

Model 5 tests whether the earnings of foreign-educated Asian immigrants are more affected by countries of origin than their U.S.-educated peers and White immigrants who study abroad, as shown in Table 3-4. The data reveals striking differences among highly educated immigrants with or without a U.S. education. Specifically, foreign-educated Asian immigrants' earnings ranked the highest among all groups if they were educated in Europe, Oceania and Canada, and their earnings are significantly higher than those of foreign-educated White immigrants. However, foreign-educated Asian immigrants tend to receive lower earnings than their U.S.-educated counterparts and White immigrants with

U.S. education if they originated from Asian, and they ranked the lowest among the four immigrant groups if they originated from other non-Western and non-Asian countries.

For foreign-educated immigrants, nativity variation reveals a discrepancy in the source of individuals' human capital. The results confirm previous literature indicating that immigrants from less developed, non-Western countries tend to experience a larger wage disadvantage than immigrants from Western countries. The effect of source of human capital plays a stronger role among foreign-educated immigrants.

Figure 3-1: Predicted Earnings for Whites and Asian-Americans By Country of Origin (based on Model 5)



Notes: Error bars show 95% confidence intervals.

In model 5, the effect of region of nativity is less noteworthy among U.S.-educated Asian immigrants. While U.S.-educated Asian immigrants may have had some schooling in their home countries before immigration, the findings suggest that whether or not workers had attained some education in their home country does not matter much for

earnings as long as they completed college education in the United States. In other words, host country education becomes a viable option for Asian immigrants to achieve economic advancement.

Discussion and Conclusion

Overall, the results produced compelling evidence that 1) the existence and magnitude of the disadvantage of foreign education depend on the immigrants' origin countries. For both foreign-educated Asian and white immigrants, educational degrees acquired in non-Western countries are less transferable to the U.S. labor market than those obtained in Western countries. Among developed countries like Europe and the United States, the industrial structures and the types of skills that are rewarded in their labor markets are similar, and English language proficiency is high. Thus, the knowledge and skills acquired in school may be easier to translate into greater productivity in the receiving countries (Chiswick, 1979; Mincer and Ofek, 1982; Borjas, 1992b). Quite the opposite, the cultural and social distances and English language proficiency are more different between Asian countries and the United States. Overall, the results suggest that the earnings disadvantage experienced by foreign-educated immigrants is primarily due to low (or poorly transferable) skills.

2) For Asian immigrants, there is some evidence that education quality might matter. However, more evidence suggests that the selectivity of an immigrant compared to their native country influences an immigrant's earnings. For instance, immigrants from countries with lower rates of tertiary education tend to earn significantly more in the U.S.

3) The results suggest that attending college in the U.S. substantially influences economic advancement. For many immigrants, host country schooling can provide the

acquisition of formal and informal skills that are in demand among receiving country employers (Duvander 2001). And most importantly, the higher quality of education that immigrants acquire in the receiving country is the main reason for the strong positive outcomes of host-country schooling (Kanas and van Tubergen 2009; Arbeit and Warren 2013). Overall, access to host country education can help integrate new immigrants, particularly those facing economic challenges. By providing opportunities for skills development, knowledge advancement, and cultural assimilation, host country education works as a key driver in enhancing the economic prospects and social cohesion of immigrant population.

Table 3-4: The Moderating effect of Country of Origin on Earnings

	Model 5	
	Coef.	SE
Race/Nativity/Place of educ (reference**=** UEWI)		
FEWI	.048	.06
UEAI	.062	.047
FEAI	.161	.083
Educational attainment (reference=BA)		
BA+	.27***	.019
Major choice (reference=non-STEM)		
STEM……	.211***	.023
Language Skills (reference= English only)		
No English……	-.46***	.047
Very well……	-.083***	.017
Well ……	-.352***	.03
Not well ……	-.589***	.044
Female	-.239***	.019

Table 3-4. (continued)

Age ……	.095***	.006
Age^2 ……	-.001***	0
Citizen		
Not a citizen	.008*	.023
Years in the US	0*	0
Years in the US Squared		
Urban residence: Division (reference= New England)		
Middle Atlantic……	.042	.023
East North Central……	-.101***	.011
West North Central……	-.161***	.028
South Atlantic……	-.097***	.011
East South Central..	-.236***	.028
West South Central..	-.065***	.014
Mountain ..	-.174***	.02
Pacific Division..	.075	.023
Log of GDP per capita	.052**	.016
Log of Gross enrollment ratio	-.098**	.032
Gross enrolment ratio dummy	-.39**	.138
Country (reference=Euro/Oceania		
Asian	-.022	.063
Other	-.009	.049
Race/Nativity/Place of educ* Country		
White-Foreign-edu* Asia	-.169*	.069
White-Foreign-edu* other	-.097	.065
Asian-US-edu*Asia	-.071	.072
Asian-US-edu*other	-.07	.057
Asian-Foreign-edu*Asia	-.204*	.101
Asian-Foreign-edu*other	-.281**	.082
Cons	9.037***	.128
R^2	.218	

Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

CHAPTER 4

THE ENGLISH-SPEAKING PROFICIENCY OF THE SENDING COUNTRY AND EARNINGS DIFFERENCES BETWEEN ASIAN AND WHITE IMMIGRANTS IN THE U.S.

Introduction

Researchers generally agree that much of the earnings disadvantage Asian Americans face is due to their higher likelihood of receiving their education credentials from institutions outside the United States. Previous analysis in Chapter 3 demonstrates that the earnings penalties associated with nativity and the source of human capital are more pronounced among foreign-educated Asian immigrants, and their educational degrees acquired in non-Western countries are less transferable to the U.S. labor market compared to those acquired in Western countries.

Chapter 4 further explores the effect of country of origin on earnings by considering both the language of the country where an immigrant may have received his or her degree and the region in which that country is located. I account for whether the country in which an immigrant presumably earned their degree is English-speaking or not to gauge the transferability of human capital to the U.S. job market.

The language of the country of origin plays a significant role in labor market assimilation. In empirical studies, as a critical aspect of pre-migration human capital, individuals' native language is commonly used as a proxy for skill transferability (Akresh 2007). Researchers generally agree that Asian countries, which constitute a large part of recent immigration, are more culturally distinct from the United States compared to the source countries, such as Britain, that dominated earlier immigrant waves(Duleep and Regets 1997). Because Asian countries may contain large elements of region specific skills,

the education and training acquired in those countries are less than perfectly transferable across national boundaries if English is not used as the medium of instruction. U.S. employers may be more likely to reward those who have earned their degrees in English-speaking countries. These graduates are more likely to acquire strong English-speaking skills, which can help them effectively communicate their knowledge to English-speaking employers.

In this chapter, I want to explore whether Asian immigrants who earn degrees in English-speaking countries will experience higher earnings returns compared to those who earn degrees in non-English-speaking countries.

Besides lower skill transferability, non-recognition or devaluation of immigrants' foreign credentials is another reason a foreign education carries a penalty compared to individuals with domestic education. It is possible that even when home country credentials are of similar quality to those from the U.S., foreign certificates are discounted by employers either by maintaining barriers to recognizing them or by disregarding their value outright (Tesfai 2017).To account for credentialism, I want to examine whether the penalties for Asian immigrants who earned degrees in regions that are more culturally or historically similar to the U.S., like Canada, Australia, and the English-speaking countries in Europe, are lower than for degrees earned in regions that may be perceived as more dissimilar, such as Asia or Africa.

Finally, I look for evidence of discrimination in the labor market. I want to explore whether Asian immigrants who earn degrees abroad suffer more earnings disadvantage than White immigrants who earn degrees abroad, even after accounting for these other factors?

Data and Method

The data for this research comes from the pooled 2015 to 2019 American Community Survey (ACS) accessed through the Integrated Public Use Microdata Series. The analyses are limited to only immigrants who reported a bachelor's degree. In addition, I limit the sample to first-generation immigrants who are able-bodied, full-time employed, and in the labor force with positive earnings, between ages of 25 and 64, and not currently in school.

Dependent Variable and Main Independent Variable

The dependent variable is the logged annual earnings of those in the labor force with positive earnings. The proxy measure of place of education using a few variables available from the ACS: age, ethnicity, education, and year of immigration is the primary independent variable.

Explanatory Independent Variables

Language and region of degree: Based on the primary language of communication in a country and area of the immigrant's home country, the country of origin is further broken down into five categories: (1) Canada, Australia/New Zealand, Europe: English Dominant; (2) Europe: Non-English Dominant; (3) Asia: English Dominant; (4) Asia: Non-English Dominant; and (5) all other nations.

The criterion for deciding whether English predominates is based on whether English is an official language or predominantly spoken and primary used in public domains, including academic institutions, business, tourism, in a given country. Europe has the strongest English proficiency of any region in the world. The English-speaking European countries comprise countries in Northern Europe, including Denmark Finland

Iceland Norway Sweden, as well as major countries in Western Europe like the United Kingdom, Ireland, Belgium, Netherland, Switzerland, Austria, and Germany. These countries have high levels of English proficiency and often use English as a primary or official language (English Proficiency Index 2015).The non-English-speaking European countries include France, as well as countries from Southern Europe, Central Europe and Russia. These countries typically have lower levels of English proficiency and do not primarily use English as an official or dominant language.

English-speaking Asian countries include Malaysia, Philippines, Singapore, India, Hong Kong, Bangladesh, Bhutan, Myanmar (Burma), Pakistan, Sri Lanka, Maldives, and Nepal. In India, English is an official language used to facilitate communication across the country's diverse communities. Pakistan has the third-largest number of English speakers in the world. In countries like Nepal, Bhutan, although English is considered a foreign language, it has become one of the primary and dominant languages extensively used in public domains. English is widely spoken and commonly understood in countries such as Bangladesh and Maldives, either due to the widespread tourism that the country is dependent on or due to British colonization(Bolton 2008). Other Asian countries with low English-speaking proficiency, such as China, Japan, Korea, are categorized as "non-English-speaking Asian countries." Besides, countries in Central America, South America, the Middle East, Africa, and the Pacific Islands are classified as the "Other" category.

Education quality: The quality of a foreign country's education is captured with two measures. The first is the logged GDP per capita of the country. GDP is measured as the log of source-country per capita gross domestic product (in U.S. dollars).To better capture differences in educational quality when immigrants attended school, this variable

is lagged for 20 years (Bratsberg and Terrell 2002).The second is the logged average of a country's 1990 and 2000 gross tertiary enrollment ratio, which is calculated as the proportion of students enrolled in tertiary education, regardless of age, to the population of the age group which officially corresponds to tertiary education. Countries that have missing information are assigned a dummy variable[7]. Tertiary education has been found to contribute to individual future earnings, national economic growth, and other non-monetary benefits, including improving health outcomes and fostering civic engagement. Since the late twentieth century, global participation in higher education has expanded tremendously. It has been well-documented that higher education has become the most significant factor that diversified individuals' income. Meanwhile, modern higher education is evolving from an 'elite' educational system to a system that prepares students for serving in a variety of professional fields to meet the burgeoning demand for more high-skilled labor in the workplace (Yu and Delaney 2014; Altbach, 2013;Trow 2000). Boosting the economic growth of nations thus becomes 'a major rationale for public investment in higher education' (Johnstone and Marcucci 2010, p.276). In addition, the mass and global expansion of higher education participation is also believed to accommodate society's responsibility to promote social justice (Trow 1976). A wider range of social groups including racial and ethnic minorities, individuals from low socio-economic backgrounds, women, access to higher education is still limited in many regions.

[7] The World Bank defines tertiary education as universities as well as colleges, technical training institutes, community colleges, nursing schools, research laboratories, centers of excellence, distance learning centers, and other pots-secondary education. Data can be found there: https://databank.worldbank.org/Tertiary-Education/id/2c670ebf

Individual-level Characteristics

I include additional control variables that are predictive of wages: age and its squared term, gender, English-language proficiency, a dichotomous variable indicating whether the respondent is a U.S. citizen (1) or not (0), and individuals' region of residence.

Analytic Strategy

I run linear regression models with logged, positive earnings as the dependent variable to further explore the earnings returns to a degree earned abroad.

Model 1 provides baseline differences in wages between four immigrant groups. In Model 2, major choice and individual-level controls for age and age squared, years in the U.S. and its square, English-language proficiency, and citizenship status are included to see if the differences between the four immigrant groups persist. In Model 3, I add two educational quality measures-- country GDP per capita and percentage of post-secondary degree holders in a country, to see if academic quality mediates any of the relationships. In Model 4, I add language and region of degree as control to examine the transferability of human capital to the U.S. job market. In Model 5, I add interactions between the categories of race/place of education and English-speaking country and region to see if these influence Asian and White immigrants differently.

Descriptive Statistics

Table 4-1 reports data on the distribution of white and Asian immigrants with bachelor's degrees or higher, and between the ages of 25 and 64. The results show foreign-born immigrants from Asian countries in which English languages predominated constitute the highest proportion (38.21%) among all highly educated foreign-born workers, followed by those from Asian countries in which non-English predominate (26.13%). Moreover, among Foreign-educated Asian immigrants, those from countries in which English languages (65.18%) predominate outnumbered those coming from non-English predominating countries (32.45%). Among U.S. educated Asian immigrants, the proportion of individuals coming from non-English predominating and English-predominating countries is almost the same. Among foreign-educated white immigrants, a similar proportion of individuals come from English-speaking countries and non-English-speaking countries.

