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Abstract[*]

This paper uses the Mexican Social Mobility Survey 2006 to analyze intergenerational social mobility as it relates to entrepreneurial activity. First, the paper analyzes whether entrepreneurs experience greater upward social mobility than self-employed workers or employees. Second, probit models are estimated to identify whether predetermined characteristics are the main determinants of the decision to become an entrepreneur. Third, using the propensity score matching method (PSM), the paper estimates the effect of entrepreneurial activity on income. Results show that entrepreneurs have more options for upward social mobility. For entrepreneurs with low-income parents, it is more difficult to reach the top of the socioeconomic distribution compared to those with middle- or upper-class parents. Second, the probability of becoming an entrepreneur increases when the respondent's father was an entrepreneur. Finally, the mean effect of entrepreneurial activity on income is positive, and is greater for those whose parents belonged to the extreme ends of the socioeconomic distribution.

JEL classifications: C21, J62, L26
Keywords: Social mobility, Entrepreneurship, Propensity score matching, Mexico

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1. Introduction

Equality of opportunity is necessary to ensure that people's position in social strata will be the result of a merit-based competitive process rather than one that is determined by their socioeconomic origin or the socioeconomic status of their parents.[1] Vélez-Grajales, Campos-Vázquez, and Fonseca (2011) argue that a good indicator for performance of redistributive policies is that individuals' life achievements depend less on their physical or socioeconomic characteristics and more on their talent and effort. The degree of social mobility, i.e., position changes of individuals in the social strata, is an important indicator of a society's success because it is a sign of equal opportunity among children of families with different socioeconomic status.

According to Serrano and Torche (2010), social mobility should be promoted for three main reasons: justice, efficiency, and social cohesion. For the first one, a normative reason, it is argued that individuals should earn what they deserve, as in a meritocracy. The argument for efficiency is that the lack of social mobility will create barriers to an optimal allocation of human resources. Finally, for social cohesion, it is argued that social mobility reduces the probability of social conflict.

Some authors argue that there is a negative correlation between inequality and mobility (Erickson and Goldthorpe, 1992; Jantti et al., 2006; and Solon, 2004). Empirical evidence confirms this relationship. Latin America, for example, which historically has had one of the highest levels of social inequality in the world, is characterized by a persistent intergenerational inequality in a context of low mobility (UNDP, 2010), i.e., the status quo persists across generations.[2] Under this scenario, it is necessary to identify first the barriers for social mobility, and second, the possible vehicles to break this vicious intergenerational circle.

This study focuses on the latter. Specifically, it analyzes the role played by entrepreneurship in promoting social mobility in Mexico. Becoming an entrepreneur can depend not only on specific individual characteristics such as talent or effort, but also on other factors such as family wealth or membership in a family of entrepreneurs. Therefore, if membership is a

[1] Following the capabilities approach proposed by Sen (1985, 1987), equality of opportunity should be measured in terms of effective freedom, i.e., available options to choose. It must be noted, however, that equality of opportunity does not assure equality of results (PNUD, 2010).

[2] Deininger and Squire (1996) report that Latin America and the Caribbean have been the regions with the highest Gini coefficients since the 1960s, with an overall decadal average of 0.50. In comparison, countries classified as industrial and high-income show a decadal average of 0.34.

main determinant of whether an individual becomes an entrepreneur, this barrier should be eliminated through public policies.

Mexico is a good case study for the proposed analysis. Historically, Mexico has experienced high levels of household income inequality. As Székely (2005) shows, during the mid-1980s, the Gini coefficient reached its lowest level: 0.43.[3] In 2010, the Gini coefficient for Mexico was 0.51—compared to 0.41, the highest in a sample of industrialized countries (UNDP, 2010).[4] In terms of social mobility, Mexico has not performed well. Torche (2010) finds that intergenerational social mobility is low, and that it is significantly lower at the extreme ends of the socioeconomic distribution.[5] The result of combining high inequality and low social mobility is a society where the status quo is persistent across generations.

To better understand the causes of low social mobility across generations in Mexico and to arrive at public policies that might solve the problem, it would be useful to know to what extent family background determines individuals' occupational choices and how these choices affect their income. Three analysis requirements are identified. First, it is necessary to define Mexican entrepreneurs and analyze whether they experience greater upward social mobility than the self-employed or employees. Second, possible intergenerational determinants of entrepreneurship should be identified. Finally, the effect of entrepreneurial activity on income should be estimated. For the analysis, retrospective socioeconomic data are taken from the Mexican Social Mobility Survey 2006 (MSMS-2006). This survey collects current respondents' socioeconomic information and the comparable retrospective information on their parents. The analysis is conducted for two birth cohorts of respondents: 1942-1964 and 1965-1981.

Results show that entrepreneurial activity is a good vehicle for upward mobility. The magnitude of increase in entrepreneurs' social mobility, however, varies with their individual characteristics and family background, i.e., barriers to entry to entrepreneurial activity, differ

[3] It has to be noted, however, that during his period of study, 1950-2004, the Gini coefficient was always closer to 0.5 than to 0.4. Székely has estimated income Gini coefficients for several years during the period 1950-2004. In 1950, the coefficient was of 0.52 and it was only until 1977 when it dropped below 0.5. In a previous study, Altimir (1987) argues that there is an underestimation of income in household surveys. After adjustments are done, he reports that Gini coefficient in Mexico was of 0.606 for 1963, i.e., 0.53 with no adjustment, and 0.518 for 1977, i.e., 0.482 with no adjustment.

