The Park Place Economist

Volume 20 | Issue 1 Article 15

2012

Returns from Self-Employment: Using Human Capital Theory to Compare U.S. Natives and Immigrants

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Abstract

An article in USA today written by John Hopkins (2007) explains what it takes to be a successful self-employed person. Looking at the list of characteristics, education and experience are missing from the equation. What Hopkins lists as crucial is being a risk taker, knowing how to manage money, and even having the right genetics. The fact that education and experience are viewed by Hopkins to have minimal influence on the success of being self-employed is odd considering that those are some of most important factors for being successful according to economic theory which is later discussed in this paper, which is why I hypothesize that education and experience will have a significant impact on the success of a self-employed individual.

RETURNS FROM SELF-EMPLOYMENT: USING HUMAN CAPITAL THEORY TO COMPARE U.S. NATIVES AND IMMIGRANTS

Nikola Popovic

I. INTRODUCTION

An article in USA today written by John Hopkins (2007) explains what it takes to be a successful self-employed person. Looking at the list of characteristics, education and experience are missing from the equation. What Hopkins lists as crucial is being a risk taker, knowing how to manage money, and even having the right genetics. The fact that education and experience are viewed by Hopkins to have minimal influence on the success of being self-employed is odd considering that those are some of most important factors for being successful according to economic theory which is later discussed in this paper, which is why I hypothesize that education and experience will have a significant impact on the success of a self-employed individual.

People who are self-employed or who start small businesses have significant influence on the economy. For example, according to facts compiled by the US Small Business Administration (2008), small businesses accounted for the employment of 52 percent of the US workforce in 2001, and were responsible for 75 percent of jobs created from 1990 to 1995. Starting a business has also allowed for innovation and increased competition in the markets. Since the Internet boom, new technology has provided opportunities to start a small business, be it one large enough to have employees or just for an individual.

An increase in opportunities to become self-employed has not only affected the native population but the minority as well. The steady increase of the immigrant population in the United States has provided the domestic small business scene with diversity of both culture and knowledge, with Mexico being the highest supplier of immigrants followed by China, India, and the Philippines (CIS, 2010). According to a study by AnnaLee Saxenian (1999), 25.3 percent of 2000 surveyed companies in Silicon Valley reported that at least one of their key founders was an immigrant. Immigrants provide abilities that are unique to the American economy as well. A one percent increase in college educated immigrants increases patents per capita by 6 percent (Hunt and Gauthier-Loiselle, 2010). These figures start to address the significance that immigrants have on the advancement of the US economy. The increase in the immigrant population has caused the number of loans given to minorities to increase dramatically starting from the mid 90s (US SBA, 1999). This increase in business loans can be attributed to the fact that there are more immigrants coming to this country, but other factors, like education, could be at play.

This paper will study the effects that education and age have on earnings for self-employed individuals and will control for the country of birth. This research will attempt to find a correlation between the amount of human capital invested in an individual and the amount of returns they receive from self-employment, and then examine whether being a native to the US has a different effect than being an immigrant. I hypothesize that more human capital investment will result in higher earnings from self-employment, according to the theory that will be discussed later in this paper. I also hypothesize that immigrants will earn more than natives when controlling for educational attainment. The literature supports this reasoning because immigrants possess different skill sets coming from different cultural and educational backgrounds, which might influence how much income they receive. The immigrant groups selected for this study are from Mexico, China, India, and the Philippines.

II. THEORY AND LITERATURE

There has been limited research done on the returns from self-employment when controlling for investments in human capital. Where the literature lacks completely is in finding a relationship between the returns from self-employment

among natives and immigrants based on human capital investment in the US. It is common to find literature, however, on the success of individuals who dropped out of college to start their own multi-billion dollar firms. The focus of this paper is on finding the general trend of returns from education and experience, rather than on the few whose success stories are extremely rare.

The hypothesis and models for this study will be built off of a study done by Justin van der Sluis, Mirjan van Praag, and Arjen van Witteloostuijn (2007). Their research compares the returns from human capital of self-employed and privately employed individuals. They find that investment in human capital in fact does have a significant effect of the returns to self-employment. My paper will use the findings of Sluis, Praag, and Witteloostuijn combined with a study by George Borjas (2007) to form the hypothesis that investments in human capital will similarly affect immigrants.