Table 4-1. Descriptive Statistics for Immigrants With College Degrees

Country of Origin/ English proficiency of the country	US-Educated White Immi-grants	Foreign Educated White Immi-grants	US-Educated Asian Immi-grants	Foreign Educated Asian Immi-grants
%CA, OC, EU, English Dominant	28.46	37.43	1.68	.86
%Europe, Non-English Dominant	42.32	37.65	.16	.10
%Asia, English Dominant	.94	.63	46.70	65.18
%Asia, Non-English Dominant	.71	.35	48.88	32.45
%Other Nation	27.56	23.94	2.58	1.41
N=186,550	24,062	39,275	51,414	71,799

Data: ACS 2015-2019

Results

Table 4-2: Estimated Regression Coefficients from Earnings Estimates by Region and English-Speaking Proficiency of the Sending Country Between Immigrant Groups

	Model 1		Model 2		Model 3		Model 4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Race/Nativity/Place of educ (reference= UEWI)								
FEWI	-.003	.049	.026	.05	.016	.047	.01	.048
UEAI	-.002	.054	.001	.025	-.012	.036	.035	.04
FEAI	-.125	.082	-.041	.04	-.047	.043	-.007	.055
Educational attainment (reference=BA)								
BA+			.284***	.027	.273***	.019	.276***	.02
Major choice (reference=non-STEM)								
STEM……			.212***	.024	.212	.023	.211***	.022
Language Skills (reference= English only)								
No English			-.474***	.064	-.462***	.047	-.402***	.044
Very well…			-.104***	.028	-.087***	.019	-.057***	.012
Well ……			-.367***	.041	-.358***	.032	-.307***	.023
Not well ……			-.601***	.057	-.596***	.044	-.528***	.039
Female			-.241***	.019	-.238***	.019	-.234***	.019
Age ……			.096***	.006	.095***	.006	.095***	.006
Age^2 ……			-.001***	0	-.001***	0	-.001***	0
Citizen								
Not a citizen			.03	.017	.008	.023	-.002**	.022
Years in the US			.009*	.003	.009**	.003	.009**	.003
Years in the US Squared			0*	0	0**	0	0**	0

Table 4-2. (continued)

Urban residence: Division (reference= New England)								
Middle Atlantic			.035	.022	.042	.023	.044	.025
East North Central			-.11***	.012	-.102***	.011	-.102***	.012
West North Central			-.168***	.029	-.162***	.027	-.162***	.028
South Atlantic			-.107***	.012	-.1***	.011	-.1***	.011
East South Central			-.244***	.03	-.24***	.029	-.239***	.029
West South Central			-.075***	.015	-.068***	.014	-.071***	.014
Mountain ..			-.183***	.024	-.176***	.02	-.18***	.021
Pacific Division..			.068*	.029	.072**	.023	.075**	.026
Log of GDP per capita					.058***	.015	.048**	.016
Log of Gross enrollment ratio					-.094**	.033	-.095*	.037
Gross enrollment ratio dummy					-.397**	.138	-.39*	.155
Region/English-speaking (reference=EU/OC_English dominate								
EU non-English							-.146***	.035
Asia English							-.161*	.051
Asia non-English							-.22***	.049
Other							-.166**	.051
Cons	11.426***	.022	9.099***	.024	8.974***	.125	9.157***	.185
R^2	.007		.212		.216		0.22	

Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

Table 4-2 presents regression results for model 1 to 4. Model 1 tests the effect of place of education on earnings among white and Asian immigrants. Table 4-3 reports the *t*-tests of pairwise group differences in each model. In model1, the bivariate model shows that though not significant, Asian immigrants without a U.S. education ranked the lowest among all four groups. Asian immigrants with U.S.-education counterparts earned significantly more than their foreign-education counterparts, while they appear to earn less but did not significantly differ from White immigrants with U.S. education, as shown in

Table 4-3. The results indicate that a foreign education mainly affects Asian immigrants' earnings: a U.S. education prevents Asian immigrants from experiences severe earnings disadvantage.

Model 2 adds individual-level controls for age, years in the U.S., language proficiency, citizenship, region of residence as well as major choices. When these variables are included, though not significant, the differences in earnings between Asian immigrants educated abroad and White immigrants educated in the U.S. decline. The results indicate a lot of the differences can be attributed to the demographic differences shown in the model. In addition, the model shows that those who have STEM-designated degrees earn significantly more than those who do not.

Model 3 examines the effect of education quality of the sending country on earnings. Model 3 shows though not significant, Asian immigrants with foreign education again ranked the lowest among all four groups. Their U.S.-educated counterparts ranked the second lowest after my measure of education quality of the sending country are included. Foreign-educated White immigrants again ranked the highest. Contrary to my hypothesis, there is a negative relationship between the gross enrollment in tertiary education ratios of immigrants' countries of origin and earnings, while log GDP per capita is positively related to earnings. It may be that, rather than capturing educational quality in a country, this variable is better measures how selective an immigrant is. Those college-educated immigrants from countries with lower proportions of their populations in higher education may represent more selected members of that group. Trow (1972) identifies three enrollment stages of higher education development: higher education was growing from an elite system enrolling less than 15% of the school leaver age group to a mass system

between 15% and 50% and then a universal system with over 50%. In my analyses, the data reveals that the gross tertiary enrollment rates for Asian countries, whether English predominating or not, is only slightly higher than 10%, and thus quantifies elite systems as having less than 15% gross enrollment rates. It indicates even with the increasing expansion of higher education systems in worldwide, access to higher education in many Asian countries remains a concern. On the contrary, for developed countries, including Europe, Canada and Oceania countries surpass the gross enrollment rate threshold of 15% and achieve massified stage. It indicates that the expansion of higher education in these areas helps to meet the workforce's increasing educational demand as well as promote social justices. Overall, this model shows no significant differences in earnings across Asian and White immigrants who earned degrees in the U.S. and abroad.

Model 4 tests the effect of language and region of degree on earnings among white and Asian immigrants. Most noticeably, though not significant, the earnings difference between U.S.-educated Whites and foreign-educated Asian immigrants declines after the region and English-speaking proficiency of the country where they presumably earned the degree are included. Specifically, the earnings of foreign-educated Asian immigrants did not differ significantly from those of white immigrants educated in the U.S. Similarly, among white immigrants, those with foreign education did not significantly differ from their U.S.-educated peers.

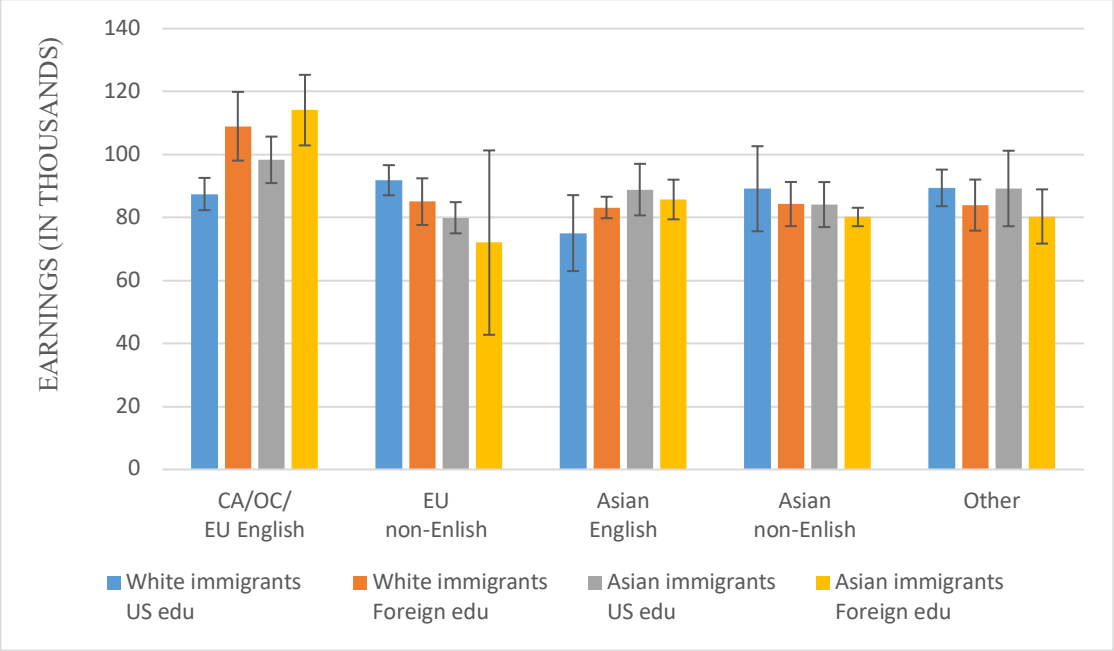
Table 4-3. Estimated Earnings Differences by Region and English-Speaking Proficiency of the Sending Country Between Immigrant Groups

Comparison Group	Reference Group	Model 1	Model 2	Model 3	Model 4	Model 5
Asian immigrants Foreign edu	White immigrants US edu	-.003	.026	.016	.01	.22***
Asian immigrants US edu	White immigrants US edu	-.002	.001	-.012	.035	.117***
White immigrants Foreign edu	Asian immigrants Foreign edu	.122	.067	.063	.017	-.046
Asian immigrants US edu	Asian immigrants Foreign edu	.123***	.042	.034	.042	- .149**

*** p<0.001, ** p<0.01, *p<0.05

Moreover, the results reveals the region and English-speaking proficiency of the sending country play a significant role in explaining earnings disparities between foreign-educated Asian immigrants and U.S.-educated Whites. The returns to education are greater for those who are educated in Canada, Australia, and English-speaking European countries compared to other immigrant groups, including non-English-speaking European countries, after controlling for countries where English is primarily spoken and the measure of the quality of education. Individuals who received their education from non-English-speaking Asian countries ranked the lowest among all groups. Among immigrants originating from Asia, those who earn degrees in English-speaking countries got higher earnings returns than those who earn degrees abroad in non-English-speaking European countries. By comparing earnings differences within a similar region, I argue that English-speaking proficiency of the country helps to transform foreign human capital into the U.S. labor market and thus increase earnings.

Figure 4-1. Predicted Earnings for Immigrants by Region and English-Speaking Proficiency of the Sending Country



Notes: Error bars show 95% confidence intervals.

To get a better sense of the circumstances under which a foreign degree might be an earnings liability for White and Asian immigrant workers, I run interactions between the region and English-speaking proficiency of the country in which they presumably earned their degree for White and Asian immigrants (model 5 in at the end). Figure 4-1 shows, most noticeably, the earnings of all Asian immigrants are significantly higher than White immigrants with U.S.-education if they were educated in Canada, Australia, English-speaking European countries or English-speaking Asian countries after controlling for countries where English is primarily spoken and my measure of the quality of education. Specifically, Asian immigrants ranked the highest. Their earnings are significantly higher than their U.S.-educated counterparts, as shown in Table 4-3. A similar pattern can be found among white immigrants: those with foreign credentials receive significantly higher

earnings than their U.S.-educated peers if they were educated in regions like Canada, Australia, and Europe, where English is predominant. However, the *t*-tests of pairwise group differences show the differences between White immigrants with foreign-education and Asian immigrants educated aboard are not significant, indicating Asian immigrants are not significantly different from White immigrants if they were educated in Canada, Australia, and Europe, where English is predominating.

Model 5 also reveals that the earnings of Asian immigrants ranked lower than those of Whites if they attained degrees in non-English-speaking regions, including non-English-speaking European and Asian countries. Foreign-educated White immigrants enjoy a relatively high economic status among immigrant groups if they were educated in English-speaking countries, similar to Asian immigrants. However, their financial status among the four immigrant groups remains mostly the same if they were educated in non-English-speaking countries. Overall, the results show: 1) there is less evidence of credentialism as the data showed the earnings returns varying more by whether a country is predominantly English-speaking than its region. 2) there appears to be little difference between Asian and White immigrant workers if they were educated in English-speaking countries. However, Asian immigrants' economic status declined tremendously if they attained their education from non-English-speaking countries. In contrast, White immigrants still enjoy a relatively high economic status if they receive their education from those regions.

Conclusion

Researchers generally agree that much of the earnings disadvantage Asian Americans face is due to their higher likelihood of receiving their education credentials abroad. In this chapter, I further investigate how the U.S. labor market responds to a

foreign degree. I examine whether the earnings differences might be due to individual-level differences between these two immigrant groups, differences in educational quality across countries, and differences in the primary language (English-speaking or not) and region of countries of origin.

The preceding regression analysis presents three key findings. First, for Asian immigrants who earned degrees in non-English-speaking countries, there is an earnings penalty even after controlling for region and the measure of the quality of education. The results indicate that graduates from countries where English predominates are likely to be able to communicate what they have learned to English-speaking employers in the U.S. It indicates human capital differences, particularly their transferability, explain most of the earnings penalty to a foreign degree. Moreover, the measure of education quality, log GDP per capita, and log school enrollment ratio for tertiary school seems to matter little for earnings. While there is some evidence that education quality affects earnings, more evidence can be found to suggest that the selectivity of an immigrant compared to their native country influences an immigrant's earnings.

Second, for Asian immigrants, their earnings ranked the highest among all immigrant groups if they were educated in Canada, Australia, or English-speaking European countries after controlling for countries where English is primarily spoken and my measure of the quality of education. While their earnings declined if they were educated from English-speaking Asian countries, they still ranked the second highest and enjoyed a relatively high economic status among the four groups. The results indicate there is less evidence of credentialism, and most of the differences in earnings returns are explained by whether a country is predominantly English-speaking than its region.