[4] The sample includes 22 members of the Organization for Economic Co-operation and Development (OECD).

[5] Torche estimates a multidimensional intergenerational well-being index with the Mexican Social Mobility Survey 2006. Results show that around 50 percent of male Mexican household heads (HH) with parents who belonged to the lowest quintile stayed in the same quintile. Moreover, only 4 percent of such HH reached the top quintile. On the other hand, no HH with parents who belonged to the top quintile fell down to the lowest one.

across subgroups of the population. Results suggest that although entrepreneurs with lower-income parents experience upward mobility, it is more difficult for them to reach the top end of the socioeconomic distribution compared to those with parents who belonged to the middle- or high-income end of the socioeconomic distribution. Second, the individual's decision to become an entrepreneur is strongly determined by the father's occupation. It is not necessarily related to the individual's initial wealth or educational attainment. Finally, the mean effect of entrepreneurial activity on income is positive in general and relatively larger for those whose parents belonged to the extreme ends of the socioeconomic distribution.

The document is organized as follows. In Section 2, the context for Mexican entrepreneurial activity is briefly described. In Section 3, the data source and descriptive statistics are presented. In Section 4, the empirical strategy is described and results are presented. Section 5 concludes.

2. The Entrepreneurial Context in Mexico

In 2008, there were 3.72 million firms in Mexico. Most of them, 3.24 million, were service enterprises, i.e., the tertiary sector; 0.46 belonged to the secondary sector, including industry and construction; and the other 0.02 belonged to the primary sector, including agriculture. According to Lecuona Valenzuela (2009), from 2000 to 2007 the share of available financial resources allocated to entrepreneurial activities in Mexico decreased from 30 to 23 percent. However, from 2004 to 2008, the total number of firms in the country increased by 24 percent—from 3.24 to 3.72 million (see Table 1).

In terms of firm size, firms with up to five workers constitute 85 percent of the increase; 95 percent if firms with up to ten workers are also included. By sector, the tertiary or service sector experienced 85 percent of the total firms' increase. The secondary sector shows the highest relative increase: 32 percent versus 23 percent for the tertiary sector. The primary sector, in contrast, shows a decrease of almost 9 percent. In relative terms, the share of firms with up to five workers, i.e., 80 percent, did not change from 2004 to 2008. The group of firms with up to two workers reduced their share from 70 to 65 percent of the total, but this decrease was mainly absorbed by the group of firms with three to five workers (see Table 2).

Table 1. Firms in Mexico, by Number of Employees

	All Sectors		Primary Sector/1		Secondary Sector/2		Tertiary Sector/3	
Firm size (number of workers)	2004	2008	2004	2008	2004	2008	2004	2008
All	3,005,036	3,724,009	21,209	19,443	347,676	461,034	2,636,151	3,243,532
0-2	2,118,138	2,408,422	14,050	11,784	193,558	243,841	1,910,530	2,152,797
3-5	581,262	903,670	2,077	2,497	86,472	131,447	492,713	769,726
6-10	153,891	224,086	1,348	1,410	27,465	40,477	125,078	182,199
11-15	47,601	63,623	818	901	9,501	12,094	37,282	50,628
16-20	24,361	31,309	588	615	5,402	6,418	18,371	24,276
21-30	25,177	30,345	784	779	6,081	6,853	18,312	22,713
31-50	20,946	24,688	748	802	5,802	6,218	14,396	17,668
51-100	16,142	18,668	524	438	5,333	5,610	10,285	12,620
101-250	10,931	12,029	272	179	4,388	4,218	6,271	7,632
251-500	4,003	4,136		32	1,965	2,016	2,038	2,088
501-1000	1,623	1,908		6	1,048	1,162	575	740
1001 or more	961	1,125			661	680	300	445

Source: INEGI. Economic Censuses 2004 and 2009

Note: Sectors' classification is based on the North American Industry Classification System (NAICS). Data from the private sector for 2009 Census was collected in 2008.

1/ It includes: Agriculture, Forestry, Fishing and Hunting.

2/ It includes: Mining; Utilities; Construction; Manufacturing.

3/ It includes: Wholesale Trade; Retail Trade; Transportation and Warehousing; Information; Finance and Insurance; Real Estate and Rental and Leasing; Professional, Scientific and Technical Services; Management of Companies and Enterprises; Administrative and Support and Waste Management and Remediation Services; Education Services; Health Care and Social Assistance; Arts, Entertainment and Recreation; Accommodation and Food Services; Other Services (except Public Administration).

It has been argued that the majority of Mexican firms face growth limitations. Credit constraint is one of the main reasons that Mexican entrepreneurs do not take advantage of economies of scale opportunities to increase the added value of their activity. Lecuona Valenzuela (2009) shows that even though 42 percent of commercial banks' credit portfolios in 2007 were allocated to entrepreneurial activities, on average only 11 percent, or 0.7 percent of GDP, of these portfolios were available for minor clients; almost 80 percent was concentrated on the 300 major clients of each bank. The question that remains is whether, under these conditions, entrepreneurial activity is a good vehicle for social mobility.

