Effects of Foreign Education on Immigrant Earnings

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Abstract

The research reported here explores the effects of foreign education on earnings. Previously, most studies were based on indirect estimated information about foreign education, and documented the lower earnings of immigrants who had foreign education as compared to those who had domestic education. Using direct information obtained from respondents, this research goes beyond the existing studies by suggesting the discount effects of foreign education, consisting of endowment and sheepskin discounts. Our results, as expected, show that the endowment discount on earnings is significant among immigrants who received their highest education in foreign countries. In addition, our results confirm our expectation that the place-specific sheepskin discount is found among those who completed universities in Asia.

Introduction

The fact that education strongly affects earnings has long been established in social science literature with the understanding that the relationship is varied by gender, age, racial and ethnic backgrounds (Aydemir and Skuterud 2005; Baker and Benjamin 1995; Borjas 1982; Ferrer and Riddell 2002; Lofstrom 2001). Research has shown that the relationship is particularly crucial to understand immigrants' earnings.

However, this taken for granted relationship becomes more complicated in recent years. With the increasing globally interconnected economy and immigration policies target to recruit immigrants who are ready to integrate in the labor market, there are substantial growth of migration of skilled and educated workers. Among this group of immigrants, large number receives part, or sometimes all, of the education in overseas. Compounding the complexity is the discount of foreign education on earnings in the new country. Drawing from the National Survey of College Graduates and 2000 census, Zeng and Xie (Zeng and Xie 2004) estimated more than half of Asian immigrants in the United States completed education outside the country and those received foreign education earned about 14% less than American trained. Similarly, studies in Canada, another major immigrant receiving country, have also found that about half of immigrants completed their highest education outside Canada and some earn almost $10,000 less than Canadian educated (Li 2001).

Although previous studies have documented discount effect of foreign education on immigrants' earnings (Boyd 2001; Li 2001; Zeng and Xie 2004), they seldom explore different effects of various trajectories of foreign education experiences. For example, it is quite likely that discount effects of foreign education on earnings can be different among immigrants received highest education in foreign countries as compared to those received foreign countries but completed their highest education at the host country. Moreover, studies have made no attempt

to consider possible differences in place-specific or ranking-specific discount of those received foreign education in overseas. For instance, variations of effect on earnings between education received from developed countries compared to developing countries, or between education received from world famous universities compared to local universities can be substantially different. The failure to differentiate the place-specific and ranking-specific discount of foreign education most likely simplifies the understanding the effects of foreign education on earnings. Third, though previous studies control for individuals who work in professional and non-professional occupations in the analysis of foreign education effects on earnings, these studies do not compare foreign education effects on earnings between professional and non-professional occupations. Missing of such analysis implies different institutional arrangements impact on foreign education effects on earnings do not take into full account. Finally, previous studies of earnings effects of foreign education are based on indirect estimates of foreign education experiences from various data sources. Despite careful estimation was implemented in these studies, the reliability of the estimated information remains to be confirmed.

Based on a recent collected data of immigrants in Toronto, this article addresses the limitations of previous studies. We made three complementary contributions to the discussion of foreign education and earnings. First, we differentiate two effects of foreign education, endowment and sheepskin effects, on earning to capture the trajectories, place-specific, and ranking-specific discount of foreign education experience. The differentiation helps to explain how the discount effects occur. We believe that this is the first study to explore how trajectories, place and university ranking of foreign education affect earnings of immigrants. Second, we envisage the importance of institutional characteristics in affecting earnings. We, thus, situate our discussion in the institutional context by analyzing separately the effects of foreign education on earnings among those who work in professional and non-professional occupations. Finally, the study is based on direct information of foreign education experience among immigrants. Taken

together, the study will provide a more comprehensive understanding of the foreign education effects on the earnings of immigrants.

Assimilation, Earnings, and Institutions

Individual economic behaviors are not guided only by cost and benefit calculation but also influenced by the institutional rules where the economic activities occur (Fligstein 2001; Reitz 1999). To stress the significance of the embedded institutional effects on economic behavior has a long tradition in sociological inquiry. It can be traced back to the classical sociological work since Durkheim and Weber, and recently has been re-emphasized and advanced (Alba and Nee 2003; Nee and Ingram 1998).