The underlying theory that I base my hypothesis on is human capital theory. This theory states that the more one invests in his or her education, the more returns s/he should receive in the form of earnings. There are two different applications of this theory: general and specific human capital.

General human capital theory states that skills obtained through education and experience in one's lifetime is what develops an intuition for successful business behavior due to a broad set of skills that are transferable between occupations (Brixy and Hessels, 2010). In this sense, both natives and immigrants should theoretically have the same advantages when looking at the success of a business because there are no statistical implications that would suggest one nationality has a higher quality life experience than the other. This conclusion can be made because the data set allows for the immigrant groups to become assimilated to the host country by setting the minimum age at 25. Leonid Azarnert (2011) suggests that an increasing immigrant population will in fact lower the return from human capital for natives because the increased competition discourages native workers. I will attempt to account for this issue by controlling for country of origin to find a general trend of returns from general human capital.

Specific human capital suggests that individuals possess skills that are directly relevant to their occupation (Brixy and Hessels, 2010). For example, an education and work experience in the auto mechanic field should result in higher economic success for an individual starting an auto shop compared to an education and experience in music for an individual trying to start the same auto shop. George Borjas (2007) discusses the significant difference between different countries when it comes to quality of education in certain areas. Borjas states that a higher percentage of Indian students study computer science than American students; therefore, using specific human capital theory, this would suggest that Indians would be more successful in starting a business in the technology field compared to Americans, simply because they have more related educational attainment. Generally speaking, the immigrant population has skills that are scarce to the US economy, and therefore these skills are in high demand which results in higher earnings.

Borjas does not ignore the fact that there are challenges when migrating to a new country, such as learning a new language and culture. These challenges might decrease the amount of potential earnings an immigrant can make from self-employment, but Borjas argues that the positive effect of having unique skills will be greater than the negative effect of migrating to a new country. This argument supports my hypothesis that self-employed immigrants will earn more than self-employed natives when controlling for the same level of upper level educational attainment.

When considering age, Gary Becker (1975) uses an empirical model to prove that earnings towards the end of one's career decrease because investments in human capital by the individual decrease over time. It is more likely that someone in their 20's will decide to go back to school to pursue higher education than someone in their 50's. This idea has become accepted in the economic community and therefore suggests that individuals in this study will see a slowdown in the amount of their earnings increase as they age because they will no longer be motivated to invest in their own human capital as they near retirement.

This theory is slightly more straightforward on its connection to natives, but there are other factors involved when considering investments in

human capital for immigrants. Immigrants need time to assimilate to the culture and language, which usually is a larger challenge for low skilled immigrants than high skilled. The amount of skills that immigrants possess will have an impact on the policy implications of this study which explores how immigrants benefit the US economy by starting their own businesses. If most of the immigrants in the sample are low skilled, their economic success, as measured by earnings, might not be as significant as natives'. However, if a significant portion of immigrants are skilled, the findings of this study might suggest that the US change its immigration policies to encourage the migration of educated immigrants.

III. DATA

The data for this study comes from the IPUMS Current Population Survey as conducted by the Minnesota Population Center. The data is taken from a survey conducted in March 1999. The reason for this year is because 1999 was on the tail end of strong economic growth for the US. This will attempt to reduce the effect of the economic cycle on the earnings for individuals. It will also give new immigrants opportunities to get assimilated during a time of economic growth. The sample consists of 6000 self-employed individuals from ages 25 through 65. These individuals report their income for the year of the survey. The immigrant groups that are compared to US natives are immigrants from Mexico, China, India, and the Philippines. What defines an immigrant in this study is an individual that was born outside of the US, with the year of migration not taken into account. The large number of variables available from this survey, as well as a large sample size, makes for a strong set of data.

This database is also beneficial to this study because the variable which defines the class of worker includes codes for self-employed, making it simple to identify, and isolate, which individuals apply to this study.

IV. NATIVE / IMMIGRANT COMPARISON

To find descriptive statistics of earnings for natives and immigrants, I compiled general information about the education level and average age of each group using the data set, detailed in Table 1.