Table 2. Firms in Mexico, by Number of Employees (Percentages)

	All Sectors		Primary Sector/1		Secondary Sector/2		Tertiary Sector/3	
Firm size (number of workers)	2004	2008	2004	2008	2004	2008	2004	2008
All	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
0-2	70.49%	64.67%	66.25%	60.61%	55.67%	52.89%	72.47%	66.37%
3-5	19.34%	24.27%	9.79%	12.84%	24.87%	28.51%	18.69%	23.73%
6-10	5.12%	6.02%	6.36%	7.25%	7.90%	8.78%	4.74%	5.62%
11-15	1.58%	1.71%	3.86%	4.63%	2.73%	2.62%	1.41%	1.56%
16-20	0.81%	0.84%	2.77%	3.16%	1.55%	1.39%	0.70%	0.75%
21-30	0.84%	0.81%	3.70%	4.01%	1.75%	1.49%	0.69%	0.70%
31-50	0.70%	0.66%	3.53%	4.12%	1.67%	1.35%	0.55%	0.54%
51-100	0.54%	0.50%	2.47%	2.25%	1.53%	1.22%	0.39%	0.39%
101-250	0.36%	0.32%	1.28%	0.92%	1.26%	0.91%	0.24%	0.24%
251-500	0.13%	0.11%		0.16%	0.57%	0.44%	0.08%	0.06%
501-1000	0.05%	0.05%		0.03%	0.30%	0.25%	0.02%	0.02%
1001 or more	0.03%	0.03%			0.19%	0.15%	0.01%	0.01%

Source: Based on Table 1

1/ It includes: Agriculture, Forestry, Fishing and Hunting.

2/ It includes: Mining; Utilities; Construction; Manufacturing.

3/ It includes: Wholesale Trade; Retail Trade; Transportation and Warehousing; Information; Finance and Insurance; Real Estate and Rental and Leasing; Professional, Scientific and Technical Services; Management of Companies and Enterprises; Administrative and Support and Waste Management and Remediation Services; Education Services; Health Care and Social Assistance; Arts, Entertainment and Recreation; Accommodation and Food Services; Other Services (except Public Administration).

3. Data Source and Descriptive Statistics

The MSMS-2006 was conducted by the *Espinosa Rugarcia Foundation* and the *Center for Studies Espinosa Yglesias* (CEEY).[6] The MSMS-2006 is a nationally representative, fully probabilistic, stratified multistage survey. The sample is representative only for men, but it also includes a sample of women. The respondents are individuals between 25 and 64 years old. The most relevant information collected for the purposes of the study concerns the education and employment information for the respondent and her father. The respondent is asked about the characteristics of her current job and her first job. She is asked about her father's jobs when she was 14 years old. The survey also contains information on the characteristics of the respondent's household and the household of her father.

The primary sampling units are basic geographic areas for the largest metropolitan areas of the country, i.e., Mexico City, Guadalajara, and Monterrey, and municipalities in the rest of the country. To ensure the sample's geographic and socioeconomic representativeness, the primary sampling units were stratified by number of inhabitants and socioeconomic status. The

[6] A second survey, the MSMS-2011 was already conducted by the same institution. The sample of that survey is representative of men and women (both household heads and non-household heads) aged 25-64. This new cross-section survey contains retrospective questions on both fathers and mothers. Also, it contains more detailed information on respondents' siblings. The data are already available but their quality is being reviewed by CEEY staff.

socioeconomic stratification was done according to an index calculated in terms of the inhabitants' education level, their earnings, and the proportion of households with a sewage system. The secondary sampling units are blocks. For each block, five households were randomly selected. In each household, one respondent was randomly selected.

The MSMS-2006 sample is representative for men. Women were interviewed only when no men between the ages of 25 and 64 lived in the household. This study uses the information about male respondents only. A total of 6,322 men completed the interview. On average, they were 42 years old with a standard deviation of 11 years. More than 90 percent of them are heads of household, 6 percent are a son of the head of household, and the rest are deemed other relatives. On average, they have eight years of schooling, which corresponds to the second year of junior high school, and 77 percent completed primary school.

On average, the household monthly income of respondents is 5,390 Mexican pesos, or US$677, 2005-Purchasing Power Parity (PPP).[7] More than 2 percent report being unemployed and more than 3 percent report being retired. Those with a job are distributed in the following seven sectors of the economy: services (20 percent), industry (19 percent), trade (18 percent), agriculture (12 percent), other services, i.e., automotive services, domestic repairs, etc. (12 percent), construction (11 percent), and transport (8 percent).[8]

Almost 60 percent of respondents are employees in the private or public sector; 8.3 percent are owners or partners of the firm where they work; and 30 percent are self-employed. The rest do not report their occupation. This investigation defines entrepreneurs as those who report being owners or partners. As expected, compared to the whole sample, the mean household monthly income is higher for entrepreneurs, 7,300 Mexican pesos, or US$917, 2005-PPP.

[7] The Purchasing Power Parity (PPP) factor in 2005 is 7.64. This factor is taken from the *World Development Indicators* in: http://data.worldbank.org/indicator/PA.NUS.PRVT.PP (12/29/2011).

[8] Services include scientific and technical services, government and international organizations, educational services, temporary housing services and preparation of food and beverages, health and welfare services, real estate and rental services, and financial and insurance services.

4. Empirical Analysis

Socioeconomic classes are defined in terms of household income distribution. Following López-Calva and Ortiz-Juárez (2011), middle-class individuals are defined as those from households with a daily income between US$10 and US$50, 2005-PPP.[9] According to this definition, 21 percent of individuals are considered lower-class, 71 percent middle-class and 8 percent upper-class.

