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ABSTRACT

Education and Self-Employment: South Asian Immigrants in the US Labor Market*

Does higher educational attainment lead to greater participation in self-employment? Available studies agree and disagree on this subject through various explanations. We invoke an empirical example from the experiences of immigrants moving from poor countries to rich countries. Further, we focus exclusively on the self-employment participation among south Asian immigration in the United States (using IPUMS Data), which the related literature has clearly neglected thus far despite long traditions of successful business ventures. We establish that higher educational attainment for immigrants from south Asia reduces the likelihood of being self-employed. In fact, a South Asian immigrant with higher educational attainment has 10% less chance of being self-employed than one without. In addition, we show that factors such as longer stay in USA and being a male, affect the likelihood of being self-employed positively. However, another interesting finding of our paper is that being a 'citizen immigrant' affects the probability of being self-employed positively. Though citizen immigrants with higher education attainment are less likely to choose self-employment, the probability is relatively higher in comparison to the non-citizen immigrant group with similar levels of education. This trend lends itself to a more than proportionate participation in self-employment by the citizen immigrants and the difference with immigrant non-citizen group becomes statistically significant. These results have various static and dynamic implications for the native labor market in host countries.

JEL Classification: J11, J15, J24

Keywords: immigration, occupation, microdata, USA, South Asia

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1. Introduction and Motivation

A rich strand of literature has investigated occupational choice of immigrants in the USA (to name a few, Patel and Vella, 2007; Chiswick and Taengnoi, 2007; Borjas, 2001, etc). Explanations of occupational choice can be based on several factors - skill, network effects, labor demand conditions and other exogenous shocks. In this paper, we focus on the occupational choice of South Asian Immigrants in the United States of America. The paper focuses on two important questions. First, we are interested in analyzing the impact of educational attainments of an individual on the likelihood of choosing self-employment vis-à-vis wage earning. While a number of studies investigated such choices for different ethnic groups, hardly any focuses on immigrants of South Asian origin. The idiosyncratic aspects of native culture amidst the cultural pluralism in the sub-continent; the existence of considerable income and educational heterogeneity among South Asian immigrants; and the country-specific political and other factors that might have influenced migration motivates a detailed investigation into the issue. The factors that contribute towards migration and occupational choice of such immigrants may be significantly different from those originating in other parts of Asia, Africa or Latin America. In this context, our second question pertains to whether the likelihood of choosing self-employment differs across the naturalized immigrants vis-à-vis the non-citizen immigrants of the South Asian origin. Once again, this question has both static and dynamic implications for the subject of economic and social assimilation of the immigrants with the dominant native structure, in the same vintage as the studies by Chiswick (1978), Carliner (1980), and more recently, a number of contributions by Constant, Gataullina and Zimmerman (2009, 2008, for the human capital aspects). Arguably, one route to faster income assimilation is entrepreneurship and self-

employment (see, Kar, 2009). We limit occupations to self-employment and employment as two mutually exclusive choices.

The self-employment participation rates of such South Asian immigrants in the US have not been subject to much empirical curiosity, despite 'Patels', 'Singhs' and 'Khans' have been running various small and medium-sized businesses quite successfully for a long time. This omission is not the same everywhere, or for everybody, however. Studies on Canada by Bolaria and Bolaria (1983) offered detailed economic analysis of Indian immigrants' occupational choices. On the other hand, Bates (1997), Fairlie and Mayer (1996) and Fairlie (2002) offer detailed account of the self-employment patterns among Chinese, Korean, even Lebanese immigrants as proportionately over-represented in self-employment in major cities in the US. The same set of studies also discusses Latino and Black entrepreneurship as control for establishing proportional over-representation among certain ethnic groups. The case for South Asian immigrants do not feature in such discussions. Based on this motivation and in order to fill this gap, we wish to explore the labor market outcome for immigrants originating in India, Pakistan, Sri Lanka, Bangladesh and Myanmar. The main variable of interest in this paper is the educational attainment of individuals. We narrow down the choice of occupation as an outcome of the educational attainment among South Asian immigrants and further investigate the variation in choices across citizen immigrants and non-citizen immigrants in the US.

In general, studies have previously dealt with educational attainment as a possible determinant of occupational choice (Bernhardt 1994; De Wit, 1993; Evans and Jovanovic, 1989; Gill, 1988; Rees and Shah, 1986), such that, qualities like the managerial ability of an individual increases with education leading to higher probability of being self-employed (Lucas, 1978). Also, educated workers tend to be better informed and, thus, will have a comparative advantage

in judging self-employment opportunities (Rees and Shah, 1986; Borjas and Bronars, 1989; Evans and Leighton, 1989). On the other hand, it seems that education may not have any impact on self-employment choices and, actually, higher educational attainment may lower the probability of being self-employed (See, Lentz and Laband, 1990; De Wit, 1993). They argue that formal education does not necessarily make good entrepreneurs and, in fact, high levels of education may 'facilitate entry into wage earning'. Our paper therefore aims to contribute to this rather general debate in labor economics by using the self-employment choice by South Asian immigrants in USA as an example.

We use probit specifications to test our hypothesis. Our results prove the alternative at least as far as the occupational choice of the immigrants from South Asia is concerned. Higher educational attainment for this group reduces the likelihood of being self-employed. In other words, a South Asian immigrant with higher educational attainment has 10% less chance of being self-employed than one without. Further, our analysis shows that factors like spending longer years in USA and being a male, affect the likelihood of being self-employed positively. Yet, another interesting finding of our paper is that being a 'citizen immigrant' affects the probability of being self-employed positively vis-à-vis wage earning. Though citizen immigrants with higher education attainment are less likely to choose self-employment, the probability is relatively higher in comparison to the non-citizen immigrant group with similar levels of education. We consider *proportion tests* to address our second question. We find that proportion of self-employed individuals among immigrant-citizen group is higher than proportion of self-employed among immigrant non-citizen group and the difference is statistically significant. The results hold for the higher education group – group of individuals with a college degree or higher.