Recent studies applied the institutional approach to explore how institutions affect economic integration of immigrants. According to these studies, as immigrants settle in the new country, competition, or sometimes even conflict, between immigrant and native born population may arise. To minimize possible conflict in the process of immigrant integration, institutions may "regulate" the economic activities of immigrants, which subsequently affect this economic integration process. However, the economic integration of immigrants is not the outcome that is passively shaped by institutional arrangements. Alba and Nee (2003) argues that immigrants at the same time actively use their various forms of socioeconomics to maximize outcomes within the existing institutional constraints. Therefore, according to Alba and Nee (2003), assimilation involves two processes. The first process is how institutions regulate, sometimes intentionally or unintentionally constrain, the economic outcomes of immigrants. The second is how immigrants use their existing socioeconomic resources in various ways within institutional constraints to maximize outcomes.

To understand the value of socioeconomic resources in the economic integration process, it is crucial to differentiate socioeconomic resources acquired before and after immigration. Such differentiation is crucial because some forms of capital acquired before immigration are not fully

recognized and received discount in the new context (Barth 1969; DaVanzo and Morrison 1981). Explanations of resources acquired before immigration on earnings discounted is succinctly summarized by Shibutani and Kwan's (1965) argument in their classic, Ethnic Stratification. Simply put it, they argue that institutions maintain the existing equilibrium of resource distribution among existing members, and minimize possible competition generated by new members.

With these theoretical underpinnings, the paper elaborates upon the effects of human capital resources acquired before immigration on immigrants' earnings. Specifically, we explore the mechanisms of foreign education discount on earnings. In the following section, we outline two aspects of foreign education discount that affects their earnings potential

Foreign Education and Earnings

Drawing upon economic literature on education and earnings, we extend the study of foreign education effects on earnings. We differentiate two types of foreign education discount on earnings of immigrants: the endowment and the sheepskin effect. This differentiation is theoretically important as it makes explicit the mechanisms of how foreign education affects earnings. More important, it shows how institutions constrain the economic outcomes of immigrants as suggested by Alba and Nee (2003).

Endowment Discount

Studies on education and earnings have suggested that earnings are not only affected by the time spent by the individual in education, but also it is affected by the endowments associated with the education received (Behrman, Rosenzweig, and Taubman 1996). Education endowment refers to the "inputs" or characteristics associated with different levels or types of education that affect their earning potential (Bratsberg and Terrell 2002). These resources may be interaction skills, expectations, or information about the labor market that are embedded in the learning process.((Card and Krueger 1992; Card and Kruger 1992). They are helpful in job search which in turn can translate into higher earnings. In a very thorough evaluation of the

endowment effects, Heckman et al (1996) showed the endowment effects affect different education groups in different ways (Heckman et al 1996:596). In particular, education endowment has stronger effect on higher skill occupations.

To translate these findings to foreign education effects, we expect that individuals who received foreign education are exposed to endowments that are location specific. These endowment resources may not be easily transferable to another country. As contrast to those received education in Canada, the endowments associated with education in the host country are more ready to translate in local labor market. Subsequently, the economic performance of immigrants received foreign education will be affected in the host country.

Among various foreign education trajectories among immigrants, the endowment discount is especially strong for those who received their highest level of education in foreign countries. This group of immigrants has minimal exposure to the operations and expectation of the labor market in the new country.

Sheepskin Discount

Drawing from the screening theories in education literature, labor economists (Belman and Heywood 1991; Park 1999) have proposed the importance of the "sheepskin effects" of education on earnings. They argue that various education levels serves as an indicator of certain levels of productivity. Employers recruit workers according to these indicators and market rewards these indicators accordingly. Therefore, most studies about the sheepskin effects expect that individuals who graduated with a diploma earn more than those who studied for the same number of years without obtaining a diploma. Drawing from the Current Population Survey, (Jaeger and Page 1996) showed that the effect is particularly strong for post-secondary education and minimal for a high school diploma.

The arguments have direct and significant implications to understand the discount effects of foreign education on earnings, especially those completed universities. Employers usually

know little about foreign education. Immigrants who graduated from countries with the university system less familiar to the local employers or graduated from not so well known foreign universities will experience sheepskin effect in the labor market of the host country.

Professionals and Earnings

To understand the earnings attainments, it is important to differentiate those who are working between professional and non-professional occupations. Professional occupations are usually associated with greater prestige, stable career path and, most important, higher income (Barringer, Takeuchi, and Xenos 1990; Leicht and Fennell 2001). Because professional occupations usually involve credentials, certification, and are regulated by professional associations, there is pressure to converge to similar evaluation practices and structures (Dimaggio and Powell 1983). This strong institutional isomorphism becomes powerful forces to ensure similar economic returns for those, even immigrants with foreign education, involved in professional occupations.