4.1. Entrepreneurs' Profile by Class

Middle-class entrepreneurs are defined along individual and firm dimensions. A total of 7.6 percent of middle-class individuals report being entrepreneurs; this figure is 5.7 percent for the lower class and 16.9 percent for the upper class. In terms of number of years of schooling, we find that they increase by class. Lower-class entrepreneurs have an average of 5.6 years of education, middle-class entrepreneurs have 8.1 years, and the upper-class entrepreneurs have 12.6 years. Viewing the level of education of entrepreneurs by social class, we note that 85 percent of middle-class entrepreneurs completed primary school, which is 8 percent higher than that for the total population. This percentage is lower for lower-class entrepreneurs, in which 61 percent completed primary school, and among the upper class, 92 percent of entrepreneurs completed primary school.

Firm dimensions include firm size and sector of economic activity. Respondents were asked about the number of workers in their firms. The options were one person, two to four, five to nine, ten to 100, and more than 100. Given these options, it is not possible to define small and medium-sized enterprises (SMEs) as those with 10 to 50 employees and those with 51 to 250 employees, respectively. SMEs are defined as those enterprises with 10 to 100 workers, without distinguishing between small- and medium-sized enterprises.

The percentage of entrepreneurs with SMEs is similar across social classes. Around 11.4 percent of middle-class entrepreneurs are owners of SMEs; the percentage for lower-class entrepreneurs is 9.8 percent, and it is 11.9 percent for upper-class ones. Most entrepreneurs are owners of microenterprises, that is, firms with fewer than 10 employees. In the case of middle-

[9] López-Calva and Ortiz-Juárez determined the US$10 lower bound based on the probabilities of falling into poverty in three countries: Chile, Mexico, and Peru. In the case of Mexico, non-poor individuals with a 10 percent probability of falling into poverty have a daily income level of US$9.7, 2005-PPP. In a similar exercise for entrepreneurs only provided to us by Ortiz-Juarez, the lower threshold is equal to US$10.63,2005-PPP. However, this estimation is made with a limited number of observations.

class entrepreneurs, 33 percent report having only one employee, 36 percent have two to four employees, and 13 percent have five to nine employees. This distribution is similar for lower-class entrepreneurs, i.e., 42 percent, 33 percent, and 9 percent, respectively, but for the upper class the proportion of firms with only one worker decreases significantly, i.e., 14 percent, 51 percent, and 15 percent, respectively.

Enterprises in the trade sector are the most commonly owned by entrepreneurs, i.e., 33 percent. The least common are in the construction and transport sectors, at 4 percent and 6 percent, respectively. These percentages are similar for firm owners of each socioeconomic class. The distribution of entrepreneurs in other economic sectors, however, varies by class. For instance, a larger proportion of lower-class entrepreneurs—35 percent—owns enterprises in the agriculture sector than middle- (10 percent) and upper-class entrepreneurs (5 percent). Also, around one-third of upper-class entrepreneurs own firms in the service sector, i.e., 31 percent, while less than one-sixth of middle- and lower-class entrepreneurs own firms in that sector (see Table 3).

Table 3. Distribution of Entrepreneurs by Sector and Class

	All	Poor	Middle Class	Rich
Agriculture	14%	36%	10%	5%
Industry	16%	13%	18%	17%
Construction	4%	3%	4%	4%
Trade	33%	31%	34%	31%
Transport	6%	3%	8%	2%
Services	15%	9%	12%	31%
Other Services	13%	6%	14%	10%

4.2 Entrepreneurship and Intergenerational Mobility

Social mobility refers to position changes of individuals in the social strata. For the present study, such changes are measured across generations, i.e., changes experienced by individuals in relationship to their parents, or intergenerational mobility. For this kind of analysis, a whole set of studies can be found in the literature (Solon, 1992; 2002; Behrman, Gaviria, and Székely, 2001; Mazumder, 2005; Jantti et al., 2006).

In the literature, social mobility is analyzed in terms of several dimensions. Income mobility measures are the most commonly used; Fields (2007) affirms that there are at least 20 different ones. Because accumulation of human capital reached through education is considered

one of the main vehicles to ascend the social ladder, years of schooling is another commonly studied dimension of social mobility Social class is used as a dimension to measure social mobility in the sociological literature. Torche (2009) argues that this approach allows capture of the value of several market assets, such as specific skills, work position, sector of economic activity, education, and others. The most commonly used classification for social mobility and stratification studies is the Comparative Analysis of Social Mobility in Industrialized Nations (CASMIN), a social class grouping defined by Erikson and Goldthorpe (1992). A fourth dimension of social mobility is wealth. As Torche and Spilerman (2010) argue, wealth can increase consumption in the long term and reduce households' vulnerability. Also, wealthier households are less restricted and can make long-term investments, such as education for children. Social mobility can also be measured through social perception. In this sense, Huerta (2010) affirms that perception is a main determinant of individuals' well-being. Given its multi-dimensionality, social mobility can be measured combining different well-being dimensions. Torche (2010) argues that following such a strategy allows for more accurate identification of differences along the whole socioeconomic distribution, including the extreme ends.