Section 2 presents a brief literature review and builds up the hypothesis. Section 3 explains the data used in the paper. Section 4 lays out the empirical methodology and the benchmark results. Section 5 talks about robustness analysis and Section 6 concludes.

2. Self-employment as an occupational choice

An extensive literature already explores self-employment as an occupational choice for different groups. Becker (1984) and Bearse (1984) for example, investigate the self-employment rates for blacks and whites respectively.[1] The usual direction such analysis takes is also about comparing the self-employment participation among the immigrants in the US, of which large number of Hispanics, Asians and Eastern Europeans constitute the dominant group. In this respect Borjas (1986) noted a rapid increase in self-employment rates among unskilled immigrants moving to the US. It seemed mainly an outcome of the relative decline in opportunities in the salaried unskilled sector.

Self-employment of skilled immigrants is, however, explained differently. Considering education as a measure of skill, many researchers have found that higher levels of education increase the probability of self-employment. Both Borjas (1986) and Bearse (1984) found years of completed education to be positively related to the probability of being self-employed.[2] In

[1] Becker (1984) uses CPS data to estimate black participation in self-employment. Blacks are less likely to be self-employed on average, and between 1975 and 1983 the percentage dropped from 5.5 to 3.8. Black self-employed workers are concentrated in sales, services, farming, operator, fabricator, laborer etc. White self-employed individuals are more likely to be in managerial, professional, and technical areas. Bearse (1984) documents that blacks are more likely to have only one earner in the family, less likely to have assets or sources of interests and dividend income, have a higher proportion of females who are self-employed, and are concentrated in blue-collar industries and occupation.

[2] In Kar (2009) it was shown that self-employment rate of skilled immigrants is likely higher than the natives, because asymmetric information in the labor market leads to pooled wage and lowers the expected return among skilled workers. It pushes more skilled workers towards self-employment. For example, Weiss *et al*. (1999) show that for highly skilled immigrants from the former USSR to Israel, expected lifetime earnings fall short of

terms of earnings also, there is a positive correlation between higher education and higher self-employment returns (Bates, 1985; Brock and Evans, 1986; Lazear and Moore, 1984). Bauman (1988) and Evans and Leighton (1987), moreover, found that the impact of education on self-employed earnings was generally greater than the impact of education on wage earnings.

Many empirical studies have shown that self-employment rate among immigrants vis-à-vis the native born is higher in North America, Western Europe and other developed countries(Clark and Drinkwater, 2000; Bates, 1997; Li, 1997; Yuengert, 1995; Fairlie and Meyer, 1996, 2003; etc., for USA and UK; Razin, 1992, a case study for Israel with respect to Asian, African, East European and N. American immigrants; Kidd, 1993 for Australia etc).[3] All of these studies emphasize that in many rich countries, immigrants as well as ethnic minorities are proportionately over-represented in self-employment; i.e. the immigrant self-employment rate exceeds that of the native population. Of course, there are a number of other explanations for high rate of minority and immigrant self-employment in these countries. They include, labor market discrimination (Borjas and Bronars, 1989; Fairlie 1996, etc.), enclave effects and language proficiency (Borjas, 1986, although lacks support from later studies *viz.* Clark and Drinkwater, 2000; Yeungert, 1995, etc), and source country cultural traits (Bonacich and Modell, 1981; Bates, 1997; Borjas, 1987; Constant and Zimmerman, 2006; Duleep and Regets,

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comparable Israelis by 42%. Of this, 8.3% reflects friction associated with unemployment and occupational mismatch while there exists a remaining 34.3% gap, despite gradual adaptation of imported schooling and experience to the local labor market. Under the circumstances, it is possible that skilled individuals might seek alternative sources of income to maximize their expected lifetime earnings. This is true even for relatively unskilled population. Balkin (1989) tabulates self-employment rate among male high school dropouts across industries to be 11.8% (CPS, March 1987). Of this, agriculture, forestry, and fishing account for 44.4%; mining 7.2%; construction 16.9%; manufacturing 1.3%; wholesale trade 8.3%; retail trade 15.6%; services 16.8%; and finance, insurance, and real estate 11%. Nevertheless, self-employment rate for all males was considerably greater (21% greater) than the self-employment rate of male dropouts. Even men who finished high school had a greater participation (14%) in self-employment compared to those who did not (11.8%).

[3]Fairlie (1996), for example, shows that the Korean American men and women have self-employment rates of 27.9 and 18.9 %, respectively, and followed by Lebanese immigrants and so on. Kidd (1993) shows that among skilled Australian immigrants (collegiate), self-employment rate exceeds that of natives.

1997;Dustmann*et al*, 2005a, 2005b, 2003; Fairlie, 2005; Funkhouser and Trejo, 1995; LaLonde and Topel, 1992; Light, 1984).

3. The Data Source

Our primary data source for the paper is the Integrated Public Use Microdata Series (IPUMS) database. This database is published by the Minnesota Population Center, University of Minnesota. The unit of analysis for our paper is an individual who is South Asian by origin living in the United States. We consider both citizen immigrants and non-citizen immigrants. For our benchmark analysis, we start with the most recent available time period in the sample – 2009. As part of robustness analysis, we have considered past years – 2007 and 2005.Our sample of South Asian Immigrants includes primarily Indians (the exact figures are provided later). The percentage of population from the neighboring countries - Bangladesh, Pakistan, Sri Lanka and Burma (Myanmar) -- is relatively small. For the year 2009, we have a sample of 20,464 individuals.