Table 4-4: Estimated Regression Coefficients from Earnings Estimates Based On Model 5

	Model 5	
	Coef.	SE
Race/Nativity/Place of educ (reference= UEWI)		
FEWI	.22***	.06
UEAI	.117***	.047
FEAI	.266***	.083
Educational attainment (reference=BA)		
BA+	.279***	.02
Major choice (reference=non-STEM)		
STEM……	.21***	.022
Language Skills (reference= English only)		
No English……	-.386***	.043
Very well……	-.055***	.011
Well ……	-.298***	.022
Not well ……	-.515***	.036
Female	-.233***	.019
Age ……	.095***	.006
Age^2 ……	-.001***	0
Citizen		
Not a citizen	.-002	.022
Years in the US	.009**	.003
Years in the US Squared	0*	0
Urban residence: Division (reference= New England)		
Middle Atlantic……	.043	.024
East North Central……	-.101***	.013
West North Central……	-.158***	.027
South Atlantic……	-.099***	.011
East South Central..	-.234***	.028
West South Central..	-.07***	.014
Mountain ..	-.177***	.021
Pacific Division..	.074	.026

Table 4-4. (continued)

Log of GDP per capita	.047**	.017
Log of Gross enrollment ratio	-.094*	.038
Gross enrolment ratio dummy	-.382*	.159
Country (reference=EU/OC non-English)		
EU non-English	.049	.031
Asia English	-.153	.084
Asian non-English	.19	.064
Other	.022	.039
Race/Nativity/Place of educ*Region/English		
White-Foreign-edu*EU non-English	-.297***	.04
White-Foreign-edu* Asia-English	-.117	.065
White-Foreign-edu*Asia non-English	-.275***	.063
White-Foreign-edu* other	-.283***	.041
Asian-US-edu* EU non-English	-.256***	.047
Asian-US-edu* Asia English	.052	.115
Asian-US-edu*Asia non-English	-.177**	.055
Asian-US-edu*other	-.119*	.049
Asian-Foreign-edu*EU non-English	-.509*	.215
Asian-Foreign-edu* Asia-English	-.133	.116
Asian-Foreign-edu*Asia non-English	-.372***	.064
Asian -Foreign-edu* other	-373***	.041
Cons	9.01***	.18
R^2	.222	

Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

Finally, the results suggest that there is little difference between Asian and White immigrant workers if they were educated in English-speaking countries. However, Asian immigrants' economic status declines tremendously if they attained their education from non-English-speaking countries. In contrast, White immigrants still enjoy a relatively high economic status if they received their education from non-English-speaking areas. The results indicate that White immigrants seem to have an advantage over Asian immigrants if they are educated in places that have longer linguistic and cultural differences compared to the United States. In the U.S. labor market, employers may need more information and

knowledge on the quality of foreign education and degrees if they were attained in non-English- speaking countries. Employers tend to show preferences for employees from higher-status race groups to determine whether someone is permitted to work in a certain field. The findings suggest it is important to establish clear and transparent processes for recognizing foreign academic and professional credentials in the United States.

CHAPTER 5

GENDER WAGE DISPARITIES AMONG ASIAN AND WHITE IMMIGRANT WORKERS

Introduction

Gender inequality is well documented in the U.S. labor market. Many existing studies have demonstrated that women receive lower pay and are more concentrated in low-paying jobs, such as administrative support and service positions (Blau and Kahn, 2000). Among researchers who study immigrant labor force outcomes, there is a tendency to either consider the immigrant population as a whole or focus solely on a subsample of men to explore the earnings disadvantage of immigrants in the U.S. labor market(Tong 2010). Separating the immigrant population by gender is important because the migration paths of men and women are often found to be very different. In this chapter, I explore whether Asian immigrants' labor market disadvantages are contingent on gender.

Immigration researchers have argued that gender may play a more salient role in wage disparity than immigrant status (Tong 2010). Previous studies generally show that the female immigrant population is the most disadvantaged group, as factors of gender and immigration intersect. Immigrant women are at a disadvantage compared to men regardless of their nativity, educational background, and place of education (Goyette and Xie 1999; Adsera and Chiswick 2004; Tong 2010). For instance, Goyette and Xie(1999) showed that foreign-born women scientists and engineers are less likely to be employed and promoted than their male counterparts and native-born women. Tong (2010) further investigated the effect of place of education on earnings among immigrant scientists and engineers. Their

results showed that the most vulnerable group comprises immigrant women who do not have a U.S. degree.

Immigration researchers also examine gender disparity by comparing earnings differences between foreign-born and native-born individuals. Results generally showed that the earnings gap between immigrant women and native-born women is smaller than that between immigrant men and native-born men. Tong (2010) thus concluded immigrant women may have less difficulty adapting to the highly skilled labor market in the U.S.

Researchers speculate that female immigrants' diverse family experiences and migration paths contribute to their unique disadvantages in the U.S. labor market (Lopez-Gonzalez et al., 2005). Unlike male immigrants, female migration is often viewed as a secondary movement resulting from the initial migration of economically motivated men (Tong 2010). While female immigrants are likely to participate in the labor market after migration, they are more likely to come to the United States to join their husbands who are already employed there, rather than based on their own occupational skills (Goyette and Xie 1999; Shan, Pullman, and Zhao 2016).

Building on previous research, in Chapter 4, I explore whether Asian immigrants' labor market disadvantages differ by gender. First, I compare earnings differences between immigrants and the U.S.-born population by gender. Specifically, I explore: 1) do college-educated female Asian immigrants face a more severe systematic earnings disadvantage due to the place where they receive their education compared to their male peers; and 2) whether STEM degrees help to alleviate the earnings disadvantage of both Asian immigrant men and women in the U.S. labor market. Previous studies have shown that major choices have a substantial effect on gender differentials in earnings (Daymont and

Andrisani 1984; Davies and Guppy 1997). Males are much more likely than females to enter fields of study with higher economic returns, such as STEM. Among immigrants with a college degree or higher in the United States, men outnumber women in the scientific workforce. Thus, it is essential to take field of study into consideration, especially since the effect of major choice begins before individuals enter the labor market.

Next, focusing on the immigrant population, I further explore how the country of origin affects the earnings of male and female immigrants. In the study design, I account for whether the country in which an immigrant presumably earned their degree is English-speaking or not to gauge the transferability of human capital to the U.S. job market. I want to explore: 1) do both female and male Asian immigrants who earn degrees in English-speaking countries experience higher earnings returns than those who earn degrees in non-English-speaking countries; and 2) among both male and female Asian immigrants, are the penalties for immigrants who earn degrees in regions that are more culturally or historically similar to the U.S., like Canada, Australia, and the English-speaking countries in Europe, lower than those for degrees earned in regions perceived as more dissimilar after controlling for countries where English is primarily spoken and the measure of the quality of education.

The Moderating Effect of Field of Study by Gender

Data and Method

My study is based on analyses of the pooled 2015 to 2019 ACS accessed through the Integrated Public Use Microdata Series. The analytical sample consists of individuals between the ages of 25 and 64, who are not in school or self-employed, are able-bodied full-time workers, and reports at least a bachelor's degree.

Dependent Variable and Main Independent Variable

The dependent variable is the natural logarithm of the annual salary of a respondent for each survey year. All annual wages have been standardized to dollars as valued in 2019.

The proxy measure of place of education that uses age, ethnicity, education, and year of immigration is the primary independent variable.

Explanatory Independent Variables

Field of study is a critical variable in my research. In the ACS, the variable "field of study" reports the field in which the person received a bachelor's degree. In the study design, university curricula are divided into two categories: STEM fields and non-STEM fields.

Additional covariates found to be predictive of wages include: educational attainment measured as bachelor's degree and graduate degree; occupation (Managerial; Computer and Mathematical; Architects (Except Naval); Scientist/Life Physical and Social Sciences; Legal; Healthcare Practitioners and technical; Technicians, sales, Office and Healthcare support; Arts, design, entertainment, sports and media-multimedia; Protective Services; Education and Community/social Services; service, farming, production, and other), age (in years) and age squared, sex, English proficiency (measured in five categories: No English, speaks not well, speaks well, speaks very well, and only English), and region of residence (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central and West South Central).

Analytic Strategy

In Chapter 5, I first compare the earnings differences between white and Asian immigrants as well as their U.S.-born peers by gender. Male and female subsamples are

estimated separately. I want to explore whether STEM degrees help alleviate the earnings disadvantage of both Asian immigrant men and women in the U.S. labor market. STEM degrees are relatively universalistic. Model 1.1 and Model 1.2 provide the baseline differences in wages between four immigrant groups and their U.S.-born counterparts, broken down by gender. In Model 1.3 and Model 1.4, major choices and individual controls, including educational attainments, age and age squared, English-language proficiency, occupation and region are included to see whether the differences between four immigrant groups and their U.S.-born peers remains. In Model 1.5 and 1.6, I examine interactions between the six categories of race/nativity/place of education and major choices. The analysis aims to determine if these interactions affect male and female Asian and White immigrants and non-immigrants differently.

Descriptive Statistics

I first highlight differences in characteristics of respondents based on race, nativity and place of education. My analysis involves comparing white and Asian immigrants as well as their U.S.-born peers. Table 5-1 and Table 5-2 reports summary statistics for males and females with a bachelor's degree or higher, ages 25-64.

Immigrants make up the main population of Asian Americans, with a predominance of bilingual and foreign-educated individuals among Asian immigrants. Asian immigrants had the lowest rate of using English exclusively. Compared to other groups, U.S.-born Asians had the youngest population among the six groups, with a mean age of 37.94 years for men and 37.2 years for women.

Socioeconomically, differences between male and female subsamples across the six groups of workers are prominent. Most notably, the earnings gap between immigrant

and native-born women is smaller than between their male counterparts. Specifically, among males, foreign-educated Asian immigrants ($119,672) received the lowest wages across the six groups. Among females, all immigrants and minority populations, including foreign-educated Asian immigrants, received higher earnings than the reference group, the U.S.-born Whites. U.S.-educated Asian immigrant women ($102,227) ranked the highest among female subsample, followed by U.S.-educated white immigrants ($145,844) and U.S.-born whites ($121,291). Equally noticeable, male respondents received much higher earnings than their female counterparts across all six groups separated by race, nativity, and place of education.

Gender differences in education are prominent among Asian immigrants. Female Asian immigrants are less likely to hold a post-graduate degree than their male counterparts, and the difference is more prominent among those with foreign degrees. In addition, the distribution of men and women holding STEM degrees is also highly uneven. Male respondents out-numbered with STEM degrees regardless of their race, nativity, and place of education. Among all immigrants and U.S.-born populations, Asian immigrant men have the highest concentration in the STEM field. Specifically, approximately seventy percent of foreign-educated Asian immigrants (71.74%) and U.S.-educated Asian immigrants (67.48%) received STEM degrees. While a similar pattern can be found among male white immigrants, the percentage of individuals with STEM degrees is much lower.

Table 5-1. Descriptive Statistics for Male Respondents With College Degrees

Male	UBW	UEWI	FEWI	UBA	UEAI	FEAI
Mean years of Schooling	16.85 (1.23)	17.42 (1.50)	17.47 (1.47)	16.99 (1.36)	17.34 (1.38)	16.94 (1.28)
Educational Attainment						
% BA+	34.96	52.27	55.37	38.26	56.28	53.39
Mean annual wage (in $ 2019)	121291 (108391)	145844 (128498)	154878 (135838)	120835 (110392)	133831 (109363)	119672 (94156)
Mean age	44.14 (11.04)	43.00 (10.82)	46.10 (9.79)	37.94 (9.82)	40.51 (9.51)	44.33 (9.64)
Language						
% English only	97.21	45.17	37.88	65.4	21.45	7.15
% no English	.00	.07	.2	.02	.09	.3
%Very well	2.52	50.72	48.05	31.3	64.65	66.82
%Well	.18	3.57	11.71	2.65	12.74	21.82
%Not well	.009	.47	2.16	.63	1.07	3.91
Major						
STEM	34.97	52.86	60.73	48.76	67.48	71.74
Occupation						
Managerial……	24.58	24.19	27.39	18.10	18.81	17.83
Business	10.14	8.78	6.85	12.06	9.32	6.11
Computer &Math	8.8	13.03	14.77	15.75	23.69	30.94
Architects	7.05	9.58	8.99	8.23	12.63	9.49
Social/ Sciences	2.28	3.75	4.92	2.91	4.11	4.44
Legal	2.97	2.45	.93	2.74	1.26	.36
Healthcare Practitioner	5.13	7.69	5.34	12.23	8.36	7.59
Technicians, sales/office	15.98	11.86	10.14	13.28	9.48	9.31
Arts, sports, media	2.82	2.64	2.67	2.75	1.74	1.23
Protective Services	3.58	2.17	1.58	2.48	1.41	1.55
Educ & Social Services.	9.76	8.69	8.26	5.12	5.2	4.84
Other……	6.92	5.16	8.14	4.36	4	6.31
Urban residence						
New England	6.92	8.54	8.41	3.93	4.82	5.15
Middle Atlantic	14.65	21.65	19.87	15.84	18.03	18.44
East North Central	16.2	11.21	10.06	6.78	7.68	10.07
West North Central	7.43	2.27	2.13	1.4	1.99	2.22
South Atlantic…	19.52	17.97	19.02	10.88	13.92	15.97
East South Central	5.35	1.9	1.98	.78	1.14	1.76
West South Central	9.64	6.84	8.25	6.04	9.3	10.5
Mountain	7.63	5.19	4.60	3.77	3.2	3.68
Pacific	12.66	24.43	25.68	50.58	39.92	32.22
N	573571	13297	24304	17725	27914	40900

Data: ACS 2015-2019

Table 5-2. Descriptive Statistics For Female Respondents With College Degrees

Female	UBW	UEWI	FEWI	UBA	UEAI	FEAI
Mean years of Schooling	16.93	17.35	17.35	17.07	17.31	16.99
	(1.21)	(1.40)	(1.42)	(1.34)	(1.40)	(1.28)
Educational Attainment						
% BA+	40.0	52.61	52.39	41.94	51.19	40.83
Mean annual wage (in $ 2019)	80909 (66673)	99839 (85395)	95359 (88861)	96558 (79960)	102227 (80319)	85966 (666955)
Mean age	43.12	41.39	46.00	37.20	39.69	45.80
	(11.16)	(10.48)	(9.83)	(9.79)	(9.24)	(9.74)
Language						
% English only	97.48	41.15	30.57	62.44	24.01	9.16
% no English	.0	.03	.29	.02	.09	.36
%Very well	2.2	54.99	53.21	34.46	62.15	64.98
%Well	.14	3.46	13.59	2.43	12.65	21.76
%Not well	.08	.36	2.34	.64	1.1	3.74
Major						
STEM	15.79	26.74	33.4	30.19	39.70	36.74
Occupation						
Managerial……	18.81	20.34	19.55	17.85	16.52	11.69
Business	11.22	13	10.85	14.51	16.33	12.46
Computer &Math	3.01	5.1	5.85	6.39	12.47	14.24
Architects	1.2	2.25	2.77	2.51	3.98	2.93
Social/ Sciences	2	3.72	5.56	3.3	4.55	4.6
Legal	2.74	3.62	1.7	3.68	1.95	.62
Healthcare Practitioner	14.03	14.47	12.12	18.94	16.91	21.35
Technicians/sales/ office	16.4	15.16	16.81	15.42	13.34	16.14
Arts, sports, media	2.75	3.05	3.21	3.8	2.47	1.5
Protective Services…	1.34	1	1.5	1.07	.75	1.6
Educ & Social Services.	24.32	15.94	15.12	10.56	8.56	7.26
Other……	2.18	2.35	4.96	1.95	2.17	5.67
Urban residence						
New England	7.16	9.17	8.29	3.76	5.11	4.23
Middle Atlantic	14.98	23.8	23.05	15.95	18.86	17.86
East North Central	16.27	10.93	10.25	6.06	6.93	8.51
West North	8.29	2.20	2.30	1.4	1.94	1.92
Central						
South Atlantic…	19.77	19.32	20.07	10.73	13.57	15.97
East South Central	5.65	1.81	1.72	.89	1.03	1.4
West South	9.62	5.67	6.95	5.95	7.82	9.08
Central						
Mountain	6.77	5.26	5.27	3.07	3.57	4.4
Pacific	11.48	21.84	22.11	52.2	41.16	36.63
N	530303	10765	14971	17059	23500	30899

Data: ACS 2015-2019

On the contrary, even though female Asian immigrants had the highest concentration in STEM majors among female subsamples, the number is much lower than their male peers. Less than forty percent of foreign-educated female Asian immigrants (36.74%) and their U.S.-educated counterparts (39.7%) hold STEM degrees. In addition, Asian immigrants, both men and women, had the highest concentration in majors that related to STEM while under-represented in positions with supervisory responsibilities. Male and female white immigrants are most likely to be in positions with supervisory responsibilities.