The most studied relationship in the literature to measure intergenerational social mobility relates earnings of parents to those of children (Behrman and Taubman, 1990; Solon, 1992). Because the MSMS-2006 contains information on income only for the respondents' generation, it is not possible to estimate intergenerational earning elasticities. Therefore, for the present study, intergenerational mobility is measured by calculating the intergenerational persistence of household wealth.

To measure wealth, an index of household assets is constructed. As discussed in Sahn and Stifel (2003), using an asset-based index instead of the standard use of expenditures or income to address issues of poverty and inequality has several advantages. The main one is that poverty reduction is largely predicted by the individual's ability to accumulate assets. This requires selecting a set of weights to obtain an index of the form:

$$A_i = \gamma_1 a_{i1} + ... + \gamma_K a_{iK} \qquad (1)$$

where A_i is the asset index, the a_{ik}'s are the individual assets, and the γ's are the weights.

The weights are estimated through the principal components analysis method. Then, correlations between the indices of parents and children are estimated. This is done for the whole sample and also for entrepreneurs, employees, and the self-employed.

The principal component analysis technique is used to reduce the dimension of a set of variables by constructing fewer new variables which capture the variation in the original set. The new variables are linear combinations of the original variables. The first principal component is the combination that explains the largest amount of variation. The second principal component is the combination which best explains the remaining variability, and so on. In this study, the asset index is the first principal component.

Indices are computed for both the household assets of the respondents and those of their parents. Following the notation in Filmer and Pritchett (2001), the formula of the index for each household A_j can be written as:

$$A_j = f_1 \cdot \frac{a_{ji} - a_1}{s_1} + \cdots + f_N \cdot \frac{a_{jN} - a_N}{s_N} \qquad (2)$$

where f_i is the weight in the linear combination for asset i; a_{ji} is the value assigned to asset i; and, a_i and s_i are the mean and standard deviation of the i-th asset variable over all households.

Three types of assets are considered: durables, household characteristics, and access to credit. Most of the variables are binary. The value 1 represents ownership or access, and 0 is the lack of the asset. Therefore, a move from 0 to 1 of the variable results in a discrete change of $\frac{f_i}{s_i}$ in the index. Examples of durables are cars, televisions, telephones, and books. Household characteristics include having a toilet, access to hot water, and electricity. Finally, variables associated with credit access include ownership of a bank account and ownership of a credit card. The set of asset variables available in the data is not the same for respondents and parents.

Respondents were born over a period of 39 years, from 1942 to 1981. Because it is probable that the value of assets changed over time, indices are estimated separately for two groups of respondents: those who were born in 1942-1964 and those who were born in 1965-1981. Correspondingly, indices for the parents of each group of respondents are estimated. Table 4 shows the weights and marginal effects assigned to the variables that constitute the asset indices for respondents, and Table 6 shows those for their parents. Fathers of the second generation of respondents were born, on average, 18 years later than those of the first generation,

which is consistent with the difference of 20 years in the average year of birth between the two generations of respondents.

All variables have a positive effect on the indices of both groups. Having domestic service and access to the Internet are the assets that most increase the indices, by more than 0.9 units. The ownership of assets that facilitate access to credit, such as stocks or a credit card, substantially increases the index as well. Examples of variables that raise the index in less than 0.60 units include having access to hot water and owning a telephone, a television, or a car. When comparing the marginal effects between groups, owning stocks or a credit card increases the wealth index for respondents born in 1942-1964 less than for those born in 1965-1981. Also, while having access to electricity raises the index by 0.83 units for the first generation, it raises it only by 0.67 units for the second one.

Table 4. Weights and Means for the Variables that Constitute the Asset Index for Respondents

Variable	Respondents born between 1942 and 1964			Respondents born between 1965 and 1981		
	Mean	Weight	Weight/st. dev.	Mean	Weight	Weight/st. dev.
has domestic service	0.05	0.22	1.01	0.05	0.23	1.06
has access to internet	0.11	0.29	0.95	0.08	0.29	1.07
owns stocks	0.02	0.11	0.87	0.02	0.15	0.97
has a credit card	0.09	0.24	0.85	0.10	0.27	0.91
has electricity	0.99	0.09	0.83	0.99	0.08	0.67
owns a computer	0.19	0.32	0.81	0.16	0.31	0.84
has a bank account	0.08	0.21	0.79	0.08	0.25	0.93
owns a refrigerator	0.88	0.23	0.71	0.87	0.22	0.65
owns a stove	0.94	0.17	0.71	0.95	0.16	0.75
has savings	0.10	0.21	0.70	0.12	0.23	0.71
has access to tv cable	0.23	0.28	0.67	0.20	0.28	0.70
has a toilet inside the house	0.86	0.22	0.63	0.86	0.20	0.58
owns a washing machine	0.76	0.27	0.62	0.72	0.25	0.56
has access to hot water	0.61	0.28	0.57	0.59	0.26	0.53
has a cell phone	0.41	0.27	0.56	0.47	0.26	0.53
has access to telephone	0.58	0.27	0.55	0.46	0.28	0.55
owns a television	0.91	0.14	0.52	0.94	0.11	0.47
owns a car	0.49	0.25	0.51	0.44	0.25	0.50
owns the house where he lives	0.81	0.06	0.16	0.58	0.06	0.13

As in Filmer and Pritchett (2001), the internal coherence of the asset index is tested by comparing the average asset ownership across households with different levels of wealth. Table 5 shows the means of asset variables across households of different quintiles of the index distribution. For every variable the proportion of households that own the asset increases with the quintile. For instance, for the first generation of respondents, only 12 percent of those in the first quintile and 47 percent of quintiles 2-4 households own a car, while 91 percent of those in the last quintile do so. For some variables the differences are larger than for others. More than 90

percent of the households have electricity for each of the three groups. However, while only 11 percent of those in the first quintile have access to hot water, almost all the upper class ones, 96 percent, have that asset. Comparisons are similar for the second generation of respondents.