However, research has documented that immigrants are under represented in the professional occupations, such as the areas in engineering or science (Tang 1993). While certainly constrained by lacking of human capital resources and limited social networks, studies has shown that discrimination is also an important factor (Boyd 2001). Among those immigrants who secure professional positions, we expect that the foreign education discount effect is minimal as there is strong institutional isomorphism among professional occupations.

Social Networks and Earnings

Our discussion focuses to disentangle the discount effects of foreign education. In other words, it explores how institutions constrain immigrant adaptation process. However, the discussion cannot be completed without taking into the consideration of how immigrants use their resources to maximize the outcomes under institutional constraints. In particular, since studies have documented that the importance of social networks for immigrants to minimize their

disadvantages, how social networks alleviate the discount effects of foreign education should be addressed (Sanders, Nee, and Sernau 2002).

Within the context of ethnic economy, studies on the use of social networks among immigrants in their economic adaptation process have argued that, because of co-ethnic trust and solidarity, employers are more willing to hire co-ethnic workers who may not have the qualifications (Sanders 2002; Waldinger 1999). This practice provides immigrants favorable earnings returns with respect to their qualifications, including educational credentials (Light and Gold 2000; Sanders and Nee 1987). Counterposing these findings, some studies suggest that co-ethnic immigrant workers may experience lower earnings working in the ethnic businesses.

Studies explored the effects of social networks on earnings beyond the ethnic economy context (Sanders, Nee, and Sernau 2002) suggests that social networks, ethnic networks in particular, most likely lead to low paying jobs outside the ethnic economy among immigrants. Fernandez and Fernandez-Mateo (2006) points out that such outcomes reflect the "wrong networks" used by job seekers, because members in the mobilized networks lack credibility or reputation among employers (Smith 2005). Thus, it is the "quality" of social networks that determine the jobs of different earnings potentials. Findings from Ooka and Wellman (2006) in their study based on Toronto data echo the arguments. They show that ethnic groups with social networks of limited resources more likely lead to less desirable jobs. Addressing related issue of immigrant adaptation process, segmented assimilation perspective, thus, proposes immigrants with different levels of social capital have different paths of integration(Portes and Rumbaut 2001; Zhou 1997). Drawing from the findings of these studies, one key implication is that the study of discount effects of foreign education on earnings can be reduced when immigrants have more extensive social networks (Lin 2001).

In short, we differentiate two discount effects associated with foreign education. The endowment discount of foreign education is specially strong among those who received the

highest education in overseas; whereas the place-specific and ranking-specific sheepskin discount are more likely among those who graduated from regions where the local employers are not familiar with the educational systems and less well known universities. However, we also pointed out that these various types of foreign education discount are less among those who are in professional occupations and have a more extensive social networks.

Data and Method

The data of this study were drawn from the New Economy and Immigrant Adaptation Survey, conducted in 2005 in Toronto, Canada. The study included 1,539 respondents aged 18 years or older. In this study, we are particularly interested in the effects of foreign education on earnings. The dependent variable is self-reported personal income, in intervals ranging from below $20,000 to over $200,000. The median income interval is between $20,000 and $39,999.

One of the key independent variable is the endowment discount of foreign education. We grouped respondents into four different foreign education trajectories: Canadian born who received their education in Canada, immigrants who received their highest education in foreign countries, immigrants who received some foreign education but completed their highest education in Canada, and immigrants received all education in Canada. We expect those immigrants who received their highest education in foreign countries to have the highest endowment discount. Canadian born respondents who received their education in Canada are included for purpose of comparison with immigrants.

We included two variables to measure the sheepskin effects of foreign education. First, a categorical variable indicates the place of education by major regions: Asia, “US, UK or Western Europe,” “Eastern Europe,” “South America and Africa,” “Canada,” and “other regions”. Some regions are grouped into one category because of a limited number of cases. Our interpretation will be in caution as we are fully aware possible different sheepskin effects of studying in different

regions. Second, a dummy variable indicates high-ranking foreign universities. The ranking is based on the ranking published by Shanghai Jiaotong University in 2005 (http://ed.sjtu.edu.cn/ranking.htm), in which top 500 universities were selected by region. The ranking is based on publication impact and citation of faculty and alumni, and size of institution. A high-ranking university is defined if the university is listed in the top 500 list. We expect that immigrants who received education in foreign countries, especially Asian countries, will encounter significant place-specific sheepskin discount because employers in Canada are less familiar with these universities and their systems. The ranking-specific sheepskin discount is particular significant for those who received education at low-ranking universities. Together, immigrants who received education in Asian low ranking universities will more likely experience place-specific and ranking-specific sheepskin discount.