3.1. Dependent or Outcome Variable

Our primary objective in the paper is to explore the occupational choice of South Asian immigrants in the United States in terms of an individual choosing wage earning or self-employment. The variable labeled 'class of worker' from the census data provides us with this information. Our dependent variable is a dummy indicating if an individual, i , is self-employed or a wage earner. The next sub-sections talk about the determinant of occupational choice (being self-employed) that has been considered in the extant literature.

3.2. Independent Variable of Interest

The predominant independent variable of interest in our model is the educational attainment of an individual. We are interested in exploring the impact of educational attainment on the decision of an individual of being self-employed. The variable 'EDUC' provides us specific details about education attainment of an individual based on certain categories. The specific categories are no schooling, nursery to grade 4, whether an individual completed grades[4] 5, 6, 7 or 8, 9, 10,11 and 12, the years of college completed (1st year of college, 2nd year of college, 3rd year of college or 4th year of college) and finally whether the individual attended 5 plus years of college. We construct an ordered dummy variables that takes the following values – takes the value 0 if the individual has up to 8th grade of education, takes the value 1 if the individual educational attainment is between 8th grade and 2 years of college and finally takes the value 2 if the individual has attained more than 2 years of college education.

3.3. Other variables

Following the standard literature, we consider other variables that can be potential determinants of occupational choice for an individual. We consider demographic variables like age and sex of the individual. Age is an important determinant since it helps to build up the much needed experience that is critical for being self – employed (Destré and Henrard, 2004) . As pointed out by Kidd (1993), age brings in capital accumulation that helps to reduce this risk associated with self – employment due to greater variation in earnings. Other studies also confirm the positive association between age and the probability of being self-employed (Huyette, 1997; Van Praag and Van Ophem, 1995). Other studies like Rees and Shah (1986) however, show that the older population might be more averse to risk and thus, age might have a

[4] The completion of grades 5, 6,7 and 8 are grouped together and the rest are given as separate categories.

negative impact as well. Following Constant and Zimmermann (2003), we also consider a dummy stating if the individual is a male or not. They claim that other than differences in personal tastes on choice of employment, there should be no differences across genders in a 'world of equal opportunity'.

We, further, control for the years spent by an immigrant in the host country, USA. We anticipate that higher number of years in USA will make an individual well informed about self-employment opportunities and will also favor capital accumulation and thus, she should be more efficient in making her occupational choices. Initial years in a foreign land create greater information asymmetry. Additionally, for similar reasons, we control for citizenship status of an individual – whether naturalized or born of American parents. Being a citizen will ease the credit constraints and will also reduce the information asymmetry, both of which are critical factors for the occupational choice of immigrants. Since citizens will have to deal with less information asymmetry and face better circumstances in terms of credit constraints, they will also have a positive attitude towards risk taking and thus, will prefer self employment. Studies have shown that positive attitude towards risk taking enhances the probabilities of being self employed (See, Kan and Tsai, 2006; Fairlie, 2002; Cramer et al., 2002; Hundley, 2000; Hamilton, 2000). We also control for the family size and number of children. According to Dolton and Makepeace (1990), individuals with children are less prone to become self-employed since they are likely to be risk-averse. Finally we also control for the head of the household in our specifications.

4. Methodology and Benchmark Results

4.1. Characteristics of the Benchmark Sample

Table 1A provides the characteristics of our benchmark sample – the 2009 sample. The table provides the number of observations, mean and the standard deviation of the different sub- samples. As evident from Table 1A, 10 percent of our sample, that include citizens and non-citizens, are self employed. There are fewer observations for the class of worker variable (15017) compared to the whole sample, as there are missing values. In terms of gender, our sample is almost split into half – 52 percent of the sample is male. Approximately half the individuals in our sample are citizens and 41 percent of individuals are head of the household. On average, individuals have been in the United States for 15 years. The average age of individuals in our sample is around 40 years. Also, about 55 percent of the individuals in our sample have at least 1 child and on average, individuals have 1 child. The average family size of the sample is around 4. Finally, Indians dominate the sample – almost 73 percent are Indians.

In Tables 1B and Table 1C, we further present the sample characteristics based on the citizen immigrant sample and the non-citizen immigrant sample. While in the citizen immigrant sample, 15 percent of individuals are self-employed, in the immigrant sample, the figure is only 6 percent. The percent of males and average family size remain similar for these two samples. On average, the age of citizens is higher than the average age of immigrants. Also, as expected, number of years spent in the USA for the citizen sample is higher than the immigrant sample. Family size is comparable across the samples. Approximately, 44 percent individuals are head of households in the citizen sample and the corresponding number for the immigrants sample is 36 percent.

Before we conduct the empirical exercise, we present some characteristics of our sample in the form of diagrams. Figure 1shows the share of wage earners and self-employed individuals for the whole sample and for various sub-samples. We find that the percentage of wage earners is always higher than the percentage of self-employed for all sub-groups. With higher educational attainment, more individuals choose wage earning over self-employment. Yet, interestingly, comparing self-employed individuals across the groups of citizen immigrants and non-citizen immigrants, we find that the percentage of self-employed individuals is always higher for the citizen group. This is evident in figures 1B and 1C. The figures provide strong support to our empirical findings that follow.