Table 5. Means for the Variables that Constitute the Asset Index for Respondents, by Quintiles

Variable	Respondents born between 1942 and 1964			Respondents born between 1965 and 1981		
	Quintile 1	Quintiles 2-4	Quintile 5	Quintile 1	Quintiles 2-4	Quintile 5
has domestic service	0.00	0.00	0.24	0.00	0.01	0.22
has access to internet	0.00	0.01	0.52	0.00	0.00	0.41
owns stocks	0.00	0.01	0.07	0.00	0.01	0.10
has a credit card	0.00	0.02	0.39	0.00	0.02	0.44
has electricity	0.94	1.00	1.00	0.94	1.00	1.00
owns a computer	0.00	0.05	0.81	0.00	0.05	0.66
has a bank account	0.00	0.02	0.31	0.00	0.02	0.36
owns a refrigerator	0.48	0.98	1.00	0.44	0.97	1.00
owns a stove	0.72	0.99	1.00	0.77	1.00	1.00
has savings	0.00	0.05	0.34	0.01	0.05	0.42
has access to tv cable	0.02	0.14	0.70	0.01	0.11	0.65
has a toilet inside the house	0.46	0.95	0.99	0.46	0.95	0.99
owns a washing machine	0.16	0.88	1.00	0.16	0.81	0.98
has access to hot water	0.11	0.67	0.96	0.08	0.63	0.95
has a cell phone	0.08	0.37	0.89	0.10	0.44	0.93
has access to telephone	0.10	0.62	0.95	0.04	0.45	0.93
owns a television	0.73	0.95	0.99	0.80	0.96	0.99
owns a car	0.12	0.47	0.91	0.08	0.43	0.85
owns the house where he lives	0.70	0.82	0.89	0.49	0.57	0.68

In the case of the asset index computed for the parents of respondents, some assets have a negative effect on the index. For instance, as shown in Table 6, a household from the first generation that owns land has an asset index lower by 0.20 units compared to a household that does not, i.e., 0.16 units for households of the second generation. The variable that lowers the index the most is ownership of cattle, by 0.26 for the first generation and 0.30 for the second generation. The asset that raises the index the most for the first generation, by 1.14 units, is ownership of stock. For the second generation the asset is ownership of an apartment for rent, by 1.02 units. Variables associated with access to credit, such as having a bank account or having savings, raise the index substantially.

Table 6. Weights and Means for the Variables that Constitute the Asset Index for Respondents' Parents

Variable	Parents of respondents born between 1942 and 1964			Parents of respondents born between 1965 and 1981		
	Mean	Weight	Weight/st. dev.	Mean	Weight	Weight/st. dev.
owned stocks	0.01	0.09	1.14	0.01	0.09	0.96
had domestic service	0.03	0.19	1.07	0.04	0.16	0.77
owned a vacation home	0.01	0.10	1.06	0.01	0.10	0.99
had a bank account	0.03	0.15	0.95	0.03	0.15	0.80
owned an apartment for rent	0.01	0.09	0.95	0.01	0.10	1.02
had savings	0.03	0.17	0.94	0.05	0.17	0.79
had access to telephone	0.10	0.28	0.94	0.20	0.29	0.71
owned a washing machine	0.15	0.31	0.88	0.32	0.32	0.68
had access to hot water	0.20	0.33	0.83	0.33	0.32	0.68
had a toilet inside the house	0.35	0.33	0.70	0.56	0.34	0.68
owned a car	0.14	0.24	0.70	0.24	0.26	0.61
owned a stove	0.38	0.33	0.67	0.65	0.33	0.69
owned a television	0.31	0.31	0.67	0.59	0.31	0.63
had access to piped water	0.43	0.32	0.64	0.65	0.33	0.68
had electricity	0.60	0.27	0.56	0.81	0.28	0.70
owned a business local	0.09	0.16	0.56	0.13	0.15	0.45
owned the house where they lived	0.74	0.01	0.01	0.79	0.03	0.07
owned agricultural machinery	0.07	-0.04	0.00	0.05	-0.01	-0.04
owned land	0.33	-0.09	-0.20	0.24	-0.07	-0.16
owned cattle	0.27	-0.11	-0.26	0.20	-0.12	-0.30

The asset index for the parents of respondents is internally coherent in the sense that the average asset ownership of variables with positive weights increases with the quintile of the index distribution and those with negative weights decrease. The only exception is ownership of the house where a respondent of the second generation lived when he was 14 years old. A higher percentage of first quintile parents (78 percent) owned a house than parents in quintiles 2-4 (76 percent). It is probable that a higher proportion of parents in quintiles 2-4 rented their houses. As distinct from respondents' households, their parents had more limited access to electricity, particularly those in the lower quintiles. Only 1 percent of parents in the lowest quintile of the first generation had electricity and 20 percent for those of the second generation. These percentages for quintiles 2-4 are 71 percent and 95 percent, respectively.