Our analysis also takes into the consideration of two factors. First, we run separate analysis for professional and non-professional occupations in order to differentiate possible institutional difference in discount of foreign education on earnings. Second, our models control for the extensity of social networks of respondents. The extensity of social networks of individuals are measured by two variables, which are derived from the position generator, a survey instrument commonly used to capture the extent of a respondent's social networks (Lin 2001; Lin and Dumin 1986). The first variable focuses on the potential resources that the networks can obtain. It is the highest occupational prestige score associated with the occupations to which the respondent has access. The second variable is the range between the highest and the lowest occupation to which the respondent has access, thus showing the extent of the individual's social networks. The occupational prestige score is based on the findings from Ganzeboom and Treiman (1966).

In our statistical model, we also control for a number of factors for possible effects on earnings: level of highest education, age, gender, language ability, being a visible minority, being employed in a professional occupation, weeks of work, and hours of work.

Interval regression is used in this analysis. Since the dependent variable, individual income, has the lowest category left-censored and the highest category right-censored, and the remaining categories are interval-censored, it could not be analyzed in a straight forward manner by OLS regression or by an ordered logit (probit) model. Interval regression is a statistical method which specifically models this type of censored variable. In our analysis using interval regression, we recoded the dependent variable into thousands and transformed them into a natural logged scale.

Results

TABLE 1 ABOUT HERE

Table 1 shows the earning distribution of respondents by their trajectories of foreign education in professional and non-professional occupations. The first panel reports the earnings of all respondents. The results show the well known earning disparity of immigrants who received their highest education in foreign countries. These immigrants have distinctly lower income.

However, not all immigrants received foreign education have lower earnings. Immigrants received some foreign education but completed their highest education in Canada do considerably well. About 18% of this group, the highest percentage among all other immigrants with different foreign education trajectories, earns $80,000 or more. This percentage of high earners is greater than that of the Canadian born population. At the same time, they also have the lowest percentage of individuals earning $20,000 or less.

The earnings of immigrants with no foreign education, who are most likely the 1.5 generation who arrived in Canada when they were young, are very similar to the earnings of those born in Canada. While about 14% of this group earns $80,000 and over, the rate for the

Canadian born population is 12%. Similarly, 38% of this group earns $20,000 or less, compared to 39% of the Canadian born population.

The second and third panels of the table display the earnings of respondents by separate trajectories of foreign education in professional and non-professional occupations. It is very clear that those who work in professional occupations have higher earnings compared to those in non-professional occupations with the same trajectory of foreign education. Besides, the earnings disparity among immigrants with different trajectories of foreign education remain the same between professional and non-professional respondents.

In short, the results have clearly suggested a more complicated picture of the effects of foreign education on earnings. We observe that immigrants who completed their highest education in foreign countries have lower earnings. However, immigrants with some foreign education whose highest education was completed in Canada have higher earnings, even higher than the earnings of the Canadian born group. In addition, there are drastic differences in earnings between respondents with the same trajectories of foreign education who are in professional and non-professional occupations.

TABLE 2 ABOUT HERE

The first set of interval regression analysis reported in Table 2 focuses on examining the endowment discount of foreign education on earnings. We expect that those who received their highest education in foreign countries will experience a significant endowment discount. We ran three sets of analysis. The first set includes all respondents. The second and third sets include respondents who work in professional and non-professional occupations respectively. In each set of analysis, we ran two models. The first model includes the trajectories of foreign education, controlling for social and demographic backgrounds of respondents. The second model adds additional variables to capture the social networks of respondents. The

earnings of the Canadian born population with only Canadian education serve as contrast to the earnings of immigrants with various trajectories of foreign education.

Immigrants who received highest education in foreign countries experience discount in earnings. For those immigrants who received foreign education and completed their highest education in Canada, their educational experience is positively related to earnings. However, the effect is statistically not significant. The same pattern is also observed for immigrants who did not receive foreign education.