4.2. Empirical Model and Benchmark Results

Our empirical models aims to test how educational attainment is related to being self employed. In other words, using the sample of South Asian immigrants we want to test, whether educational attainment affects one's choice of being self employed or being wage earners. We employ probit specifications to test our hypothesis. Since our data is characterized by a dichotomous or binary outcome variable, probit and logit are the appropriate models to use. In general, both logit and probit models generate similar estimates. Probit is used when we have data classified into success or failure and this outcome is generated from an underlying, but not directly observable, normally distributed random variable. Let's consider that the decision of the i^{th} individual to be self employed or a wage earner depends on an unobserved Utility level level I_i that, in turn, depends on the educational attainment of the individual. The utility function can be defined as $I_i = \gamma_1 + \gamma_2 X_i$, where X_i represents the educational attainment of the individual. If I_i, is above a certain level, then we can observe success (accordingly, we define success as self employment or wage earning). Our reduced form equation takes the following form

$$WorkerDummy_i = \beta_0 + \beta_1 Edu_i + \beta_2 X_i + \varepsilon_i \qquad (1)$$

where $WorkerDummy_i$ represents the class of workers – a variable which takes the value 1 for self employed individuals and 0 for a wage earner. Edu_irepresents a dummy for educational attainment. It takes the value 0 to 2 with higher values representing higher levels of educational attainment. [5] $X_i$denotes the other control variables – whether individual i is male or female, whether she is citizen or not and the number of years spent in USA.

Table 2 presents the benchmark results. Column (1) presents the results without any controls. Education dummy is negative and significant implying that as an individual attains higher education, the probability of being self employed diminishes. The interpretation of the coefficients for a probit specification is not straightforward. For a linear regression, the dependant variable is expected to change in response to a one unit change in the explanatory variable. For any regression estimates concerning binary response variables, we need to calculate the marginal effects. The marginal[6] effect (not reported) for column 1 specification shows that with higher educational attainment, an immigrant's probability of being self-employed diminishes by 1%.

In columns 2 and 3, we subsequently add more controls. The controls included are a dummy indicating whether an individual is a male or not, a dummy indicating whether an individual is an US citizen or not and a variable representing the number of years an individual is residing in USA. All the explanatory variables are positive and significant implying that factors like being a male, residing in USA for more years and being a citizen, enhance the probability of being self employed. The marginal effect of education on worker dummy remains identical for

[5] The variable has been defined in the previous section.
[6] Keeping the space constraint in mind, we have not reported the marginal effects. They are available on request.

all the specifications. The marginal effect of some of the controls is stronger than education dummy. For example, the marginal effect of the sex dummy is 0.04 implying that if an individual is a male, then the probability of being self employed increases by 4%. The effect is similar for being a citizen.

In Columns (4) to (6) of Table 2 we run similar specifications but we include a dummy for higher education instead of education dummy. This variable takes the value 1 if an individual has 4 and higher years of college. Our results are similar. The coefficient of higher education dummy is negative and significant for all the specifications. Yet, the effect is stronger compared to education dummy. Based on the marginal effect, if a citizen receives higher education, then the probability of being self employed diminishes by 10%. Thus, for individuals receiving higher education, there is a much higher probability of being a wage earner. The other controls retain their and significance.

In Columns (1) and (2) of Table 3, we test the interactive impact of educational attainment and being an immigrant citizen on class or worker. In column (1), we consider the education dummy while in column (2), we consider the higher education dummy. For both the specifications, the interaction term is positive and significant while the education dummy, in both cases, retains the negative sign. Thus, while greater educational attainment reduces the probability of self employed for an individual, for an immigrant citizen receiving higher education, the probability is still diminished, but by a lesser extent compared to an immigrant non-citizen. Similar to our benchmark results, we find that the impact of the interaction term to be stronger for the higher education sample. These results align with the figures 1B and 1C. we elaborate on these findings in the next sub-section.

4.3. Proportion tests

Our previous findings show that the probability of being self-employed for an immigrant citizen is greater than that of a non-immigrant citizen, for similar levels of educational attainment. We now test the same by employing proportion tests. [7] Specifically, we investigate whether the proportion of self-employed individuals among citizen immigrants is statistically different from the self-employed individuals among non-citizen immigrants. Thus, we conduct two sample tests for proportion.

In our case, we have two samples. Let f_1 be the number of individuals, out of citizen immigrants $[\![(n]\!]_1)$, who are self employed and let f_2 be the number of individuals, out of immigrants or non-citizens $[\![(n]\!]_2)$. $\widehat{p_1}$ and $\widehat{p_2}$ will be the sample proportions defined as $\widehat{p_1} = \frac{f_1}{n_1}$ and $\widehat{p_2} = \frac{f_2}{n_2}$ respectively and p_1 and p_2 will be the population proportions. Thus, given n_1 and n_2 are sufficiently large,

$$\frac{(\widehat{p_1} - \widehat{p_2}) - (p_1 - p_2)}{\sqrt{\frac{p_1(1-p_1)}{n_1} + \frac{p_2(1-p_2)}{n_2}}}$$

will be distributed as approximately a standard normal variable. We aim to test the following hypothesis, $H_0: p_1 = p_2$ against the alternate hypothesis $H_1: p_1 \neq p_2$. The pooled population, p, which is the common value of p_1 and p_2, is unknown. Thus, we have

[7] Based on a simple theory, if in a population, p is the proportion of members with a characteristic A and if a random sample of size n be drawn from this population, the n drawings being mutually independent , and if f be the number of members of the sample who possess characteristic A , then f will follow a binomial distribution with probability mass function $\binom{n}{f} p^f (1-p)^{n-f}$. However, if n is sufficiently large, f will follow normal distribution.

to estimate it by the pooled sample proportion and the corresponding test statistic to test the hypothesis can be defined as

$$z = \frac{(\hat{p_1} - \hat{p_2})}{\sqrt{\hat{p}(1-\hat{p})\left\{\frac{1}{n_1} + \frac{1}{n_2}\right\}}}$$

where the proportion of self – employed (characteristic A) in the two samples taken together is given by $\hat{p} = \frac{f_1 + f_2}{n_1 + n_2}$.