Table 7. Means for the Variables that Constitute the Asset Index for Respondents' Parents, by Quintiles

Variable	Parents of respondents born between 1942 and 1964			Parents of respondents born between 1965 and 1981		
	Quintile 1	Quintiles 2-4	Quintile 5	Quintile 1	Quintiles 2-4	Quintile 5
owned stocks	0.00	0.00	0.03	0.00	0.00	0.03
had domestic service	0.00	0.00	0.16	0.00	0.01	0.19
owned a vacation home	0.00	0.00	0.04	0.00	0.00	0.05
had a bank account	0.00	0.01	0.10	0.00	0.01	0.14
owned an apartment for rent	0.00	0.00	0.04	0.00	0.00	0.05
had savings	0.00	0.01	0.14	0.00	0.02	0.20
had access to telephone	0.00	0.02	0.46	0.00	0.07	0.83
owned a washing machine	0.00	0.02	0.69	0.00	0.22	0.93
had access to hot water	0.00	0.06	0.83	0.00	0.25	0.91
had a toilet inside the house	0.00	0.28	0.97	0.01	0.61	0.99
owned a car	0.00	0.08	0.49	0.02	0.14	0.74
owned a stove	0.00	0.34	0.97	0.01	0.76	0.99
owned a television	0.00	0.24	0.90	0.01	0.66	0.98
had access to piped water	0.00	0.42	0.98	0.02	0.76	1.00
had electricity	0.01	0.71	1.00	0.20	0.95	1.00
owned a business local	0.00	0.07	0.25	0.02	0.10	0.32
owned the house where they lived	0.67	0.76	0.77	0.78	0.76	0.88
owned agricultural machinery	0.13	0.06	0.04	0.06	0.06	0.04
owned land	0.62	0.26	0.18	0.41	0.20	0.20
owned cattle	0.53	0.21	0.10	0.37	0.18	0.07

Once indices are computed, the transition matrix for relative intergenerational mobility is calculated. The matrix shows the proportions of respondents, or children, that experienced upward, downward, or no mobility with respect to their parents. Table 8 presents the transition matrices for the whole sample and the sub-sample of entrepreneurs for the two previously determined respondents' birth cohorts. The numbers in the main diagonal of the matrix, i.e., 37, 66 and 49 percent for Matrix 1, show the proportions of children that stay in the same quintile as their parents, or those children who did not experience relative mobility. The numbers above the diagonal refer to those who experienced downward mobility, and the ones below refer to those who experienced upward mobility. For example, in Matrix 1, 8 percent of respondents with parents in the lowest quintile moved up to the top quintile of the asset index distribution, and only 3 percent of respondents with parents in the top quintile moved down to the lowest quintile.

Individuals with parents in the extreme quintiles experienced a higher degree of mobility than those in quintiles 2-4. Those with parents in the lowest quintile moved the most. When comparisons are made between the sub-sample of entrepreneurs and the whole sample, results show that entrepreneurs born between 1942 and 1964 with parents in quintile 1 experienced a higher mobility, with 70 percent moving upwards, versus 64 percent for the whole sample. On the other hand, entrepreneurs born between 1965 and 1981 moved as much as the whole sample, with more than 50 percent moving to quintiles 2-4 and around 3 percent moving to the top quintile. The mobility of entrepreneurs with parents in the top quintile for both birth cohorts is

lower than that of the whole sample. In the case of entrepreneurs in the middle quintiles, the proportion of those moving upwards, around 30 percent, is almost double that of the whole sample for both birth cohorts.

In summary, results from the transition matrices suggest two main results: i) there are more opportunities for upward mobility for entrepreneurs, but ii) for those with lower-class parents, it is more difficult to reach the top end of the socioeconomic distribution compared to those with parents who belong to the middle or upper end of the distribution.

Table 8. Transition Matrices

		Parents' wealth index					
		All			Entrepreneurs		
		Quintile 1	Quintiles 2-4	Quintile 5	Quintile 1	Quintiles 2-4	Quintile 5
		Respondents born between 1942 and 1964					
		Marix 1			*Marix 2*		
Respondents' wealth index	Quintile 1	37%	19%	3%	30%	5%	6%
	Quintiles 2-4	56%	66%	49%	57%	67%	33%
	Quintile 5	8%	15%	49%	13%	28%	61%
		Respondents born between 1965 and 1981					
		Marix 3			*Marix 4*		
	Quintile 1	46%	17%	2%	47%	9%	2%
	Quintiles 2-4	50%	69%	45%	50%	62%	33%
	Quintile 5	4%	14%	52%	3%	30%	66%

The computed indices are also used to investigate the intergenerational relationship in assets for parents and children for three different groups of respondents: entrepreneurs, self-employed, and employed. The intergenerational asset persistence is estimated by applying OLS to models of the equation form (2), i.e., running regressions of the respondents' asset index on the parents' asset index. Table 9 shows the results of the regressions for each generation. Simple correlations are computed first, but parental assets are not the sole determinant of child assets; they alone explain only around 25-40 percent of their variation. When controlling for age and education of respondents, the estimated asset persistence falls and the regression explains a higher percentage of the variation in child assets.