The results clearly suggest that the foreign education effects on earnings are more complicated than described in previous studies. Foreign education does not necessary lead to discount on earnings. Only who received highest education in foreign countries experience discount effects of their foreign education on earnings. The pattern is consistent to the proposed endowment discount of foreign education.

The second model reported in Column 2 adds variables to capture the effects of the respondents' social networks. Respondent's earnings are positively associated with more extensive social networks. In addition, the inclusion of social networks reduces of the endowment discount of foreign education on earnings. The results strongly suggest extensive social networks help to reduce the endowment discount of foreign education on earnings.

Focusing on the earnings of respondents working in professional occupations, the third and fourth columns report the endowment discount of foreign education on earnings of the group, controlling for various factors. Although working in highly isomorphic occupational structures, the negative endowment discount still cannot be erased. Extensity of social networks is insignificant in earnings of those who work in professional occupation. The results reflect the highly structured working environment of professional occupations.

Results reported in the last two columns only included respondents working in non- those who work in professional occupations. The effects of the endowment discount and social

networks on earnings among those who work in non-professional occupations are somewhat different from professional occupations. Similar to their counterparts in professional occupations, immigrants who work in non-professional occupations received their highest education in foreign countries still experience significant discount. However, differing from professional occupations, the results show that completing their highest education in Canada has positive and significant effects on the earnings of those with some foreign education. It is noteworthy to mention that, unlike professional occupations, earnings in non-professional occupations which are less regulated by professional associations are strongly related to educational level, demographic and socioeconomic background. The last column shows the results when respondents' social networks are included. It indicates that social networks are significant to improve the earnings of respondents' working in non-professional occupations, and reduces the discount on earnings of the highest education received in overseas.

The results indicate that endowment discount is observed among individuals who received their highest education in foreign countries, even when controlling for demographic and socioeconomic background. At the same time, not all foreign education experience is disadvantageous to immigrants' earnings. For those who received some foreign education and work in non-professional occupations, completed their highest education in Canada has positive effects on their earnings. The results also suggest that social networks are important as "distal mechanisms" to minimize the endowment discount only among those who work in non-professional occupations (Alba and Nee 2003).

Sheepskin Effect

So far the results have demonstrated the endowment discount for immigrants who received their highest education in foreign countries, no matter in professional or non-professional occupations. In this section, we explore the sheepskin discount of foreign education on earnings. In a separate analysis not reported here, results show that earnings are not related to the various

foreign education trajectories for those only completed high school. The results are consistent with previous studies on sheepskin effect (Jaeger and Page 1996). Therefore, our analysis of the quality discount of foreign education focuses on those completed university education. Our analysis proceeds in two stages. First, we look at how the place-specific sheepskin discount (i.e., the region where university was completed) affects earnings among those completed universities. Second, we investigate the place-ranking-specific sheepskin discount (i.e. the university's ranking in specific region) on earnings of the group.

TABLE 3 ABOUT HERE

Table 3 presents the effects of place-specific sheepskin discount on earnings. We included a set of variables that indicate the region where the foreign university education was received. The contrast category is university completion in Canada, which includes immigrants who received foreign education in their earlier education. Although their foreign education trajectories are different, our previous analysis has shown that the earnings for those who received foreign education earlier but completed the highest education in Canada do not encounter foreign education discount. At the same time, similar to those who received all education in Canada similarly enjoy higher earnings. Nevertheless, our interpretation is in caution. The first two columns reports results included all respondents completed universities. The setup of the analysis is similar to previous analysis. The first model included region where they completed university education controlling for socioeconomic and demographic backgrounds of respondents. The second model further adds the social networks variables. The third and fourth columns repeated the same models included only respondents with professional occupations. The last two columns included only respondents with non-professional occupations.

For the analysis including all respondents, the results of the first model suggest that those who completed universities in Asia, US, UK, and Western Europe experienced the sheepskin discount effect of foreign education. At the same time, most socioeconomic and demographic

factors are statistically significant. The second model further includes the social networks of respondents. The results show social networks is positively and significantly related to earnings. It also reduces the place-specific sheepskin discount on earnings. Specifically, the place-specific sheepskin discount of completing university in Asia becomes statistically insignificant, while the ranking-specific discount of completing university in US, UK and Western Europe substantially reduced.