Overall, the preliminary analyses show that earnings differ by place of education and nativity among Asian Americans and Whites. First, for both male and female Asian Americans, foreign education is a disadvantage that leads to lower earnings. Second, the results confirm the existence of gender gap in the U.S. labor market. For Asian immigrants and their U.S.-born counterparts, women tend to receive lower pay, have a lower likelihood of majoring in STEM fields, and are less likely to work in high-paying managerial positions.

Results

Table 5-3 presents regression results for model 1.1 to 1.6. The baseline models, model 1.1 and model 1.2, test the effect of place of education on earnings among white and Asian respondents, and present the statistics for the male and female subsamples, respectively. The results show that among males, all immigrant groups including foreign-educated Asian immigrants received significantly higher earnings than U.S.-born whites. U.S.-born Asians ranked the lowest among all the six groups. Among whites, those with foreign nativity and education ranked the highest among all the groups.

On the other hand, among females, U.S.-educated Asian and White immigrants received significantly higher earnings than their foreign-educated peers. In contrast, U.S.-born white women ranked the lowest among all groups. Overall, the results reveal for both Asian immigrant men and women, the effect of place of education remains substantial on earnings: a U.S. education is linked with higher earnings compared to a foreign education.

Model 1.3 and model 1.4 adds major choices, occupation and individual-level controls for age, language proficiency, educational attainment, region of residence. Model 1.3 shows among males, the ordering of the six groups from the highest to the lowest earnings is: U.S.-educated white immigrants and their foreign-educated peers, U.S.-educated Asian immigrants, native-born whites, native-born Asians and foreign-educated Asian immigrants. Foreign-educated Asian immigrants and their U.S.-born counterparts received significantly lower earnings than U.S.-born whites do. Model 1.4 shows among females, U.S.-educated Asian immigrants and their U.S.-born peers ranked the highest, while Asian immigrants with a foreign-education ranked the lowest. Overall, the results from model 1.3 and model 1.4 show: 1) for male and female Asian immigrants, those with a foreign education experience an earnings disadvantage in the U.S. labor market. 2) Educational degrees and major choices are two crucial factors differentiating labor market outcomes. For both men and women, individuals earned significantly more with a graduate degree or a STEM degree: the earnings advantage of foreign-educated Asian immigrants, especially men, in the baseline models (models 1.1 and 1.2) is explained mainly by their higher concertation in STEM degrees. Once STEM major is controlled, Asian immigrants with non-STEM degrees experience significant earnings disadvantages in the U.S. labor market.

Table 5-3 Estimated Regression Coefficients from Earnings Estimates by Field of Study, Separate by Gender

	Model 1.1[8] Male Coef.	Model 1.2 Female Coef.	Model 1.3 Male Coef.	Model 1.4 Female Coef.	Model 1.5 Male Coef.	Model 1.6 Female Coef.
Race/Nativity/Place of educ (reference= US-born White)						
US-educ White immigrants	.143***	.16***	.092***	.08***	.088***	.077***
Foreign-educ white immigrants	.168***	.066***	.08***	-.017*	.087***	-.003
US-born Asian	-.028***	.149***	-.018**	.082***	-.034**	.077***
US-educ Asian immigrants	.110***	.199***	.052***	.082***	-.014	.066***
Foreign-educated Asian immigrants	.01*	.022***	-.055***	-.066***	-.176***	-.082***
Education (reference=BA)						
BA+……			.216***	.23***	.213***	.229***
Major choice (reference=non-STEM)						
STEM……			.124***	.108***	.108***	.102***
Language Skills (reference= English only)						
No English……			-.358***	-.297***	-.325***	-.293***
Very well……			-.066***	-.03***	-.069***	-.031***
Well ……			-.292***	-.22***	-.289***	-.219***
Not well ……			-.429***	-.348***	-.411***	-.345***
Occupation (reference= Managerial)						
Business			-.106***	-.088***	-.105***	-.087***
Computer &Math			-.115***	-.007	-.119***	-.010*
Architects			-.154***	-.005	-.152***	-.006
Social/ Sciences…			-.368***	-.234***	-.368***	-.235***
Legal			.105***	.075***	.105***	.076***
Healthcare Practitioner			.006	-.063***	.013**	-.062***
Technicians, sales, office			-.284***	-.395***	-.284***	-.395***
Arts, sports, media			-.395***	-.228***	-.396***	-.228***
Protective Services			-.482***	-.57***	-.483***	-.570***
Educ & Social Services.			-.659***	-.5***	-.660***	-.500***
Other……			-.596***	-.634***	-.595***	-.633***

[8] The results from Table 3, Model 1.1 differ from the descriptive for men due to the nature of the log transformation. Log transformation compresses larger values more than smaller values.

Table 5-3. (continued)

Age ……			.102***	.074***	.102***	.074***
Age ^{2} ……			-.001***	-.001***	-.001***	-.001***
Urban residence: Division (reference= New England)						
Middle Atlantic…			.011**	.026***	.013**	.026***
East North Central			-.118***	-.113***	-.118***	-.113***
West North Central			-.163***	-.156***	-.163***	-.156***
South Atlantic…			-.098***	-.099***	-.098***	-.099***
East South..			-.21***	-.223***	-.210***	-.223***
West South..			-.055***	-.101***	-.055***	-.101***
Mountain ..			-.149***	-.139***	-.148***	-.139***
Pacific D..			.045***	.058***	.046***	.058***
Major * Race/Nativity/Place of educ						
STEM*US-educ White imgnt					.017	.017
STEM*Foreign-educ White imgnt					-.002	-.042**
STEM*US-born Asian					.039***	.020
STEM*US-educ Asian imgnt					.111***	.045***
STEM*Foreign-educ Asian imgnt					.179***	.048***
Cons	11.42***	11.093***	9.143***	9.562***	9.147***	9.562***
R^2	.004	.007	.26	.26	.261	.261

Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

In Models 1.5 and 1.6, I examine the moderating effect of individuals' major choices by gender. I aim to investigate whether holding a STEM-designated degree affects the earnings of male and female foreign-educated Asian immigrants differently. Figure 5-1 and Figure 5-2 plot the moderating effect of the field of study on earnings by gender. The results show among males, foreign-educated Asian immigrants with STEM degrees received slightly higher earnings than U.S.-born Whites, while they ranked the lowest among non-STEM degree holders.

Table 5-4 Estimated Earnings Differences by Field of Study, Separate by Gender (based on Model 1.1 to Model 1.6)

	Comparison Group	Reference Group	Male			Female		
			Model 1.1	Model 1.3	Model 1.5	Model 1.2	Model 1.4	Model 1.6
Effect of place of education	Asian immigrants US edu	Asian immigrants Foreign edu	.1***	.108***	.162***	.177***	.148***	.148***
	White immigrants US edu	White immigrants Foreign edu	-.025*	.012	.001*	.094***	.098***	.079***
Effect of being native vs foreign born	U.S.-born Asian	Asian immigrants US edu	-.138***	-.07***	-.019	-.05***	0	0.011
	U.S.-born White	White immigrants US edu	-.143***	-.092***	-.088***	.16***	-.08***	-.077***
Effect of being White vs Asian (US born)	U.S.-born White	U.S.-born Asian	.028***	-.092***	.034***	.149***	-.082***	-.077***
Effect of being Asian vs White (foreign-educ immigrants)	Asian immigrants Foreign edu	White immigrants Foreign edu	-.158***	-.136**	-.263***	-.043***	-.048***	-.079***
Effect of being Asian vs White (US-educ immigrants)	Asian immigrants US edu	White immigrants US edu	-.033***	-.040***	-.102***	.039***	0.002	-0.01

Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

The story in the female subsample is slightly different from that in the men's subsample. Specifically, while the earnings of foreign-educated female Asian immigrants with STEM degrees ranked the second lowest among all groups, their earnings are significantly lower than the references group, the U.S.-born Whites, and their U.S.-educated peers. They ranked the lowest among all the six groups if they majored in non-STEM fields.

Figure 5-1: Moderating Effect of Major Choices for Male

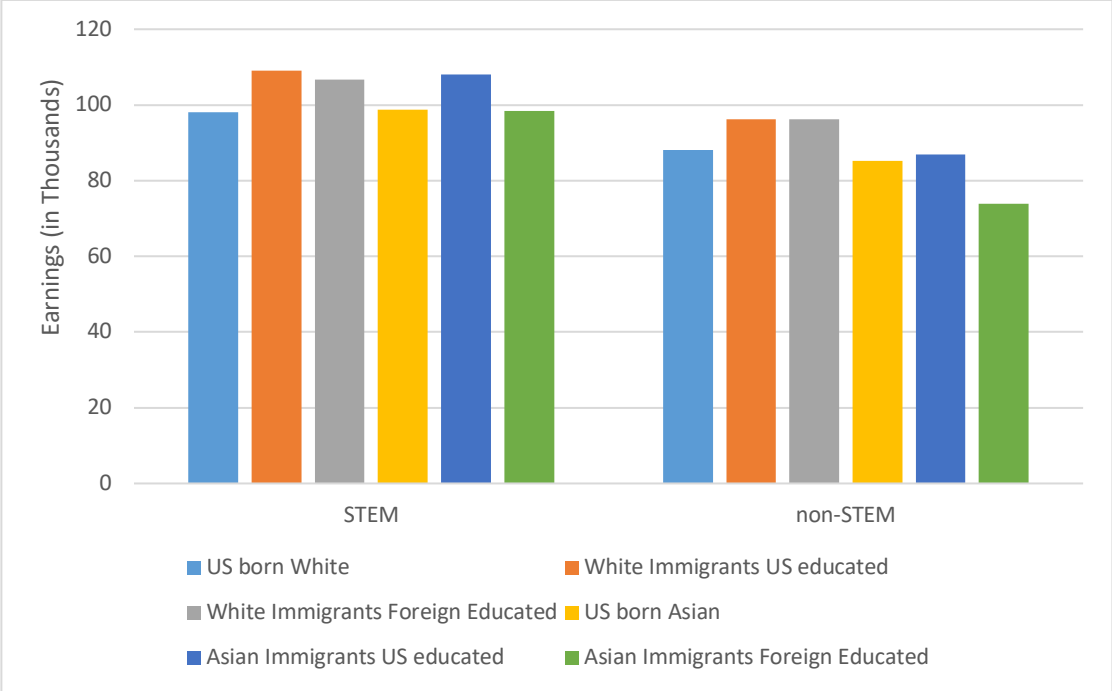


Figure 5-2: Moderating Effect of Major Choices for Female

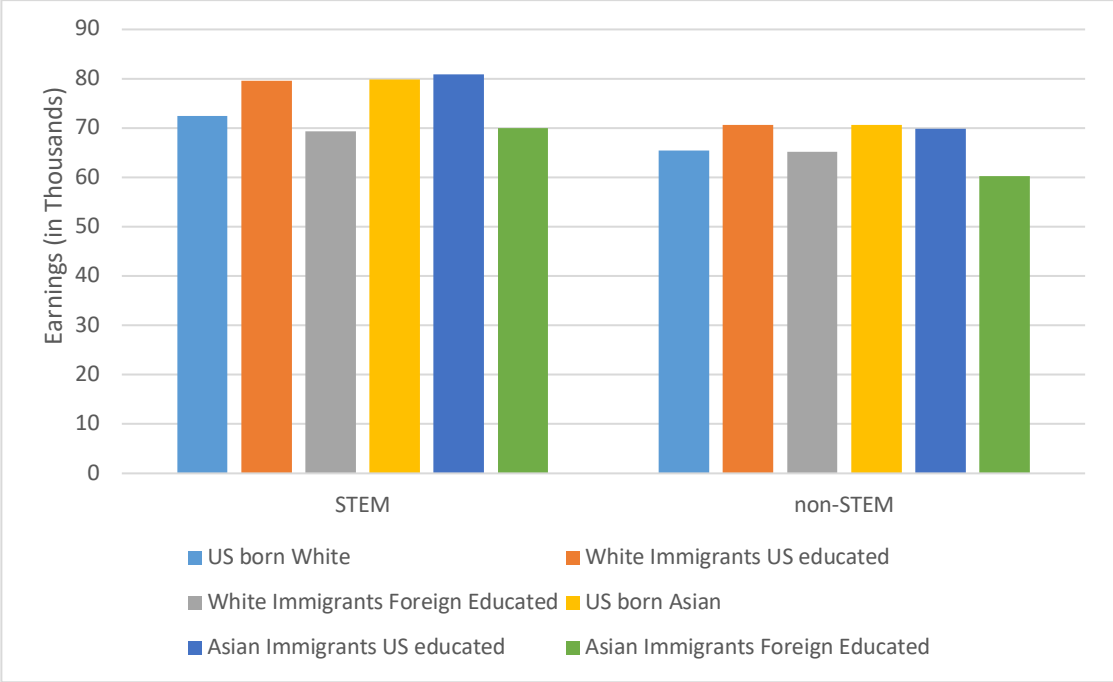


Table 5-4 reports the estimated earnings differences between the groups in the analysis. Most noticeable, when individuals hold a STEM degree, foreign-educated Asians immigrants received significantly lower earnings than White immigrants who study aboard. This deficit is larger than that between Asian and White immigrants with U.S. education. In addition, the results show the earning differences among male foreign-educated White and Asian immigrants holding STEM degrees are bigger than that those among females.