When observing the education levels for each ethnic group, the Mexican sample population stands out as having the least amount of education, about 75 percent having a High School diploma or below. The Chinese, Philippine, and Indian sample populations all have about the same percent of college educated individuals when compared to the Natives, but they have a noticeably larger percentage of individuals that have graduate levels of education. Considering the spread of data, I hypothesize that Chinese, Filipino, and Indian immigrants will have a higher income from being self-employed than the Native population; Mexican immigrants will have the lowest amount of income, when basing this reasoning on human capital theory.

The other aspect of human capital theory, experience, can be observed from the average ages of the sample groups. Mexican immigrants average a younger age then the rest of the groups, further supporting my hypothesis that they will have the least amount of income from self-employment. Chinese and Philippine immigrants have a higher average age than the Natives, which also supports the hypothesis that they will earn more than natives. The only contradiction is that the age of Indian immigrants is slightly lower; however the slight difference will be offset by a more substantial difference in education be-

Table 1: Average Ages and Percentages of Individuals in Educational Groups for Natives and Immigrants

Immigrant Group	HS diploma and below (%)	Above HS through Bachelors (%)	Above Bachelors through Masters (%)	Above Masters (%)	Average Age
Native	38.47	49.41	4.99	7.13	45.35
Mexico	75.84	20.81	2.01	1.34	40.78
China	39.29	50	0	10.71	48.21
Philippines	21.74	47.83	4.35	26.09	46.22
India	7.69	50	23.08	19.23	45.12

tween them and the Native population.

V. EMPIRICAL MODEL

This study will be divided into three tests. The first test shows the general differences in earnings that immigrants and natives have; the second test sees how well human capital theory can explain these differences, and the final test compares the earnings between self-employed immigrants and natives with the same amount of upper level education. The tests are represented in Tables 2, 3, and 4, including the expected sign of each variable as described by the hypothesis. The dependent variable will be total personal income. The data will control for the self-employed, both incorporated and non-incorporated, by only including the individuals that fit these two categories. Total personal income will be used instead of total business income because the individuals that are categorized as self-employed and incorporated report their earnings under wages, instead of business income. Using total income while controlling for both types of self-employment will assure that the data is not affected by how earnings are reported. The first test will control for country of origin to account for the general differences in skill levels between immigrants and natives, as shown in Table 2. The groups in this model are Mexico, India, China, Philippines, and Native, where Native is the omitted group, as shown in Model 1. Mexican immigrants are the only group with an expected negative relationship with natives, as concluded in the Native/Immigrant Comparison section of this paper.

Model 1: Total Personal Income(TPI) = $ß_0$ + $ß_1$(Mexico) + $ß_2$(China) + $ß_3$ (Phil) + $ß_4$(India)

The second test will add human capital variables of education and age to Model 1, as shown in Table 3. The independent variable education will be divided into groups. It will consist of four groups represented by dummy variables: high school diploma and below, above high school through bachelor's degree, above bachelor's through master's degree, and anything above a master's degree. The omitted variable will be high school diploma and below to show the effects of increasing amounts of education. The variable Age will be used to show the change in earnings for an additional year of experience, and AgeSquared will show a rate of change for an additional year of experience. The expected sign for Age is positive and AgeSquared is negative because younger individuals invest more in their human capital compared to older individuals, as hypothesized in earlier sections of the paper. Keeping the age range from 25 to 65 captures the ages where most people have obtained an education, as well as had a couple of years to become settled after their college years. For immigrants, it allows a couple years to become assimilated to the new country, as well as removing the individuals that have moved on into retirement. The complete model is shown in Model 2.

Model 2: Total Personal Income (TPI) = $ß_0$ + $ß_1$(Mexico) + $ß_2$(China) + $ß_3$(Phil) + $ß_4$(India) + $ß_5$(BachDeg) + $ß_6$(MasDeg) + $ß_7$(AboveMas) + $ß_8$(Age) + $ß_9$(AgeSquared)

To test the hypothesis that Borjas presents, that immigrants have unique skills to the US workforce, a third model will be tested using interaction variables of each immigrant group and if they have an education above a bachelor's degree. These groups will be compared to the native population with the same level of education to see if indeed the immigrants have unique skills that give them an economic advantage. This level of education has been chosen because individuals who have an education above a bachelor's degree have the most specialized skills. Table 4 and Model 3 illustrate the regression model as well as the variables with their expected signs.