The place-specific sheepskin discount is quite different when only respondents who work in professional occupations are considered. The results in the first model show that place-specific sheepskin discount, no matter what regions university education was received, is statistically insignificant. The insignificant relationship remains when the variables of social networks are included in the analysis. Social networks do not play an important factor in explaining the earnings of people who work in professional occupations.

Among those working in non-professional occupations, there is place-specific sheepskin discount for the earnings of immigrants who completed university in most regions. The results show that the social networks of respondents have a positive effect on earnings. Besides, when social networks of respondents are controlled, though the results still remain, the effects are considerably reduced.

In short, the results suggest that the discount experienced by immigrants who completed university in foreign countries is place-specific. The disadvantaged earnings experienced by immigrants who completed university in Asia becomes insignificant once social networks of respondents are controlled. On the contrary, the place-specific sheepskin discount among immigrants who completed university in US, UK, and Europe remain even social networks of respondents are controlled. For professional occupations, no place-specific sheepskin discount is experienced by immigrants. Immigrants who work in non-professional occupations experience

place-specific sheepskin discount of completing university in most foreign countries. Yet, social networks reduce the effects.

TABLE ABOUT 4 HERE

Finally, we explore the place-specific and ranking-specific sheepskin discount of foreign education received in different places on earnings. In this set of analysis, we differentiate only Asian, US, UK, and Western European universities by their rankings because we only have a small number of respondents who graduated from prestigious universities in Eastern Europe and other regions. Similar to the previous analysis, we only included those who completed their university education in overseas and ran separate analyses for those who work in professional and non-professional occupations.

The first and second columns of Table 4 present the results including all respondents. Results show that not all graduated from Asian universities received earnings discount, only those who completed university in low-ranking Asian universities experience an earning discount. The results, surprisingly, also show that immigrants who completed university in the US, UK or Europe high ranking institutions have lower earnings. The final model includes social networks. These discount effects are no longer statistically significant once the social networks are taken into consideration.

When only those respondents working in professional occupations are considered, the ranking of foreign universities does not show any significant discount on earnings. The effect remains insignificant even when the respondents' social networks are considered. In non-professional occupations, immigrants who graduated from low-ranking Asian universities and high ranking US, UK, and European universities earn significantly less. When social networks are included, the discount effects of receiving education from low-ranking Asian universities are reduced. At the same time, the discount effects of receiving education from high-ranking US, UK, and western European universities become insignificant.

In short, the results suggest that immigrants who completed university in low-ranking Asian universities and high-ranking US, UK, and Western European universities experience place-ranking-specific sheepskin discount. However, the place-ranking-specific sheepskin discount becomes insignificant when social networks are taken into consideration. In addition, respondents with professional occupations do not experience place-ranking-specific discount and the discount remains only to those graduated from Asian universities when social networks are taken into consideration.

Conclusion

The research reported here explores the effects of foreign education on earnings. Previously, most studies were based on indirect estimated information about foreign education, and documented the lower earnings of immigrants who had foreign education as compared to those who had domestic education. Using direct information obtained from respondents, this research goes beyond the existing studies by suggesting the discount effects of foreign education, consisting of endowment and sheepskin discounts.

Our results, as expected, show that the endowment discount on earnings is significant among immigrants who received their highest education in foreign countries. In addition, our results confirm our expectation that the place-specific sheepskin discount is found among those who completed universities in Asia. Unexpectedly, the discount also is found among those who completed universities in US, UK, and Western Europe. Besides, our results suggest that place-ranking-sheepskin discount is found among immigrants who completed their education in low-ranking Asian universities and high-ranking US, UK, and western European universities.

Our results also show that foreign education effects on earnings differ between immigrants working in professional and non-professional occupations. For those who work in professional occupations, both place-specific and place-ranking-specific sheepskin discount virtually insignificant. The isomorphic pressure of professional occupations prevents sheepskin discount

on earnings. However, place-specific sheepskin discount is found for almost foreign university education and place-ranking-specific discount is found among those who received university education in low ranking Asian universities and high ranking US, UK, western European universities.

Finally, the findings clearly indicate the importance of social networks to alleviate the foreign education discount, whether in terms of endowment or sheepskin discount. In particular, our analysis shows that place-specific sheepskin discount among immigrants who completed university in Asia and all place-ranking-specific sheepskin discounts to those who completed foreign university education becomes insignificant once extensity of social networks are controlled. Social networks are especially important to those who are in non-professional occupations. Place-specific sheepskin discount of those completed universities in Eastern Europe and the place-ranking-specific sheepskin discount of those completed at high ranking US, UK, and western European universities becomes insignificant when social networks are considered. It echoes the assertion that immigrants are actively using their resources to minimize institutional constraints as they integrate into the new society.