Overall, the results reveal 1) there is little to no difference in earnings returns to STEM degrees earned in the U.S. and abroad for men. Foreign-educated Asian immigrant men in non-STEM fields experience the most dramatic disadvantage in earnings. 2)Among foreign-educated Asian female immigrants, they experience earnings disadvantage compared to their peers, whether or not they have STEM degrees. It may be that, for men at least, STEM degrees are more transferable to the U.S. labor market, and/or it may be easier for men with STEM degrees to immigrate and attain residency in the U.S. based on U.S. immigration preferences for high-skill occupations. Asian immigrant women may be more likely to accompany spouses to the U.S. and, thus less likely to attain occupations based on these preferences.

Overall, I draw three substantive conclusions from the previous models. First, the results confirm the existence of gender gap in the U.S. labor market regardless of race, nativity and place of education. For white and Asian immigrants as well as their U.S.-born counterparts, women receive significantly lower earnings, and have a lower likelihood of choosing STEM fields.

Second, for both males and females, the place of education substantially affects the earnings of immigrants, and the impact of foreign education is more substantial for Asian immigrants than white immigrants. Asian immigrants with U.S. education enjoy a relatively higher earnings status in the U.S. labor market.

Third, STEM degrees better assist male Asian immigrants with foreign education to achieve a higher social status in the U.S. labor market than their female peers. There appears to be little to no difference in earnings returns to STEM degrees earned in the U.S. and abroad for Asian immigrant men. Foreign-educated Asian immigrant men in non-STEM fields experience the most dramatic disadvantage in earnings. Contrarily, foreign-educated Asian female immigrants tend to experience earnings disadvantage compared to their peers, whether or not they have STEM degrees. It indicates that for men at least, STEM degrees are more transferable to the U.S. labor market. And it may be easier for men with STEM degrees to immigrate and attain residency in the U.S. based on U.S. immigration preferences for high-skill occupations. Asian immigrant women's varied family experiences and migration paths differ from those of immigrant men. They may be more likely to join their husbands who are employed in the U.S. and thus less likely to attain occupations based on these preferences.

The Moderating Effect of Country of Origin by Gender

In the second part of the analysis, I focus on the immigrant population to explore how origin impacts male and female immigrants' earnings.

Data and Method

The analytical sample consists of white and Asian immigrants between the ages of 25 and 64, who are not in school or self-employed, are able-bodied full-time workers, and report at least a BA degree.

The dependent variable is the natural logarithm of the annual salary of a respondent for each survey year. The primary independent variable is the proxy measure of place of education.

Explanatory Independent Variables

The critical intervening variables in Part II are language, region of degree, and country of origin education quality. Based on the primary language of communication in a country and area of the immigrant's home country, this variable is further broken down into five categories: (1) Canada, Australia/New Zealand, Europe: English Dominant; (2) Europe: Non-English Dominant; (3) Asia: English Dominant; (4) Asia: Non-English Dominant; and (5) all other nations. Education quality is measured by the logged GDP per capita and the logged average of a country's 1990 and 2000 gross tertiary enrollment ratio. Countries that have missing information are assigned a dummy variable[9].

I also include additional control variables that predict wages: fields of study, age and its squared term, English-language proficiency, a dichotomous variable indicating whether the respondent is a U.S. citizen (1) or not (0), and individuals' region of residence.

[9] The World Bank defines tertiary education as universities as well as colleges, technical training institutes, community colleges, nursing schools, research laboratories, centers of excellence, distance learning centers, and other pots-secondary education.

Analytic Strategy

Focusing on the immigrant population, I aim to explore how country of origin impacts the earnings of male and female immigrants. To gauge the transferability of human capital to the U.S. job market, the language used in the country of origin is also taken into consideration.

Table 5-5. Descriptive Statistics For English Proficiency of the Sending Country Among Male Immigrants

Men	UEWI	FEWI	UEAI	FEAI
Citizenship				
%Not a citizen	19.71%	54.25%	24.94%	56.51%
Mean Years of immigration	29.76	13.63	25.73	13.24
Mean log GDP	8.59	8.87	6.66	6.58
Country of Origin/ English proficiency of the country				
%Canada, Oceania, Europe, English Dominant	28.87%	41.23%	1.67%	.85%
%Europe, Non-English Dominant	37.96%	32.37%	.15%	.07%
%Asia, English Dominant	.94%	.63%	49.53%	66.78%
%Asia, Non-English Dominant	.65%	.33%	46.11%	30.89%
%Other Nation	31.59%	25.44%	2.54%	1.41%
N=10,6415				

Data: ACS 2015-2019

Model 2.1 and model 2.2 provides baseline differences in wages between four immigrant groups, broken down by gender. In model 2.3 and model 2.4, field of study and individual-level controls for age and age squared, years in the U.S. and its square, English-language proficiency, and citizenship status are included to see if the differences between the four immigrant groups by gender persist. In models 2.5 and 2.6, language and region of degree are added. Finally, in models 2.7 and 2.8, I add interactions between my categories of race/place of education and English-speaking country and region to see if these factors influence Asian and White, male and female immigrants differently.

Table 5-6. Descriptive Statistics For English Proficiency of the Sending Country Among Female Immigrants

Women	UEWI	FEWI	UEAI	FEAI
Citizenship				
% Not a citizen	18.33%	43.34%	20.33%	39.88%
Mean Years of immigration	28.75	14.92	25.92	15.73
Mean log GDP	8.58	8.65	6.82	6.76
Country of Origin/ English proficiency of the country				
%Canada, Oceania, Europe, English Dominant	27.96%	31.25%	1.68%	.88%
%Europe, Non-English Dominant	47.72%	46.24%	.17%	.15%
%Asia, English Dominant	.93%	.63%	43.34%	63.06%
%Asia, Non-English Dominant	.80%	.37%	52.17%	34.51%
%Other Nation	22.59%	21.50%	2.63%	1.40%
N=80,135				

Data: ACS 2015-2019

Table 5-5 and table 5-6 reports data on the distribution of white and Asian immigrants with bachelor's degrees or higher, and between the ages of 25 and 64. Compared to men, female immigrants, regardless of their race and place of education, have a higher likelihood of becoming U.S. citizens. And the difference is most prominent among foreign-educated immigrants: the proportion of females that identified as "not a citizen" is substantially lower than their male counterparts. Among Asian immigrants, the female population, on average, resides in the United States for slightly longer periods than their male counterparts.

In addition, the results show that both male and female foreign-born immigrants from Asian countries where English is the predominant language constitute the highest proportion among all highly educated foreign-born workers, followed by those from Asian countries where non-English languages predominate. Quite opposite, among foreign-educated white immigrants, a similar proportion of individuals from English-speaking countries and non-English-speaking countries join the labor market without U.S. education.

Results

Table 5-9 presents regression results and presents the statistics for the male and female subsamples, respectively (shown at the end of the paper).

Model 2.1 and model 2.2 test the effect of place of education on earnings among white and Asian immigrants. Among males, though not significant, the bivariate model shows that Asian immigrants without a U.S. education ranked the lowest among all four groups. Their earnings are significantly lower than those of their U.S.-educated counterparts (shown in Table 5-7). Among females, Asian immigrants without U.S. education ranked the lowest: their earnings are significantly lower than white immigrants with U.S.-education, the reference group, and their U.S.-educated peers (shown in Table 5-8). The results indicate that a foreign education is associated with an earnings disadvantage among Asian immigrants.

Table 5-7. Estimated Earnings Differences by Region and English-Speaking Proficiency of the Sending Country Among Male Immigrant Groups

Comparison Group	Reference Group	Model 2.1	Model 2.3	Model 2.5	Model 2.7	Model 2.9
Asian immigrants Foreign edu	White immigrants US edu	.025	.034	.021	.012	.199 ***
Asian immigrants US edu	White immigrants US edu	-.033	-.029	-.032	.028	.094 **
White immigrants Foreign edu	Asian immigrants Foreign edu	.158	.106	.088	.027	-.038
Asian immigrants US edu	Asian immigrants Foreign edu	.1 ***	.043	.034	.042	-.143 *

Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

Table 5-8. Estimated Earnings Differences by Region and English-Speaking Proficiency of the Sending Country Among Female Immigrant Groups

Comparison Group	Reference Group	Model 2.2	Model 2.4	Model 2.6	Model 2.8	Model 2.10
Asian immigrants Foreign edu	White immigrants US edu	-.095 *	.01	.006	.003	.216 ***
Asian immigrants US edu	White immigrants US edu	.039	.042 **	.012	095	.148 ***
White immigrants Foreign edu	Asian immigrants Foreign edu	.043	0	.02	-.015	-0.1
Asian immigrants US edu	Asian immigrants Foreign edu	.177 *	.032	0.027	.032	-.168 *

Data: ACS 2015-2019
*** p<0.001, ** p<0.01, *p<0.05

Model 2.3 and model 2.4 add individual-level controls for age, years in the U.S., language proficiency, citizenship, region of residence as well as fields of study. Gender differences also exist in the effects of individual-level controls. Among males, though not significant, the differences in earnings between Asian immigrant men educated abroad and the reference group, white immigrant men educated in the U.S., decline after individual-level controls are included. On the contrary, among females, both foreign-educated Asian and white immigrants received higher earnings than the reference group, U.S.-educated white immigrants. The gender-specific analysis indicates that for female immigrants, many differences can be attributed to the demographic factors included in the model.

Model 2.5 and model 2.6 add measures of the education quality of the sending country, including the gross enrollment in tertiary education ratios and log GDP per capita. Though not significant, both male and female Asian immigrants with foreign education again ranked the lowest among all four groups. There is a negative relationship between the gross enrollment in tertiary education ratios of immigrants' countries of origin and

earnings, while log GDP per capita is positively related to earnings. It may be that, rather than capturing educational quality in a country, this variable better measures how selective an immigrant is.

Models 2.7 and 2.8 test the effects of language and region of degree on earnings among white and Asian immigrants. Most noticeably, though not significant, the wages of male foreign-educated Asian immigrants are slightly lower than those of White immigrant men whose education had occurred in the United States. Asian immigrant women with foreign education on average, received marginally higher earnings than U.S.-educate whites. In addition, the results reveal that returns to education are greater for both male and female immigrants who were educated in Canada, Australia, or English-speaking European countries than for those educated in non-English-speaking European countries, after controlling for countries where English is primarily spoken and the measure of the quality of education. In sum, by comparing earnings differences within similar regions, the results suggest that English-speaking proficiency of the country helps to transform foreign human capital into the U.S. labor market and thus increases earnings.

To get a better sense of the circumstances under which a foreign degree might be an earnings liability for White and Asian immigrant workers, I run interactions between the region and English-speaking proficiency of the country in which they presumably earned their degree for White and Asian immigrants, separately by gender (Model 2.9 and Model 2.10). Figures 5-3 and Figure 5-4 show:

First, among immigrants educated in the Anglo-Euro countries, including Canada, Australia, and English-speaking countries in Europe, male and female Asian immigrants with a foreign education ranked the highest among the four immigrant groups. On the

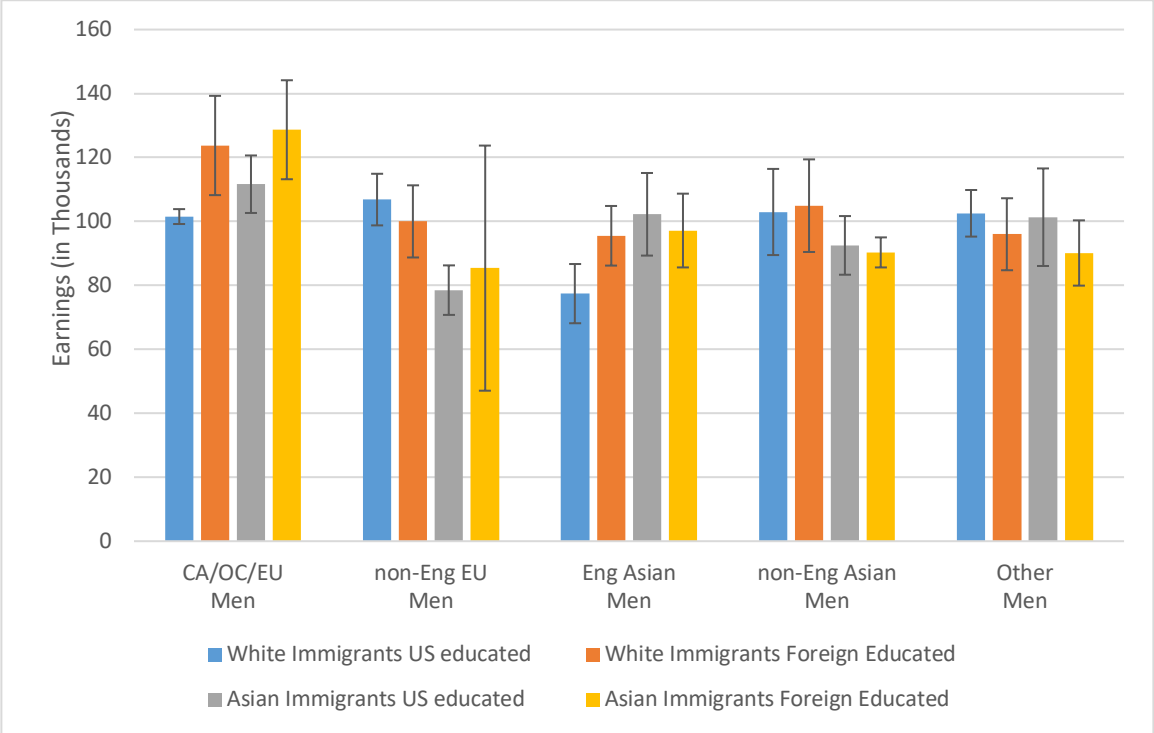
contrary, Asian immigrants with a U.S. education received lower earnings than their foreign-educated peers. The earnings patterns change tremendously among immigrants educated in European countries where other languages are spoken. Foreign-educated Asian immigrants are most disadvantaged when they come from non-English-speaking European countries. The results indicate that Asian foreign-educated immigrants, especially men, find it easier to transform foreign human capital to the U.S. job market if they originated or were educated in English-speaking countries and thus tend to receive higher earnings.