Table 4A and 4B present the statistical results.The pooled (weighted) proportion is given by $\hat{p} = 0.5\left(\frac{1242 + 396}{1638 + 1638}\right)$. The *z-score* is 29.56 and the corresponding p value is too low. Thus, we can reject the null hypothesis that two population proportions are equal at the 0.05 significant level. They are different. Further, as evident from the table, if we focus on the other alternate hypothesis H_a and H_b, then it is quite evident that proportion of self-employed among citizens is much greater than among immigrants for our sample. In table 4B, we conduct the same test but for sample of self-employed individuals who have attained 4 plus years of college. Again, we have the same conclusion. Even among the higher educated group, proportion of self-employed among citizen immigrants is much greater than among non-immigrants for our sample.

Overall our results suggest that while South Asian immigrants choose wage earning over self-employment as they acquire the skill via education, citizen immigrants are more likely to choose self-employment compared to non-citizen immigrants. A non-citizen immigrant tends to be risk averse given that she is residing in nation which is not her birthplace and, thus, chooses to go for an occupation which is less risky. Self-employment is more risky than wage earning given that there will be higher income volatility and greater information asymmetry. A citizen

immigrant will be able to afford such an occupation better than an immigrant because she will have access to more assets (at the start of the business), which can be self-owned or borrowed. Also, a citizen will have better information about the business environment and will face less information asymmetry to a lesser extent.

5. Robustness

As part of robustness analysis, we test our results to the inclusion of controls. In Table 5A, we consider additional controls that can be potential determinants of occupational choice of an individual. In the probit specifications of Column (1) and (2), we include a variable indicative of the family size of the individual. While the other variables retain their sign and significance, the family size variable is positive and significant for both the specifications. We believe this is an interesting finding. Immigrants who have relatively larger family size(for both non-citizen immigrants and citizen immigrants) can obtain the much needed help as free labor, while starting a business, from the family members. Saibal da, is there any literature in support of this?The specifications in Columns (3) and (4) control for a household dummy (takes the value 1 if an individual i is the head of an household) and an interaction term between household dummy and family size. While being the head of the household lowers the probability of being self-employed, if an individual is the head of the household with a relatively larger family size, then the probability of being self-employed is enhanced. Overall, the results suggest that head of households with smaller family size prefer wage earning to self-employment. The results remain robust when we consider a higher education dummy instead of an education dummy.

In Table 5B, we consider other controls. Instead of controlling for family size, we include a children dummy which indicates whether a family has at least one child or not. Having a child

does have an impact on the occupational choice of an individual. As we can see from the Table, the probability of being self-employed rises for an individual having a child. WHY? The results remain similar when we choose higher education dummy instead of the education dummy in Column (2). In columns (3) and (4), we consider the number children that an individual has, instead of the children dummy. The results, interestingly, show that if an individual has greater number of children, then the probability of being self-employed rises. The same is true for the higher education dummy.

Our next set of robustness tests considers the 2007 and 2005 samples to test our results. Appendix 1 presents the characteristics of the 2007 sample. We have 18288 observations and for the class of worker variable, we have 13587 observations. Thus, we have approximately 12 percent of individuals in self employment, which is a bit higher relative to the 2009 sample. The proportion of males in the sample almost remains identical to the 2009 sample - 52 percent of the sample is male. Similar to our benchmark sample, approximately half the South Asian individuals in our sample are citizens. While 42 percent of the individuals are head of households, 55 percent of individuals have kids. On average, individuals have been in the United States for 14.2 years and the average age of individuals is around 40 years. The average family size of the sample is around 3.5, which is smaller than our benchmark sample. Table 5 presents the results. As can be seen from the table, our results remain consistent. The variable of interest, dummy for education and higher education, is significant and negative for all the specifications, implying that higher educational attainment reduces the probability of being self – employed. At the same time, immigrants who are US citizens may opt for self –employment even if they have greater educational attainment(the interaction terms are positive and significant for all the specifications). The results remain consistent when family size and the dummy for household are

included. Finally, we also test our results for the 2005 sample. To conserve space, we do not report these results but they are available on request. The results are consistent with our benchmark findings.

6. Concluding Remarks

There is no simple answer to the question of whether a skilled individual chooses self-employment or entrepreneurship over wage employment, with a statistically significant gap. Empirical studies on the subject are far from conclusive. It is possible nonetheless to demonstrate theoretically that more skilled individuals choose self-employment over employment if the labor market is fraught with asymmetric information, in which case the skilled are subjected to statistical discrimination and might encounter significant loss of income in the labor market. We started off with this issue in mind and realized that the case of statistical discrimination could be rather compelling for the set of immigrants moving from a poor to a culturally and information-wise distant rich country. In this regard the available literature offers a rich endowment of findings, although none of these studies finds motivation in the information gap dominating the outcome. We also realized that finding empirical support for information gap leading to distortions in the labor market is in fact somewhat impossible owing to lack of credible data on the issue. Nonetheless, geographical distance and the absence of deep historical roots could still proxy for such information gaps; immigrants to US originating in south Asia do not certainly have the Irish, German or Italian lineage.