Table 2: Model 1 Variables with Expected Signs and Definitions

Predicted Sign	Variable	Definition
Dependent Variable -		
	TPI	Total personal income (Self-employed)
Explanatory Variables -		
Omitted	Native	Population born in the US
-	Mexico	Population born in Mexico
+	China	Population born in China
+	Phil	Population born in the Philippines
+	India	Population born in India

Model 3: Total Personal Income(TPI)
$=ß_0 + ß_1(Mexico) + ß_2(China) + ß_3(Phil) + ß_4(India) + ß_5(AboveBachelors) + ß_6(Mexico*AboveBachelors) + ß_7(China*AboveBachelors) + ß_8(Phil*AboveBachelors) + ß_9(India*AboveBachelors)$

Table 3: Model 2 Variable with Expected Signs and Definitions

Predicted Sign	Variable	Definition
Dependent Variable -		
	TPI	Total personal income (Self-employed)
Explanatory Variables -		
Omitted	Native	Population born in the United States
-	Mexico	Population born in Mexico
+	China	Population born in China
+	Phil	Population born in Philippines
+	India	Population born in India
Omitted	HSDep	High School diploma and below
+	BachDeg	Above High School diploma through Bachelors Degree
+	MasDeg	Above Bachelors Degree through Masters Degree
+	AboveMas	Above Masters Degree
+	Age	Ages 25 through 65
-	AgeSquared	Age * Age

VI. RESULTS

The regression results of Model 1 show that the difference in earnings between self-employed immigrants and natives can be predicted by looking at the general level of education between each group. The Mexican immigrants are the only group predicted to have lower earnings than natives, and this held true. The coefficients for the other immigrant groups had correct signs and reasonable values. It is interesting to note the significant difference between the immigrant groups and natives, even if the Chinese and Filipino immigrant variables were not statistically significant, which is shown in Table 5. There is about a 50,000 dollar difference from the highest earning group, Indian, and the lowest earning group, Mexican.

Model 2 included the variables for educational attainment as well as age. All of the human capital variables were highly significant while the immigrant group variable were no longer significant. This shows that when controlling for human capital variables the difference in earning amount self-employed immigrants and natives is no longer significant. The size of the difference in earnings between the groups is much less than in the first regression; only about 12,000 from the lowest to the highest group. This regression shows how the differences in earnings among self-employed can be largely explained by human capital variables, as hypothesized.

Table 4: Model 3 Variables with Expected Signs and Definitions

Predicted Sign	Variable	Definition
Dependent Variable -		
	TPI	Total personal income (Self-employed)
Explanatory Variables -		
Omitted	Native	Population born in the United States
-	Mexico	Population born in Mexico
+	China	Population born in China
+	Phil	Population born in Philippines
+	India	Population born in India
+	AboveBachelors	Individuals with above a bachelor's degree
Omitted	Native*AboveBachelors	Natives with an education above a bachelor's degree
+	Mexico*AboveBachelors	Mexicans with an education above a bachelor's degree
+	China*AboveBachelors	Chinese with an education above a bachelor's degree
+	Phil*AboveBachelors	Filipinos with an education above a bachelor's degree
+	India*AboveBachelors	Indians with an education above a bachelor's degree

The values of the coefficients for the human capital variables were all reasonable, which supports the findings by Sluis, Praag, and Witteloostuijn (2007) who found that human capi-

tal investments have a positive relationship with self-employed income. The argument discussed by Becker (1975), that individuals invest less in their human capital as they get older, can be supported by observing the coefficients of Age and AgeSquared. The positive value for Age shows that as a self-employed individual get older, he or she earns about 2066 dollars more per year. The value for AgeSquared shows that the effect of an additional year of experience is decreased by about 324 dollars per year. These values show that Becker's argument is true, even for the self-employed.

The positive and significant interaction terms in Model 3 show that immigrants with the same amount of upper level educational attainment as natives have higher returns to education than natives, except for Indian immigrants whose interaction variable was not significant. Table 6 on the next page details the estimated earnings between each immigrant group when compared to natives.