Second, the data reveals that for Asian immigrants, their earnings ranked the highest among all immigrant groups if they were educated in Canada, Australia, or English-speaking European countries after controlling for countries where English is primarily spoken and my measure of the quality of education. While their earnings declined if they were educated in English-speaking Asian countries, they ranked the second highest and enjoyed a relatively high economic status among the four groups. The results indicate most of the differences of earnings returns are explained by whether a country is predominantly English-speaking than its region.

Third, gender-specific analyses reveal for female Asian immigrants, a U.S. education ameliorates the earnings disadvantages that may come from immigrating from non-English, non-Anglo-Euro countries. However, among male Asian immigrants with a U.S. education, their earnings are lower than those of white immigrants with or without a U.S. education if they originated from areas where English is not the predominant language such as Asia. It indicates that Asian immigrant women who migrated are prone to gain skills after immigrating to the United States. They are less likely to use the knowledge and skills they acquired from education in their origin countries when migrating. On the

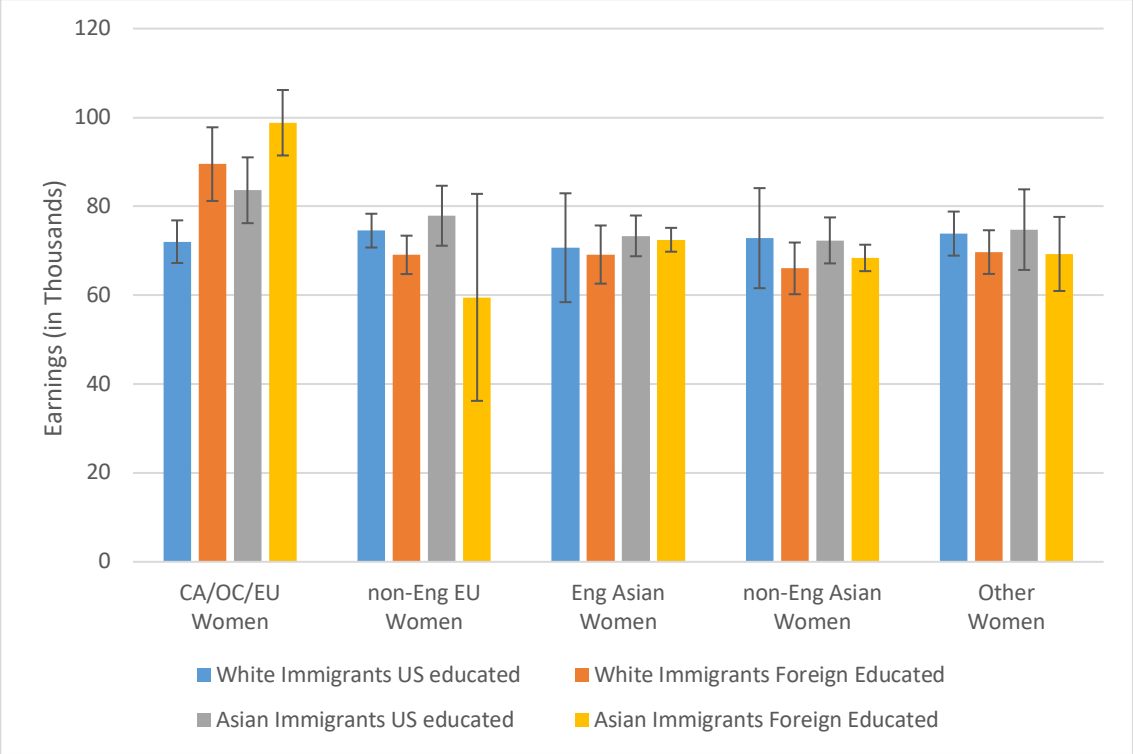
contrary, their male counterparts may be more likely to immigrate to use these skills learned in their home countries. The results support the explanation that female migration is more likely to be secondary to male migration. Women are more likely to come to the United States as secondary immigrants, joining their husbands who are employed (Goyette and Xie 1999; Shan, Pullman, and Zhao 2016).

Figure 5-3 . Predicted Earnings For Male Immigrants by English-Speaking Countries



Notes: Error bars show 95% confidence intervals.

Figure 5-4 . Predicted Earnings For Female Immigrants By English-Speaking Countries



Notes: Error bars show 95% confidence intervals.

Discussion And Conclusion

The preceding regression analysis examines whether the earnings disadvantage for foreign education and the mechanisms that underlie it differs by gender. I stratified the analysis by gender. Overall, I draw four substantive conclusions from previous models.

First, women are generally at a disadvantage compared to men regardless of their race, nativity, and place of education. Among immigrants, Asian immigrant women with foreign education are the most vulnerable group. They tend to receive lower earnings and even among respondents with STEM degrees, women receive lower earnings than men. Moreover, when comparing the earnings difference within gender-specific groups, the results show the earnings gap between Asian and white immigrant women is smaller than

that between their male counterparts. The results reveal that gender is a salient factor stratifying the earnings returns among Asian immigrants in the U.S. labor market.

Second, the effect of major choice on earnings is more prominent among foreign-educated Asian males than Asian immigrant women. It indicates that 1) STEM degrees are more transferable to the U.S. labor market and 2) Asian male immigrants' varied family experiences and migration paths may be very different from those of their female counterparts. A STEM degree closes the gap between male Asian immigrants with foreign education and native-born men more so than their female counterparts. Among male respondents, the earnings of foreign-educated Asian immigrants with STEM degrees do not vary significantly from U.S.-born Whites and Asians. On the contrary, among female subsamples, the earnings of both foreign-educated Asian and White immigrants with STEM degrees ranked significantly lower than those of the other groups. In addition, they tend to experience more severe earnings disadvantages if they major in non-STEM degrees. The results indicate STEM degrees better assist male Asian immigrants with foreign education to achieve a higher social status in the U.S. labor market than their female peers. It suggests that, for men at least, STEM degrees are more transferable to the U.S. labor market. Meanwhile, the results reveal that family experiences and migration might differ greatly between Asian immigrant men and women. It may be easier for men with STEM degrees to immigrate and attain residency in the U.S. based on U.S. immigration preferences for high-skill occupations. Asian immigrant women may be more likely to come to the United States to join their husbands and, thus, less likely to attain occupations based on these preferences.

Third, human capital differences, particularly their transferability, explain most of the earnings penalty associated with a foreign degree. The data shows for both male and female Asian immigrants, their earnings ranked the highest among all immigrant groups if they were educated in Canada, Australia, or English-speaking European countries after controlling for countries where English is primarily spoken and my measure of the quality of education. While their earnings declined if they were educated from English-speaking Asian countries, they still ranked the second highest and enjoy a relatively high economic status among the four groups. The results indicate there is less evidence of credentialism, and most of the differences in earnings returns are explained by whether a country is predominantly English-speaking than its region.

Fourth, the results support the explanation that female immigrants' varied family experiences and migration paths lead to their notable disadvantages in the labor market. The results show: U.S education has a substantial effect on the earnings of female Asian immigrants if they originated from non-English speaking countries or countries that are less culturally or historically similar to the United States. For female Asian immigrants, a U.S. education alleviates the disadvantages that may come from immigrating from non-English, non-Anglo-European countries. On the contrary, among male Asian immigrants with a U.S. education, their earnings are lower than those of white immigrants with or without a U.S. education if they originated from European and Asian areas where English is not the predominant language. It indicates that Asian immigrant women who migrate may not be coming to use skills they acquired from education in their origin countries, but rather to gain skills after they have immigrated. A U.S. education helps them to catch up or compensate for the skills that they are unable to transfer immediately after migration.

On the contrary, their male counterparts may be more likely to immigrate to use these skills. The results support the explanation that female migration is more likely to be secondary to male migration.

Table 5-9: Estimated Regression Coefficients from Earnings Estimates among Immigrants

	Model 2.1 Male Coef.	Model 2.2 Female Coef.	Model 2.3 Male Coef.	Model 2.4 Female Coef.	Model 2.5 Male Coef.	Model 2.6 Female Coef.	Model 2.7 Male Coef.	Model 2.8 Female Coef.	Model 2.9 Male Coef.	Model 2.10 Female Coef.
Race/Nativity/Place of educ (reference= US-educ white imgnt)										
Foreign-educ White imgnt	.025	-.095*	.034	.01	.021	.006	.012	.003	.199***	.216***
US-educ Asian imgnt	-.033	.039	-.029	.042	-.033	.012	.028	.050	.094**	.148***
Foreign-educ Asian imgnt	-.133	-.138*	-.072	.01	-.067	-.015	-.015	.018	.237***	.316***
Educational attainment (reference=BA)										
BA+			.279***	.291***	.269***	.281***	.272***	.283***	.273***	.287***
Major choice (reference=non-STEM)										
STEM……			.231***	.184***	.235***	.18***	.232***	.179***	.231***	.179***
Language Skills (reference= English only)										
No English……			-.492***	-.432***	-.471***	-.435***	-.406***	-.389***	-.395***	-.370***
Very well……			-.126***	-.069***	-.102***	-.064***	-.069***	-.04***	-.066***	-.039***
Well ……			-.409***	-.301***	-.394***	-.302***	-.333***	-.265***	-.326***	-.256***
Not well ……			-.633***	-.546***	-.625***	-.548***	-.543***	-.501***	-.535***	-.486***
Age ……			.112***	.076***	.11***	.075***	.11***	.075***	.110***	.745***
Age^2 ……			-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.000***
Citizen										
Not a citizen			.0472***	.006***	.025	-.007	.014	-.015	.014	-.017

Table 5-9. (continued)

Years in the US	.006	.013***	.007	.013***	.008	.13***	.007	.013***
Years in the US Squared	-.0	-.0**	-.0	-.0***	-.0	-.0**	-.000	-.000**
Urban residence: Division (reference= New England)								
Middle Atlantic	.029	.044	.036	.047	.038	.049	.037	.046
East North Central	-.105***	-.116***	-.097***	-.112***	-.097***	-.112***	-.095***	-.111***
West North Central	-.155***	-.186***	-.148***	-.183***	-.147***	-.183***	-.142***	-.181***
South Atlantic…	-.102***	-.114***	-.096***	-.110***	-.096***	-.111***	-.094***	-.111***
East South Central..	-.222***	-.279***	-.216***	-.277***	-.210***	-.279***	-.207***	-.274***
West South Central.	-.067***	-.092***	-.06***	-.090***	-.060***	-.095***	-.059***	-.093***
Mountain ..	-.173***	-.194***	-.166***	-.189***	-.170***	-.193***	-.167***	-.191***
Pacific Division..	.082*	.044	.083**	.047*	.090**	.047	.090**	.047
Log of GDP per capita			.070**	.035*	.065**	.021	-.063**	.022
Log of Gross enrollment ratio			-.107*	-.072**	-.115*	-.067**	-.112*	-.068**
Gross enrollment ratio dummy			-.426*	-.318***	-.440	-.304**	-.426	-.306**
Region/English-speaking (reference=EU/OC_English dominate								
EU non-English					-.128**	-.150***	.051	.033
Asia English					-.164*	-.164***	-.271***	-.020
Asia non-English					-.245***	-.199***	.016	.011
Other					-.165**	-.148**	.015	.022

Table 5-9.(continued)

Region/English-speaking*										
Race/Nativity/Place of educ										
White-Foreign-edu*EU non-English									-.264***	-.293***
White-Foreign-edu* Asia-English									.012	-.238
White-Foreign-edu*Asia non-English									-.180	-.315**
White-Foreign-edu* other									-.268***	-.271***
Asian-US-edu* EU non-English									-.403***	-.104
Asian-US-edu* Asia English									.184*	-.111
Asian-US-edu*Asia non-English									-.203*	-.156*
Asian-US-edu*other									-.106	-.131*
Asian-Foreign-edu*EU non-English									-.461	-.541*
Asian-Foreign-edu* Asia-English									-.010	-.291*
Asian-Foreign-edu*Asia non-English									-.369**	-.380***
Asian -Foreign-edu* other									-.354***	-.347***
Cons	11.563***	11.253***	8.757***	9.293***	8.576***	9.278***	8.727***	9.479***	8.594***	9.341***
R^2	.008	.013	.187	.166	.194	.169	.198	.172	.201	.175

Data: ACS 2015-2019

CHAPTER 6

CONCLUSION

Introduction

There is a rich literature detailing how Asian American workers' earnings compare to those of White workers. Researchers (Iceland 1999; Sakamoto and Furiuchi 2002) disaggregated Asian Americans by immigration generation and compared native-born and immigrant Asian Americans separately to White Americans. They found that only immigrant Asian Americans experienced lower earnings returns per year of education compared to White workers. The results indicated that lower earnings returns were not necessarily due to discrimination against native-born Asian Americans but were rooted in immigration-related experience. Much of the earnings disadvantage that Asian Americans face was due to their higher likelihood of receiving their educational credentials abroad. The source of human capital, commonly measured by the place individuals received their education, was found to be the most significant factor determining the gap in the standard human-capital-corrected earnings of immigrants and natives worldwide (Pendakur 2000; Friedberg 2000; Zeng and Xie 2004; Kanas and van Tubergen 2009; Kim and Sakamoto 2010; Arbeit and Warren 2013; Fellini et al. 2018).