The IPUMS data and the results do justice to our hypothesis. Despite potential asymmetric information, we did not expect that immigrants from south Asia would be highly represented in the self-employment category – the two options that this labor market offers to any immigrant, being self-employed vis-à-vis employed. The reason for this apparently

contradictory view is latent in the source countries. The immigrants from India, Pakistan, Bangladesh or Sri Lanka, who often come with high orientation towards business, are not necessarily the most educated ones, principally because the self-employment category in this case falls short of what entrepreneurship demands in terms of educational and financial capital. As a result, the more skilled immigrants have at least 10% lower chance of becoming self-employed. In fact, this is what we were keen to test – whether the more skilled immigrants from south Asia join the self-employed group or not. Interestingly, the dual incidence of skill and citizenship makes it possible for such immigrants to land into the world of self-employment more often in the US compared to non-citizens with similar skill levels. This may be a result of access to credit and other legal rights, which a non-citizen may not avail. Overall, the results have been put through various robustness checks and the usual analysis involving covariates display expected directions. It seems that the present findings offer some directions in the analysis of occupational choice among south Asian immigrants in the US. This should have strong implications for the temporal variance of income and the path towards income assimilation with the natives. In later attempts we wish to provide conclusive results in that context.

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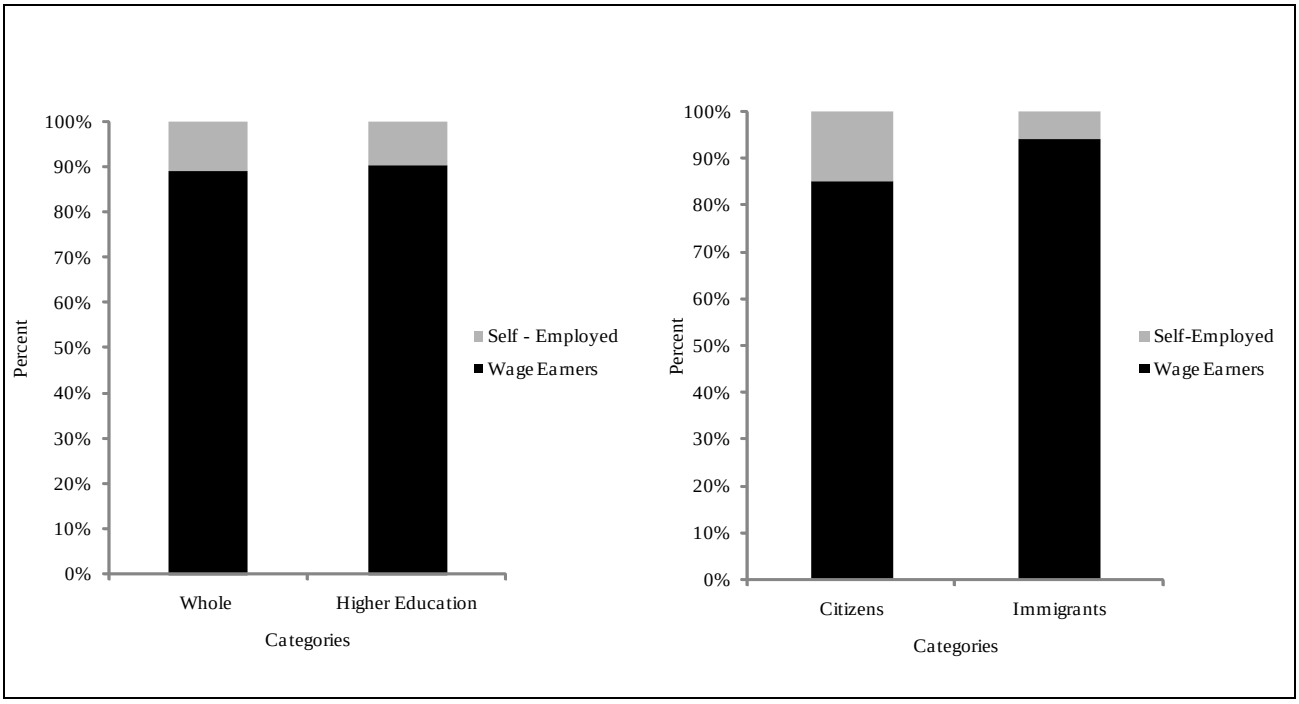
Figure 1: Share of Wage Earners and Self – Employed Immigrants for different Samples (2009 sample)