The fact that natives have higher earnings than immigrants, in cases where educational attainment is at the bachelor's degree level and below, can be attributed to Borjas' (2007) argument that low skilled immigrants face greater challenges when migrating to a new country. The negative sign of the immigrant group variables shows that being an immigrant, regardless of country of birth, shares a negative effect with the amount of income a self-employed immigrant earns. Even if only two out of the four groups were statistically significant, all of the coefficients share the same sign.

When observing individuals that have an education above the bachelor's degree level, the results show an opposite relationship between country of birth and earnings. Natives, in this case, had the lowest amount of earnings when compared to the immigrant groups. All of the interaction variables except for Indian immigrants were statistically significant and positive. This means that for each immigrant group there is an additional effect of being an immigrant, as well as having as education about a bachelor's degree level. These results show that Borjas' claim that immigrants have unique skills that are in demand in the US economy, and therefore have higher earnings from self-employment, is plausible.

Table 5: Regression Results for Models 1, 2, & 3

	Model 1	Model 2	Model 3
Constant	45195.08	-27375.59	37031.31
	(52.287)	(1.874)	(43.062)
Mexico	-19600.58***	-5364.331	-15075.09***
	(3.694)	(1.101)	(2.991)
China	10956.82	7537.90	-8912.87
	(.905)	(.685)	(.746)
Phil	16974.82	-3028.95	-22215.31*
	(1.271)	(.249)	(1.488)
India	24292.69*	4348.69	-3091.78
	(1.934)	(.380)	(.201)
BachelorDegree		17430.97***	
		(10.457)	
MastersDegree		39826.16***	
		(10.808)	
AboveMasters		104246.16***	
		(33.037)	
Age		2066.371***	
		(3.129)	
AgeSquared		-18.15**	
		(2.517)	
AboveBachelors			67317.24***
			(27.26)
Mexico*AboveBachelors			41103.34*
			(1.51)
China*AboveBachelors			194328.32***
			(5.324)
Phil*AboveBachelors			88274.62***
			(3.255)
India*AboveBachelors			16705.87
			(.702)
N	5692	5692	5692
Adjusted R Square	.003	.176	.133

Note: Numbers in parenthesis are absolute t-statistics
* Significance at .10 level
** Significance at .05 level
*** Significance at .01 level

VII. CONCLUSION

There has been extensive literature and debate on the effects of immigration on the US economy and labor force; however, there is a lack of discussion on the effect that skilled immigrants have on small business creation. The findings of this study effectively show how an increase in human capital, represented by education and age, result in an increase in earnings from self-employment, and effectively support the theory and past literature, particularly the study by Sluis, Praag, and Witteloostuijn (2007). It also proposes that Borjas' (2007) theory that immigrant skills are in high demand in the US is reasonable. One suggestion for further research could be to analyze which particular skills immigrants have, and if immigrants with an education or experience in a particular subject earn more as self-employed individuals than immigrants that are self-employed in a field that is not related to their past education or experience. Perhaps additional variables, such as family history or standard of living, could be added as independent variables to see if there are additional effects on the returns from self-employment and how they can be related to the immigrant population. The results presented in this study tell us that educated, experienced immigrants are what can help turn the economy around, and help create much needed jobs for American laborers.

Table 6: Estimated Income Distribution for Natives and Immigrants

Immigrant Group	Has Bachelor's or Below	Has Above Bachelor's
Natives	37031*	104348*
Mexico	21956*	130376*
China	28119	289764*
Philippines	14815*	170407*
India	33940	117962

Note: Values are self-employed income
* statistically significant

Recently, there has been an increase in demand for skilled immigrants, particularly in the high-tech industries due to the computer age and globalization (Chiswick, 2005). Changing immigration policies to encourage skilled individuals to come to the US will fulfill this excess demand for workers, and also provide opportunities for them to start their own high-tech companies. Maskus, Mushfiq, and Stuen (2010) provide perspective on the idea of how important the diversity in education brought by immigrants is in the US economy. They state that a 10 percent decrease in foreign doctoral students decreases research by 5 to 6 percent. More skilled immigrants provide opportunity for the US economy to be exposed to individuals with unique abilities. As with immigrants, American natives need to be encouraged to further their education and invest in their human capital so that they may become more successful in creating their own businesses.

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