Many studies have demonstrated the existence of a foreign education penalty. However, it is still being determined why the returns to foreign education are lower. In this study, I attempt to further our understanding of Asian immigrants' labor market experience by investigating the mechanisms underlying the lower returns to foreign credentials. I take another step in this literature by considering whether Asian immigrants who earn degrees

abroad differ from not only U.S.-born Whites but also White immigrants who earn degrees abroad. I aim to explore if a foreign education is less valuable for Asian immigrants in the U.S. labor market than for White immigrants, and, if so, the reasons for such disparities.

In this study, I draw from two prominent theoretical approaches in the literature to explain why the degrees of Asian immigrants may be rewarded less in the U.S. labor market: human capital theory and credentialism. Human capital theory suggests that degrees from particular regions might be less valued in the U.S. labor market because they are either of lower quality or because the skills learned in these places are less transferable to the U.S. labor market. Credentialism suggests that degrees earned abroad in a particular region may be afforded less status than those earned in the U.S., regardless of the human capital that is gained from them. It is unclear whether the lower return to a foreign education is due to the lower quality/transferability of foreign education as the human capital approach implies, or is due to the 'unfair' treatment in the labor market, as credentialism entails (Lancee and Bol 2017; Fellini et al. 2018).

I assess human capital theory by asking: 1) whether the lower return to a foreign education is because foreign-educated immigrants' pre-migration human capital is of poorer quality or 2) is because education and training acquired in the origin country are less than perfectly transferable across national boundaries.

Researchers posit that the human capital gained in foreign programs can be of lower quality, which is accrued in the native-born workers' countries. This may be particularly true for immigrants who have been educated in less developed countries (El-Araby Aly and Ragan 2010; Friedberg 2000; Hardoy and Schøne 2014). Educational quality is tough to capture, even with access to a range of measures. Educational quality across countries

has been proxied by the countries of origin or regions from which immigrants arrive (e.g. Freidberg 2007). In this research, I attempt to capture some aspects of educational quality by including a country's GDP per capita, which has been correlated with educational quality, and by measuring the percentage of individuals in a country enrolled in tertiary education.

The transferability across countries of foreign education is another essential explanation for how human capital earned in other countries influences wages. Education and training acquired in the origin country may contain large elements of region-specific skills that are not perfectly transferable across national boundaries. It is possible that degrees earned abroad may be of similar quality, but due to differences in necessary qualifications or standards across fields of study, or simply because of differences in language, foreign human capital is hard to transfer to another country. I explore the effect of human capital transferability by examining 1) the transferability of college majors and 2) the effect of English-speaking proficiency of the sending country. I ask if the earnings gap between Asian and White immigrants and between Asian immigrants and U.S.-born Whites in STEM is smaller than among non-STEM majors. It might suggest that the human capital earned in STEM fields is more transferable to the U.S. I also account for whether the country in which an immigrant presumably earned their degree is English-speaking to gauge the transferability of human capital.

Next, to address credentialism, I investigate whether the penalties for Asian immigrants who earn degrees in regions more culturally or historically similar to the U.S., like Canada, Australia, and the English-speaking countries in Europe, are lower than for degrees earned in other regions? Sociologists have long recognized that education is not

simply a means of acquiring human capital but is also a way to confer status to individuals and occupations. The 'diploma effect' of educational degrees indicates that individuals are rewarded for their educational degrees, not for their skills learned in school (Bol and van de Werfhorst 2011; Lancee and Bol 2017;Fellini et al. 2018).The effect of credentials is more prominent among immigrants than comparable natives (Ferrer and Riddell 2008). Many immigrant professionals experienced either 'non-recognition' or 'de-qualifying' recognition of their competence. Among immigrants, even when home country credentials are of similar quality to those from the U.S., foreign credentials are discounted by employers either by maintaining barriers to recognizing them or by disregarding their value outright (Tesfai 2017).

Then, I look for evidence of discrimination in the labor market. I examine: do Asian immigrants who earn degrees abroad experience more severe earnings disadvantages than White immigrants who earn degrees abroad, even after accounting for the characteristics of a foreign education? It is well documented that cultural stereotypes have operated to constrain occupational choices for Asian Americans: they are not only seen as a "model minority" but also seen as "foreign," of "limited English proficiency," and "technically oriented." Those stereotypes inform perceptions of the available careers and the acceptable ways to achieve them. There is much research that suggests Asian Americans face a "bamboo ceiling;" that is, the likelihood of attaining promotions to management positions may be blocked (e.g. Chin 2020; Huang 2021; Takei and Sakamoto 2008; Tang 1993). Among individuals who were educated abroad, U.S.-born employers may prefer White immigrants whom they may perceive to be more similar to themselves or perceive to have

higher status. Thus, Asian immigrants educated abroad are less likely to be hired or promoted.

Finally, I explore whether Asian immigrants' labor market disadvantage is contingent on gender. Separating the immigrant population by gender is important. Previous studies generally showed the female immigrant population was the most disadvantaged group. Researchers speculated that female immigrants' varied family experiences and migration paths contributed to their notable disadvantages in the U.S. labor market (Lopez-Gonzalez et al., 2005). Building on previous research, I examine:1) whether obtaining a STEM degree alleviates the earnings disadvantage experienced by both Asian immigrant men and women in the U.S. labor market; 2) whether the region and English-speaking proficiency of the sending country work similarly among female and male Asian immigrants.

Results and Findings

The Effect of Place of Education

The preceding analysis presents several key findings: First, the place of education is an essential factor in stratifying the labor market experiences of immigrants. Its impact is more substantial on the earnings of immigrants, especially those from Asian countries. The regression results revealed that, among all six groups, foreign-educated Asian immigrants ranked the lowest, while their U.S.-educated counterparts enjoyed a relatively higher earnings status in the U.S. labor market. My results confirm that among Asian immigrants, foreign education is less valuable in the U.S. job market than education acquired in the United States.

Human Capital Transferability

Second, differences in human capital, particularly its transferability, affect the earnings of foreign-educated Asian immigrants. In this study, I explore the effect of human capital transferability by examining 1) the transferability of college majors and 2) the effect of English-speaking proficiency of the sending country. To capture the effect of educational quality, I include a country's GDP per capita and the rates of tertiary education within a country in the analysis. In general, my results showed that foreign-educated Asian immigrants with either STEM degrees or who were educated in Canada, Australia, or English-speaking European countries have an advantage over those who with non-STEM degrees or who attained their degrees in non-English-speaking countries. And my measure of education quality matter little for earnings. Overall, it indicates that the earnings disadvantage of Asian immigrants educated in foreign countries is largely explained by the limited transferability of their human capital in the U.S. labor market.

STEM Transferability

Based on divergent educational philosophies, university curricula are classified into STEM and non-STEM. Researchers generally agreed that STEM fields are relatively universalistic in nature, relying more on 'hard skills' and less on particular cultural norms, and national or local policies. Thus, I anticipate the earnings penalties in these areas will be lower since it is comparatively easy to transfer knowledge across countries.

STEM-designated fields are found to be more desirable to immigrants. Asian immigrants have been found to have a higher concentration in majors relate to STEM. The descriptive statistics in the study showed approximately seventy percent of foreign-educated Asian immigrant men (71.74%) and U.S.-educated Asian immigrant men(67.48%)

received STEM degrees. While females had a lower percentage of individuals majoring in STEM degrees, my data again showed both foreign-educated female Asian immigrants (36.74%) and their U.S.-educated counterparts (39.7%)) had a higher concentration in STEM majors among female subsample.

When including college major choice in the regression analyses, my results revealed that 1) among all six immigration and native-born population groups, individuals with STEM degrees had higher financial payoffs than non-STEM degree holders, a fact well-documented in studies. 2) the magnitude of the differences between foreign-educated Asian immigrants and U.S.-born Whites, and between foreign-educated Asian immigrants and their U.S.-educated counterparts decreased among STEM degree holders. Specifically, among STEM degree holders, there appears to be little difference in earnings returns between foreign-educated Asian immigrants and U.S.-born Whites. In contrast, the earning disadvantage of foreign-educated Asian immigrants is more salient among non-STEM degree holders. 3) Compared to female Asian immigrants, the effect of major choices on earnings is more prominent among foreign-educated Asian males. Among males, foreign-educated Asian immigrants with STEM degrees received higher earnings than U.S.-born Whites, the reference group. In comparison, their earnings were substantially lower than those of all other groups if they majored in non-STEM fields. Among the female subsample, while foreign-educated Asian immigrants with non-STEM degrees faced a more severe earnings disadvantage, similar to their male peers, their earnings were still slightly lower than U.S.-born Whites if they hold STEM degrees. Overall, the results indicate among foreign-educated Asian immigrants, their earnings returns are largely explained by their higher concentration in STEM degrees. Asian immigrants had a higher concentration in

STEM fields. Once major choice is controlled for, they tend to experience a severe earnings disadvantage if they majored in non-STEM degrees.

Generally, the results support the 'strategic adaptation perspective' that Asian Americans, particularly the immigrant population, consciously and strategically choose STEM-designated degrees. This choice helps them cope with potential discrimination and other disadvantages effectively, and to maximize the educational return to their future status (Xie and Goyette 2003). STEM degrees become one crucial factor stratifying Asian immigrants' labor market experiences.

First and most importantly, the related education and knowledge in STEM fields acquired in a domestic or foreign country can be objectively measurable and valued, and thus, comparatively easy to transfer into the U.S. labor market. Researchers exploring differences in Asian American and White students' choices of fields have posited that STEM degrees reinforce advantages in non-language-intensive skills, including math and science skills, as well as problem-solving and analytical skills (Rangel and Shi 2019). On the one hand, because STEM fields may rely more on 'hard skills' and less on particular cultural norms, and national or local policies, they may be more desirable to immigrants or those without mainstream social networks (Xie and Goyette 2003). On the other hand, these fields may also be more desirable to immigrants who do not speak English or those without mainstream social networks, as the 'language' of many sciences and math may be more universally understood(Xie and Goyette 2003). Overall, degrees in STEM and some medical fields, may translate more directly to careers because the standards are more precise than those used in other fields (Goyette and Mullen 2006). On the contrary, knowledge in non-STEM fields is more context and culture-specific. Those 'soft skills'

may involve deep knowledge of local laws, policies, and customs. Thus, knowledge learned abroad may be less transferable to the U.S. context. As a result, employers in the U.S. may more readily recognize the skills provided by STEM degrees. So they may reward them similarly to those who achieved STEM degrees in the U.S. Thus, the earnings penalties for foreign-educated Asian immigrants with STEM degrees are much lower compared to other groups in the analysis than for those with non-STEM degrees.

Moreover, the existing U.S. social and economic structures favor individuals with STEM degrees. The United States has become more dependent on STEM graduates to support its technology-based economy (Moakler and Kim 2014). To attract international students studying STEM fields in the U.S., international students with STEM degrees are allowed to have more time and flexibility to seek legal ways to stay in the U.S. On the contrary, for non-STEM students, the OPT program period is very limited (12 months), with no further extension allowed.

In sum, Asian immigrants, especially those with foreign education, consciously and strategically pursue particular educational paths to avert disadvantages as newcomers and succeed with marketable credentials (Xie and Goyette 2003). A STEM-degree 1) helps Asian immigrants transform the knowledge acquired in other countries to the U.S. labor market; 2) is critical to the prosperity, security, and health of the existing U.S. technology-based economy. Thus, a STEM degree, as an important factor stratifying individuals' labor market experiences, aids Asian immigrants in maximizing the educational returns to their future status and attenuating earnings disadvantages.

Language Transferability

Next, I investigate whether labor market penalties associated with holding a foreign education/degree are contingent on their language skills. Immigrants' native language, as a critical aspect of pre-migration human capital, is commonly used as a proxy for skill transferability (Akresh 2007). Employers may be more likely to reward those who have earned their degrees in English-speaking countries. These graduates are likely to have excellent English-speaking abilities and be able to effectively communicate what they have learned to English-speaking employers. The 'linguistic distance' between English and immigrants' native languages varies significantly. Compared to the languages of countries that dominated current waves of white immigrants, there is a greater 'linguistic distance' between English and the languages of many Asian countries.

The data revealed that both White and Asian immigrants who were educated in Canada, Australia, or English-speaking European countries have an advantage over those who attained their degrees in non-English-speaking countries. This is also true for both male and female immigrants. The results confirm immigrants from countries where English is an official language experienced higher returns to their foreign education. It indicates that graduates from countries where English is predominant are likely to have excellent English-speaking abilities. U.S. employers may be more likely to reward those who have earned their degrees in English-speaking countries. On the contrary, the education and training acquired in those countries are less transferable across national boundaries if English is not used as the medium of instruction. In sum, the result indicated human capital differences, particularly their transferability, explain most of the earnings penalties associated with a foreign degree.

Education Quality

Besides human capital transferability, educational quality is another critical factor in the study explaining immigrants' earnings disadvantages. In this research, I attempt to capture some aspects of educational quality by including a country's GDP per capita and by measuring the percentage of individuals within a country enrolled in tertiary education.