Our study has advanced the understanding of the effect of foreign education on earnings. The revealed picture of the relationship is more complicated. We have shown that the negative effects of foreign education vary according to stages when the foreign education was received, place and academic ranking of the foreign education was received, and occupational types. If all these factors are taken into consideration, only those who completed highest education in overseas and those completed universities in US, UK, and western European countries experience discount on earnings. Foreign education virtually has no effect on those working in professional occupations. While only place-specific sheepskin discount are crucial on earnings for those in non-professional occupations. Thus, any discussion in the future of foreign education effects on earnings should take these factors into consideration.

Finally, the strong and positive effect of acquiring further education following immigration on earnings, especially university education, suggests its importance in advancing immigrants' earning. In addition, the consistent positive effects of social networks are critical to reduce the foreign education discount on earnings. These findings suggest possible avenues for immigrants to advance their economic achievements and to reduce discount of human capital acquired before immigration as they face the institutional constraints in their economic integration.

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Table 1: Earning Distribution by Foreign Education Experience

	Below $20,000	Between $20,000 and $39,999	Between $40,000 and $79,999	$80,000 and above	N
Total					
Canadian Born	39.42	20.51	27.88	12.18	312
Immigrants: With Foreign Education Experience and Completed Highest Education in Canada	27.42	20.97	33.87	17.74	186
Immigrants: Completed Highest Education in Foreign Countries	41.65	30.31	22.06	5.98	485
Immigrants: No Foreign Education	38.10	26.19	21.43	14.29	84
Professional Occupations					
Canadian Born	19.59	14.43	46.39	19.59	97
Immigrants: With Foreign Education Experience and Completed Highest Education in Canada	15.15	16.67	40.91	27.27	66
Immigrants: Completed Highest Education in Foreign Countries	16.67	26.67	43.33	13.33	120
Immigrants: No Foreign Education	7.14	35.71	42.86	14.29	14
Non-Professional Occupations					
Canadian Born	48.37	23.26	19.53	8.84	215
Immigrants: With Foreign Education Experience and Completed Highest Education in Canada	34.17	23.33	30.00	12.50	120
Immigrants: Completed Highest Education in Foreign Countries	49.86	31.51	15.07	3.56	365
Immigrants: No Foreign Education	44.29	24.29	17.14	14.29	70

Table 2: Interval Regression Estimates of Foreign Education Experience on Earnings

	All		Professional		Non-Professional	
Education levels						
Graduate school	0.406 ***	0.405 ***	0.444 ***	0.433 ***	0.333 **	0.357 **
University	0.320 ***	0.302 ***	0.098	0.098	0.429 ***	0.400 ***
College or below	cc	cc	cc	cc	cc	cc
Demographic and Socioeconomic Factors						
Age	0.025 ***	0.024 ***	0.030 ***	0.029 ***	0.023 ***	0.023 ***
Gender (Female=1)	-0.368 ***	-0.371 ***	-0.129	-0.135	-0.477 ***	-0.475 ***
Visible Minority	-0.192 ***	-0.170 **	0.007	0.007	-0.273 ***	-0.237 **
Language Ability: Well and Very Well	0.402 ***	0.327 ***	0.337	0.299	0.387 ***	0.298 **
Professional Occupations	0.372 ***	0.357 ***				
Ln(Weeks of Work)	0.024	0.019	0.071	0.067	0.029	0.026
Ln(Hours of Work)	0.062	0.068	0.270 **	0.273 **	0.050	0.053
Foreign Education Experiences						
Immigrants: Completed Highest Education in Foreign Countries	-0.160 **	-0.121 *	-0.291 **	-0.263 **	-0.121 **	-0.090 **
Immigrants: No Foreign Education	0.155	0.138	-0.159	-0.167	0.209	0.196
Immigrants: With Foreign Education Experience and Completed Highest Education in Canada	0.122	0.129	-0.204	-0.191	0.285 **	0.278 **
Canadian born	cc	cc	cc	cc	cc	cc
Social Networks						
Upper Reachability		0.013 **		0.008		0.013 *
Extensity		0.006 **		0.001		0.009 **
Intercept	1.893 ***	0.843 **	1.150 **	0.600	2.016 ***	0.869 *
Sigma	0.714	0.699	0.589	0.586	0.763	0.741
Log likelihood	-1794.18	-1771.74	-596.88	-595.50	-1163.91	-1142.97

p***<0.001; p** < 0.01; p* < 0.05; cc: contrast group

Table 3: Interval Regression Estimates of University Completion from Different Regions on Earnings