A. Whole and Higher Education **B. Citizen and Non-Citizens**



C. For the Higher Educated Sample Only

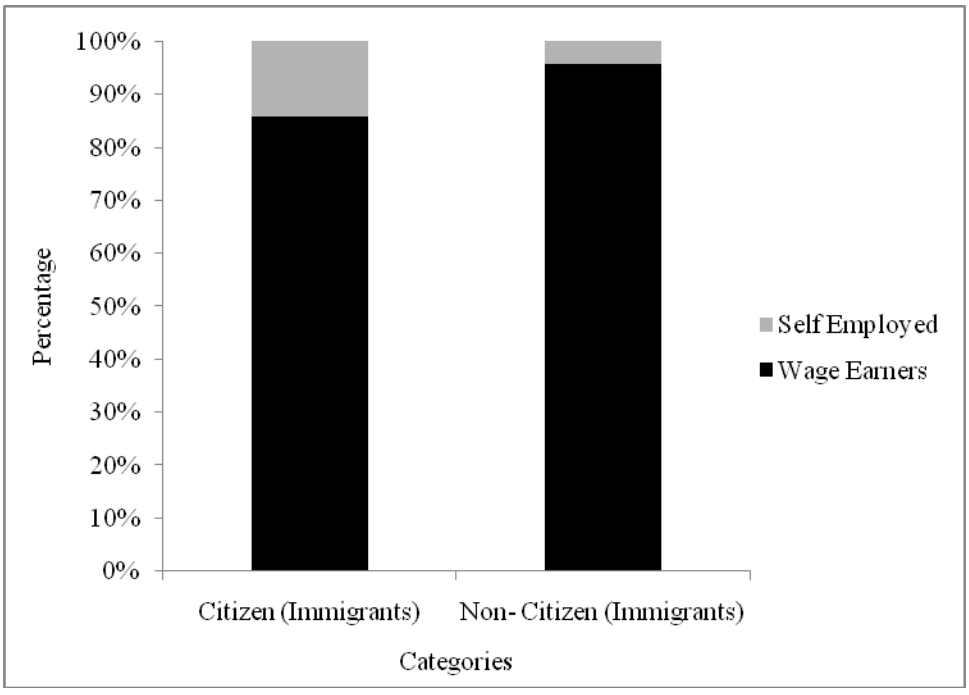


Table 1A: Characteristics for 2009 Sample

Variables	Obs	Mean	Std.Dev.
Class of Worker (Self-Emp. = 1)	15017	0.11	--
Age	20464	40.06	16.40
Sex (Male =1)	20464	0.53	--
Years in USA	20464	14.45	11.28
Citizen dummy	20464	0.52	--
Having Children (=1)	20464	0.55	--
Family size	20464	3.54	1.68
Number of children	20464	0.95	1.04
Head of Household (=1)	20464	0.41	--
Indiadummy	20464	0.77	---

Table 1B: Characteristics for 2009 Citizens Sample

Variables	Obs	Mean	Std.Dev.
Class of Worker (Self-Emp. = 1)	8283	0.15	--
Age	10576	45.3	16.14
Sex (Male =1)	10576	0.52	--
Years in USA	10576	21.12	10.62
Having Children (=1)	10576	0.6	--
Family size	10576	3.74	1.7
Number of children	10576	1.09	1.09
Head of Household	10576	0.44	0.5
Indiadummy	10576	0.73	--

Table 1C: Characteristics for 2009 Immigrants Sample

Variables	Obs	Mean	Std.Dev.
Class of Worker (Self-Emp. = 1)	6734	0.06	--
Age	9888	34.45	14.73
Sex (Male =1)	9888	0.53	--
Years in USA	9888	7.31	6.62
Having Children (=1)	9888	0.51	--
Family size	9888	3.33	1.63
Number of children	9888	0.81	0.96
Head of Household	9888	0.36	--
Indiadummy	9888	0.8	--

Table 2: Probit Specifications: Impact of Education on Class of Worker

Independent Variables	Education Dummy			Higher Education Dummy		
	(1)	(2)	(3)	(4)	(5)	(6)
Education dummy	-0.0705***	-0.0802***	-0.0774***	-0.257***	-0.278***	-0.265***
	(0.00847)	(0.00874)	(0.00879)	(0.0293)	(0.0304)	(0.0305)
Years in USA		0.0188***	0.0132***		0.0179***	0.0125***
		(0.00159)	(0.00181)		(0.00158)	(0.00180)
Age		0.0147***	0.0147***		0.0152***	0.0152***
		(0.00139)	(0.00139)		(0.00139)	(0.00139)
Sex dummy		0.234***	0.247***		0.231***	0.244***
		(0.0299)	(0.0301)		(0.0299)	(0.0300)
Citizen Dummy			0.236***			0.232***
			(0.0368)			(0.0368)
Constant	-0.907***	-1.974***	-2.051***	-1.052***	-2.157***	-2.228***
	(0.0409)	(0.0675)	(0.0686)	(0.0242)	(0.0583)	(0.0596)
Observations	15,017	15,017	15,017	15,017	15,017	15,017

Robust Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Probit Specifications: Interactive Impact of Education and Citizenship on Class of Worker

Independent Variables	(1) With Education Dummy	(2) With Higher Education Dummy
Education	-0.117***	-0.433***
	(0.0148)	(0.0543)
Years in USA	0.0130***	0.0124***
	(0.00181)	(0.00180)
Age	0.0143***	0.0148***
	(0.00140)	(0.00139)
Sex dummy	0.247***	0.245***
	(0.0301)	(0.0301)
Citizen Dummy	-0.0286	0.0727
	(0.0884)	(0.0560)
Education*Citizen	0.0603***	0.245***
	(0.0184)	(0.0658)
Constant	-1.857***	-2.094***
	(0.0898)	(0.0689)
Observations	15,017	15,017

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4A: Two-sample test of proportion:Self –Employed Sample

n_1: Number of obs = 1638
n_2: Number of obs = 1638

Variable	Mean	Std. Err.	z	P>z	[95% Conf.Interval]	
Citizen dummy	0.76	0.016			0.737508	0.778976
Immigrant Dummy	0.246	0.016			0.221024	0.262492
diff	0.52	0.01			0.487161	0.545806
	under Ho:	0.02	29.56	0		

Note 1: diff = proportion (citizen) – proportion (non-citizen) z = 29.56

Ho: diff = 0;

H_1: diff = 0;Pr(Z < z) = 0.00

H_a: diff > 0; Pr(Z > z) = 0.00

H_b: diff < 0; Pr(Z < z) = 1.00

Table 4B: Two-sample test of proportion: Self –Employed, Higher Educated Sample

n_1: Number of obs = 1043
n_2: Number of obs = 1043

Variable	Mean	Std. Err.	z	P>z	[95% Conf. Interval]	
Citizen dummy	0.22	0.01			0.1971961	0.2476745
Immigrant Dummy	0.76	0.01			0.7502014	0.8010558
diff	-0.55	0.02			-0.589020	-0.517367
	under Ho:	0.02	-25.21	0		

Note 1: diff = proportion (citizen) – proportion (non-citizen) z = 29.5616

Ho: diff = 0;