The results showed that the measure of education quality matters little for earnings. For Asian and White immigrants, education quality, as measured by log GDP per capita, is positively related to earnings. However, a negative relationship exists between the gross enrollment in tertiary education ratios of immigrants' countries of origin and earnings. Immigrants from countries with lower rates of tertiary education tend to earn significantly more in the U.S. The results suggest for both Asian and White immigrants, there is some evidence that education quality might matter. However, more evidence indicates that the selectivity of an immigrant compared to their native country influences an immigrant's earnings. It may be that rather than capturing educational quality in a country, this variable better measures how selective an immigrant is. Those college-educated immigrants from countries with lower proportions of their populations in higher education may represent more selected members of that group. Immigrants from such countries are more selective and so may attain higher earnings.

Credentialism

Third, to access credentialism, I examine whether the penalties for Asian immigrants who earn degrees in regions more culturally or historically similar to the U.S., like Canada, Australia, and the English-speaking countries in Europe, are lower than for degrees earned in other regions. There is less evidence of credentialism, though, with

earnings returns varying more by whether a country is predominantly English-speaking than by its region.

For Asian immigrants, their earnings ranked the highest among all immigrant groups if they were educated in Canada, Australia, or English-speaking European countries after controlling for countries where English is primarily spoken and my measure of the quality of education. While their earnings declined if they were educated from English-speaking Asian countries, they ranked the second highest and enjoyed a relatively high economic status among the four groups. Their earnings were much higher than those of White immigrants who received their education in the U.S. On the contrary, their earnings were lower than White immigrants with foreign or U.S. education. This trend is more salient among Asian immigrant men. While we cannot definitively say why the results also note that those Asian immigrants who got their higher education in countries that may be culturally similar to the U.S., like Canada, English-speaking Europe, actually earn more than White immigrants, including those who received their education in the U.S. It is noticeable that countries like Canada, English-speaking Europe, and Australia not only are culturally similar to the U.S. but also have higher education quality and a preference for English. This may be because of higher education quality, preferences for English, similarities across university systems, or credentialism. Employers may prefer degrees from these countries for any of these reasons or others.

Queuing and Discrimination

Fourth, to access queuing theory, I examine the following: do Asian immigrants who earned degrees abroad suffer more earnings disadvantages than White immigrants who earned degrees abroad, even after accounting for these other factors?

In the full sample containing both immigrant men and women, as well as male subsample, the results showed Asian immigrants enjoyed a higher economic status than White immigrants if they were educated in Canada, Australia, English-speaking European countries, or English-speaking Asian countries, after controlling for countries where English is primarily spoken and my measure of the quality of education. However, their earnings ranked lower than Whites if they attained degrees in non-English-speaking regions, including non-English-speaking European or Asian countries. Foreign-educated White immigrants enjoyed a relatively high economic status among immigrant groups if they were educated in English-speaking countries, similar to Asian immigrants. However, their financial status among the four immigrant groups remained mostly the same if they were educated in non-English-speaking countries. Overall, the results showed there appears to be little difference between Asian and White immigrant workers if they were educated in English-speaking countries. However, Asian immigrants' economic status declined tremendously if they attained their education from non-English-speaking countries. In contrast, White immigrants still enjoyed a relatively high economic status if they received their education from those regions.

The results indicate White immigrants seem to have an advantage over Asian immigrants if they were educated in places that have longer linguistic and cultural differences compared to the United States. In the labor market, the information is asymmetrical between employers and employees. Employers may have more information on the quality of foreign education and degrees if a foreign credential comes from an English-speaking countries. They can better recognize and access formal foreign educational qualifications or certifications to determine whether someone can undertake a

task or work in a particular field. As a result, there are no salient earnings differences between White and Asian immigrants if they were educated in English-speaking countries, since foreign credentials from these areas are relatively easily accepted, transferable, or recognizable in the U.S. labor market. Conversely, employers may need more information and knowledge on the quality of foreign education and degrees if they were attained in non-English- speaking countries. Employers tend to show preferences for employees from higher-status race groups to determine whether someone is permitted to work in a certain field. From the perspective of employers, it is safer to choose white immigrants since they are often perceived to have better English-speaking ability and knowledge of cultural nuance than Asian American immigrants (whether or not they do).

Gender Differences

Fifth, my data confirmed previous research that immigrant women are at a disadvantage compared to their male counterparts. The results support the explanation that female immigrants' varied family experiences and migration paths contribute to their notable disadvantages in the U.S. labor market.

In this study, the results showed: 1) STEM degrees better assist male Asian immigrants with foreign education to achieve a higher social status in the U.S. labor market than their female peers. For men, earnings returns to STEM degrees earned in the U.S. and abroad are similar. Foreign-educated Asian immigrant men in non-STEM fields experienced the most dramatic disadvantage in earnings. On the contrary, foreign-educated Asian female immigrants experienced an earnings disadvantage with or without STEM degrees compared to their peers. It may be that, for men at least, STEM degrees are more transferable to the U.S. labor market. Asian men may have a more difficult time utilizing

the skills acquired in non-STEM majors in appropriate occupations in the U.S. The same does not appear to be true for female Asian immigrants. Meanwhile, the results revealed that family experiences and migration might differ greatly between Asian immigrant men and women. It may be easier for men with STEM degrees to immigrate and attain residency in the U.S. based on U.S. immigration preferences for high-skill occupations. Asian immigrant women may be more likely to come to the United States to join their husbands and, thus, less likely to attain occupations based on these preferences.

2) U.S. education substantially affects female Asian immigrants if they originated from non-English-speaking countries or countries that are less culturally or historically similar to the U.S. For female Asian immigrants, a US education alleviates the disadvantages of immigrating from non-English, non-Anglo-Euro countries. On the contrary, among male Asian immigrants with a U.S. education, their earnings were lower than white immigrants with or without a U.S. education if they originated from European and Asian areas where English is not the predominant language. It indicates that Asian immigrant women who migrate may not be coming to use skills they acquired from education in their origin countries but rather gain skills after they have immigrated. A U.S. education helps them catch up or compensate for the skills they cannot transfer immediately after migration. On the contrary, their male counterparts may be more likely to immigrate to use these skills. The results support the explanation that female migration is more likely to be secondary to male migration. That is to say, women are more likely to come to the United States as secondary immigrants, joining their husbands who are employed in the U.S. (Goyette and Xie 1999; Shan, Pullman, and Zhao 2016).

The results support the explanation that female immigrants' varied family experiences and migration paths are different from their male counterparts, thus leading to their notable disadvantages in the labor markets. For Asian immigrant men, they are more likely to immigrate to use the skills they learned in their original countries, especially those with STEM degrees. Those with STEM credentials are more likely to immigrate and attain residency in the U.S. based on U.S. immigration preferences for high-skill occupations. For Asian immigrant women, they are more likely to gain skills after they have immigrated. They tend to convert the knowledge they learned in the U.S. after migration into the labor market and achieve better economic returns. Thus, women are more likely to come to the United States as secondary immigrants (Goyette and Xie 1999; Shan, Pullman, and Zhao 2016).

Limitation

The study suffers from several limitations that could lead to other research. First and foremost, this study rely on decision-making rules to determine where immigrants have earned their post-secondary education credentials. Very few surveys ask for this information. I followed the method proposed by Zeng and Xie (2004) to construct a proxy measure of place of education using a few variables available from the ACS: age, ethnicity, education, and year of immigration. Immigrants are labeled as foreign-educated when the age at immigration is higher than the estimated age of education completion. The National Survey of College Graduates does ask these questions but does not ask questions about respondents' language proficiency. Further, it selects only college graduates. There is no way to control for differential selection processes of immigrants into this pool.

While imputing the place of education based on other known variables may be possible, imputations are only as good as the data sources from which they are drawn. Future research on earnings and other returns to foreign degrees could be greatly improved by including questions about the place of education in data collection. If information on the place of education were included, we would not have to infer that the country of birth is also the country in which an immigrant receives their education.

Another way this research could be improved is by including of other measures of a country's educational quality. While we include two measures that could plausibly indicate a country's educational "quality" -- GDP per capita and the tertiary enrollment ratio – there are likely others that could be explored. PISA or other international test scores might be used to measure a country's educational quality.

One fruitful avenue for future research would be to examine how Asian and White immigrants with degrees from abroad get selected into higher education and the labor market. Although this research suggests little earnings disadvantages, we may be missing many of the nuances of how immigrants are selected to both come to the U.S. and can live and work in the U.S. It is likely that we are missing many of the hidden processes at work that may be selecting particular immigrants that may be contributing to smaller gaps between the U.S.-educated and foreign-educated, and Asian and White immigrants.

Finally, the other fruitful avenue for future research would be to explore whether earnings disparities among Asian immigrants persist over time and the factors that contribute to these changes. Compared to the point estimate used in this study, longitudinal data can provide a more comprehensive understanding of how income trajectories differ between immigrants groups and the factors that drive these disparities. It is possible that

the low entry earnings of foreign-educated immigrants from Asian countries were associated with high earnings growth. Additionally, longitudinal data can provide valuable insights for policymakers and practitioners seeking to reduce income disparities between immigrant groups. By understanding the factors that contribute to these disparities, policymakers can design more effective interventions and strategies to promote economic equity and inclusion. In sum, a longitudinal perspective is essential for understanding the long-term effects of human capital transferability, discrimination and other factors on income disparities that experienced by foreign-educated Asian immigrants.

Policy Implication

During the past decades, the population of the United States has become increasingly racially and ethnically diverse, with the Asian population being one of the fastest-growing minority groups. By the year 2020, the Asian population reached an estimated 20.6 million, or 6.2 percent of the total population (U.S. Census Bureau 2020). Asian Americans are not a homogeneous group; they are stratified by economic class, place of origin, generation, and even the date of entry into the United States.

Studying Asian Americans is essential for promoting diversity, challenging stereotypes, and understanding the complexities of American society. Asian Americans have intersecting identities based on factors such as immigration history, socioeconomic status, educational attainment, and gender. Today, Asian Americans as a group comprise a large proportion of recent immigrants who gained entry after the 1965 Immigration Act (Min 2006). This legislation prioritized family reunification and skilled labor. Consequently, many skilled Asian workers in fields such as technology and healthcare have immigrated to the United States for economic opportunities. Attracting skilled

professionals to the U.S. is crucial, as the country has become increasingly dependent on skilled workers to support its technology-based economy. However, immigrant workers, including those from Asian countries, face various difficulties and changes in the U.S. labor market. These challenges can impact their ability to find a job, earn a livable wage, and advance in their careers.

One of the key challenges that immigrants from Asian countries encounter is language barriers. Therefore, improving English skills, including workplace communication, is crucial for immigrants to succeed in the U.S. labor market and society. Immigrants have varying degrees of fluency in English based on their background and experiences. Countries like Malaysia, Philippines, Singapore, India, Bangladesh, Bhutan, have English as an official language or as a predominantly spoken language used in public domains. In contrast, in other Asian countries such as China, Japan, Korea, English-speaking proficiency is generally low. As shown in this study, the language of an individuals' country of origin is closely related to national origin of an individual's human capital. Limited language proficiency can restrict their job opportunities, limit communication with coworkers and supervisors, and thus potentially hinder their career advancements. Immigrants coming from places where English is an official language or widely spoken tend to have better English language proficiency and earn higher wages in the U.S. labor market. Among immigrant workers, particularly those educated in places where English is not an official language, workplace English programs play a vital role in helping them succeed in the workplace by improving their communication skills, job performance, and career prospects. These programs also contribute to a more inclusive and

culturally diverse work environment, boosting immigrant employees' confidence and work performance. This benefits both employees and employers.

Second, Asian Immigrants, especially those with foreign-education, often face challenges in getting their foreign education and work experience recognized in the US. This can lead to underemployment, where skilled immigrants are working in jobs that do not utilize their full qualifications. My results suggest that it is important to establish clear and transparent processes for recognizing foreign academic and professional credentials in the United States. For Asian immigrants, credentials from non-English-speaking countries are relatively hard to accept, transfer, or recognize in the U.S. labor market. This difficulty is associated with differences in accreditation standards, and language barriers, which hinder their ability to effectively utilize their education and skills in the receiving country. Thus, it is crucial to provide information and training to employers about the value of international education as well as the process of credential evaluation. Effective assessment of foreign academic credentials by employers enables them to determine whether an individual can undertake a task or work in a particular field. This helps employers make informed hiring decisions and dispel misconceptions in the hiring process, contributing to the creation of a diverse and skilled workforce. It allows individuals including immigrants to fully utilize the skills and knowledge they have acquired through their education, preventing ‘unfair’ treatment based on the origin of their education. In sum, recognizing the value of foreign credentials benefits immigrants as well as the receiving country's economy.

Third, my results confirm the existence of a gender gap among Asian immigrants in the U.S. job market. Female Asian immigrants tend to receive lower pay, have a lower

likelihood of majoring in STEM fields, and are less likely to work in high-paying managerial positions. The notable disadvantages of female Asian immigrants are attributed to their unique family experiences and migration paths. They are more likely to come to the United States as secondary immigrants, and thus, are more likely to acquire skills after immigrating. Access to education and training is essential for immigrant women to improve their skills, qualifications, and earning potential. It is important to offer financial assistance, including scholarships, grants, and financial aid programs, to help immigrant women afford higher education and training programs. These financial assistance programs can greatly reduce barriers to entry and promote educational attainment. Additionally, providing access to vocational training programs that offer practical skills and certifications in high-demand fields can help immigrant women qualify for better-paying jobs. Moreover, advocating for equal pay for equal work and raising awareness about wage disparities based on gender and immigrant status are essential for reducing wage disparities and promoting economic equality. In summary, promoting equal pay and creating a more fair and inclusive labor market can help immigrant women achieve economic equality.

Overall, Asian Americans are a diverse group, originating from various countries in Asia. This diversity contributes to the richness of the Asian American experience and highlights the significance of acknowledging the unique challenges and opportunities faced by Asian American communities. Efforts to reduce barriers mentioned above and promote inclusion can help Asian Americans, particular the Asian immigrant population, fully contribute to and benefit from the US economy.

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