	All				Professional				Non-Professional			
Region Where University Completed												
Asian	-0.226	*	-0.153		0.117		0.143		-0.462	**	-0.357	*
US, UK, Western Europe	-0.471	**	-0.399	*	-0.385		-0.300		-0.532	*	-0.494	*
Eastern Europe	-0.342		-0.265		-0.105		-0.037		-0.491	*	-0.411	
Others	-0.246		-0.211		0.097		0.089		-0.308		-0.247	
Canada	cc		cc		cc		cc		cc		cc	
Demographic and Socioeconomic Factors												
Age	0.021	***	0.019	***	0.025	***	0.024	***	0.019	***	0.017	***
Gender (Female=1)	-0.338	***	-0.354	***	-0.175		-0.199	*	-0.412	***	-0.419	***
Visible Minority	-0.160		-0.156		0.029		0.038		-0.319	*	-0.317	*
Language Ability: Well and Very Well	0.621	***	0.545	**	0.633	*	0.575		0.535	*	0.482	*
Professional Occupations	0.306	***	0.315	***								
Ln(weeks of work)	-0.030		-0.036		0.184	*	0.170	*	-0.178	*	-0.175	*
Ln(hours of work)	0.115	*	0.118	*	0.360		0.367	*	0.257	**	0.251	***
Canadian Born	0.012		-0.010		0.153		0.134		-0.088		-0.099	
Social Networks												
Upper Reachability			0.019	*			0.010				0.027	**
Extensity			0.004				0.005				0.002	
Intercept	2.201	***	0.786		0.262		-0.540		2.655	***	0.804	
Sigma	0.708		0.693		0.568		0.558		0.759		0.742	
Log likelihood	-750.74		-741.08		-301.97		-299.02		-424.30		-418.30	

p***<0.001; p** < 0.01; p* < 0.05; cc: contrast group

Table 4: Interval Regression Estimates of Foreign Education from Universities with different Rankings on Earnings

	All		Professional		Non-Professional	
Asia: High Ranking	-0.058	0.027	0.260	0.306	-0.304	-0.167
Asia: Low Ranking	-0.265 **	-0.195	0.067	0.090	-0.487 **	-0.386 *
US, UK, Western Europe: High Ranking	-0.546 **	-0.386	-0.431	-0.234	-0.669 *	-0.589
US, UK, Western Europe: Low Ranking	-0.397	-0.403	-0.347	-0.331	-0.366	-0.386
Eastern Europe	-0.339	-0.263	-0.100	-0.031	-0.486 *	-0.408
Others	-0.247	-0.211	0.099	0.092	-0.305	-0.245
Caanda	cc	cc	cc	cc	cc	cc
Demographic and Socioeconomic Factors						
Age	0.021 ***	0.019 ***	0.025 ***	0.024 ***	0.018 ***	0.016 **
Gender (Female=1)	-0.337 ***	-0.354 ***	-0.167	-0.189	-0.411 ***	-0.422 ***
Visible Minority	-0.160	-0.158	0.034	0.039	-0.321 *	-0.321 *
Language Ability: Well and Very Well	0.621 ***	0.543 ***	0.621 *	0.557	0.540 **	0.487 *
Professional Occupations	0.297 ***	0.306 ***				
Ln(weeks of work)	-0.034	-0.041	0.177 *	0.161 *	-0.180 *	-0.175 *
Ln(hours of work)	0.120	0.124 *	0.377 *	0.388 *	0.257 **	0.251 **
Canadian Born	0.011	-0.012	0.152	0.128	-0.087	-0.099
Social Networks						
Upper Reachability		0.020 *		0.011		0.027 **
Extensity		0.004		0.005		0.002
Intercept	2.215 ***	0.778	0.224	-0.624	2.670 ***	0.794
Sigma	0.707	0.691	0.566	0.555	0.757	0.741
Log Likelihood	-749.75	-740.05	-301.47	-298.38	-423.74	-417.72

p***<0.001; p** < 0.01; p* < 0.05; cc: contrast group