H_1: diff = 0; Pr(Z < z) = 0.0000

H_a: diff > 0; Pr(Z > z) = 0.0000

H_b: diff < 0; Pr(Z < z) = 1.0000

Table 5A: Probit Specifications: Inclusion of Additional Controls

Independent Variables	(1) With Education Dummy	(2) With Higher Education Dummy	(3) With Education Dummy	(4) With Higher Education Dummy
Education	-0.0972***	-0.368***	-0.0974***	-0.368***
	(0.0151)	(0.0553)	(0.0152)	(0.0556)
Years in USA	0.0146***	0.0141***	0.0146***	0.0141***
	(0.00182)	(0.00182)	(0.00183)	(0.00182)
Age	0.0147***	0.0151***	0.0148***	0.0152***
	(0.00140)	(0.00140)	(0.00142)	(0.00141)
Sex dummy	0.242***	0.240***	0.248***	0.247***
	(0.0302)	(0.0302)	(0.0341)	(0.0341)
Citizen dummy	-0.0354	0.0468	-0.0399	0.0444
	(0.0888)	(0.0563)	(0.0889)	(0.0564)
Education*Citizen	0.0508***	0.210***	0.0516***	0.212***
	(0.0185)	(0.0663)	(0.0186)	(0.0664)
Family Size	0.0678***	0.0688***	0.0464***	0.0469***
	(0.00905)	(0.00902)	(0.0125)	(0.0125)
Household dummy	--	--	-0.171**	-0.175**
			(0.0721)	(0.0721)
Household*Family	--	--	0.0429**	0.0437**
			(0.0176)	(0.0176)
Constant	-2.200***	-2.397***	-2.116***	-2.312***
	(0.102)	(0.0807)	(0.107)	(0.0873)
Observations	15,017	15,017	15,017	15,017

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5B: Probit Specifications: Robustness – More Controls

Independent Variables	(1) With Education Dummy	(2) With Higher Education Dummy	(3) With Education Dummy	(4) With Higher Education Dummy
Education dummy	-0.118***	-0.442***	-0.107***	-0.406***
	(0.0149)	(0.0547)	(0.0149)	(0.0550)
Years in USA	0.0153***	0.0147***	0.0151***	0.0146***
	(0.00184)	(0.00183)	(0.00183)	(0.00183)
Age	0.0130***	0.0135***	0.0136***	0.0140***
	(0.00143)	(0.00143)	(0.00143)	(0.00143)
Sex dummy	0.260***	0.257***	0.250***	0.249***
	(0.0303)	(0.0302)	(0.0303)	(0.0303)
Citizen dummy	-0.0560	0.0392	-0.0372	0.0429
	(0.0890)	(0.0566)	(0.0891)	(0.0566)
Education*Citizen	0.0597***	0.249***	0.0527***	0.225***
	(0.0185)	(0.0662)	(0.0186)	(0.0664)
Child dummy	0.245***	0.248***	--	--
	(0.0308)	(0.0309)		
No. of children	--	--	0.130***	0.131***
			(0.0132)	(0.0132)
Constant	-1.985***	-2.221***	-2.035***	-2.247***
	(0.0927)	(0.0723)	(0.0934)	(0.0725)
Observations	15,017	15,017	15,017	15,017

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Probit Specifications: (2007 sample)

	Education Dummy			Higher Education Dummy		
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)
Education dummy	-0.113***	-0.104***	-0.105***	-0.403***	-0.370***	-0.377***
	(0.0149)	(0.0153)	(0.0155)	(0.0543)	(0.0556)	(0.0561)
Years in USA	0.0151***	0.0159***	0.0161***	0.0146***	0.0154***	0.0156***
	(0.00182)	(0.00184)	(0.00184)	(0.00181)	(0.00183)	(0.00184)
Age	0.0131***	0.0134***	0.0131***	0.0135***	0.0138***	0.0135***
	(0.00134)	(0.00134)	(0.00137)	(0.00133)	(0.00134)	(0.00136)
Sex dummy	0.283***	0.279***	0.256***	0.279***	0.276***	0.253***
	(0.0318)	(0.0318)	(0.0363)	(0.0318)	(0.0317)	(0.0363)
Citizen dummy	-0.180**	-0.194**	-0.201**	-0.0286	-0.0481	-0.0537
	(0.0915)	(0.0918)	(0.0922)	(0.0575)	(0.0577)	(0.0579)
Education*Citizen	0.0755***	0.0721***	0.0727***	0.276***	0.261***	0.263***
	(0.0190)	(0.0191)	(0.0192)	(0.0674)	(0.0679)	(0.0681)
Family Size	---	0.0409***	0.00611	---	0.0414***	0.00588
		(0.00914)	(0.0127)		(0.00911)	(0.0127)
Household dummy	---	---	-0.208***	---	---	-0.214***
			(0.0708)			(0.0709)
Fam size * Household	---	---	0.0700***	---	---	0.0714***
			(0.0178)			(0.0179)
Constant	-1.783***	-1.973***	-1.832***	-2.024***	-2.197***	-2.055***
	(0.0912)	(0.103)	(0.108)	(0.0681)	(0.0790)	(0.0854)
Observations	13,587	13,587	13,587	13,587	13,587	13,587

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix 1: Characteristics for 2007 Sample

Variables	Obs	Mean	Std.Dev.
Class of Worker (Self-Emp. = 1)	13587	0.12	--
Age	18288	39.64	16.18
Sex (Male =1)	18288	0.52	--
Years in USA	18288	14.16	10.96
Citizen dummy	18288	0.50	--
Having Children (=1)	18288	0.55	--
Family size	18288	3.51	1.66
Number of children	18288	0.96	1.05
Head of Household (=1)	18288	0.41	--
India-dummy	18288	0.77	---