For the generation of respondents born between 1942 and 1964, the correlation between parents' wealth and children's wealth is higher for the group of self-employed than for entrepreneurs and employees. For the generation of respondents born between 1965 and 1981, it

is for this group of entrepreneurs that wealth is determined to a higher degree by their parents' wealth. Think of the addition of the intergenerational asset persistence as a measure of mobility. In that case, the intergenerational mobility of entrepreneurs decreased over the years when compared to the self-employed.

Table 9. Intergenerational Asset Persistence

All	Entrepreneurs	Self-employed	Employed
Respondents born between 1942 and 1964			
Simple correlation			
0.49	0.47	0.54	0.44
(0.014)	(0.044)	(0.025)	(0.019)
R^2=0.28	R^2=0.29	R^2=0.30	R^2=0.25
Obs=2,964	Obs=286	Obs=1,019	Obs=1,636
Correlations controlling for age and years of education of respondent			
0.3	0.28	0.37	0.26
(0.015)	(0.049)	(0.029)	(0.020)
R^2=0.41	R^2=0.41	R^2=0.40	R^2=0.40
Obs=2,960	Obs=286	Obs=1,018	Obs=1,634
Respondents born between 1965 and 1981			
Simple correlation			
0.56	0.63	0.57	0.51
(0.014)	(0.055)	(0.026)	(0.018)
R^2=0.34	R^2=0.39	R^2=0.38	R^2=0.29
Obs=2,795	Obs=201	Obs=744	Obs=1,829
Correlations controlling for age and years of education of respondent			
0.39	0.49	0.43	0.35
(0.015)	(0.057)	(0.028)	(0.018)
R^2=0.48	R^2=0.50	R^2=0.51	R^2=0.46
Obs=2,792	Obs=201	Obs=744	Obs=1,826

4.3 Initial Conditions and Entrepreneurship Relationship

There is a large body of literature that shows a positive relationship between initial household wealth and entrepreneurship in industrialized countries. This has been interpreted as evidence of liquidity and/or credit constraints for entrepreneurship (see discussions in Quadrini, 1999; and Hurst and Lusardi, 2004). Based on data availability, we investigate the factors that may be important for becoming an entrepreneur in Mexico, including parents' socio-economic class.

Taking the different socioeconomic classes into account, we estimate the probability of being an entrepreneur using probit equations. To establish causality, pre-determined variables are used as independent variables. These include respondents' and parents' education, parents' socio-economic class defined according to the wealth index, father's occupation, and regional variables such as size of the city where respondents were raised, etc. We expect wealth variables

to explain to some extent the ability of some individuals to obtain the capital needed to become entrepreneurs.

The same specification of the probit model used to investigate the determinants of the decision to become an entrepreneur is used to estimate the probabilities of being self-employed or an employee. It is interesting to see how the same variables affect choice of occupation. Table 10 shows the marginal effects for selected variables. Those related to the father's occupation are the ones that have the greatest effect on the decision of whether to become an entrepreneur. Having a father who is an entrepreneur increases the probability of becoming an entrepreneur by 0.239, versus having a father who is self-employed. Also, having a father who worked in a large firm, as opposed to a SME or microenterprise increases the probability by 0.07. Unexpectedly, it cannot be concluded that the parents' socioeconomic class affects an individual's decision to become an entrepreneur. Nor does the number of years of schooling have a significant effect on the decision. These results suggest that entrepreneurship in Mexico is strongly determined by the father's occupation and not necessarily by the individual's initial wealth or educational attainment.[10] It must be noted that the entrepreneur sample in the analysis includes only those who are still entrepreneurs, but not all of those who failed at entrepreneurial activity and left. Therefore, it could be that having a father who is an entrepreneur also increases the entrepreneurship survival/success rate.

For the self-employed and employees, the father's occupation is the variable that has the greatest effect on their sons' choice of occupation. In both cases, the probability increases at around the same magnitude as that for entrepreneurs, or 0.21. Some of the positive determinants of the decision to become an employee are negative ones for the decision to become self-employed. For instance, while having worked in a large enterprise or SME for the first job increases the probability of being an employee, it decreases that probability for the self-employed. Also, speaking an indigenous language or belonging to an indigenous group affects the decision of whether to become an employee negatively, while it affects the decision to be self-employed positively. Having a father who was an entrepreneur decreases the probability of becoming self-employed, but not the probability of becoming an employee. It could be that when

[10] This does not mean that education is not an important determinant of success for entrepreneurs. When returns to schooling are estimated using a Mincer earnings model, the coefficient of years of education is 0.08 (with a standard error of 0.011).

a family business is established, next-generation family members have the option of becoming employees of the enterprise or another one within the father's business network.

Table 10. Probability of Being an Entrepreneur, Self-Employed, or Employee

	Entrepreneur	Self-employed	Employee
Socio-demographic characteristics			
Age	0.00998***	0.00898*	-0.0195***
Age squared	-9.91e-05***	-7.53e-05	0.000179***
Years of schooling	0.00322	-0.0117*	0.0101
Years of schooling squared	-7.48e-05	0.000122	-0.000158
1 if he speaks an indigenous language or belongs to indigenous group, 0 otherwise	-0.0106	0.0962***	-0.0907***
1 if he lived in urban area (when 14 years old), 0 otherwise	0.0107	-0.0442***	0.0304*
1 if he did not attend school (when 14 years old), 0 otherwise	-0.0235**	0.0220	0.00310
First job			
1 if he worked in a SME, 0 otherwise	-0.0224***	-0.146***	0.174***
1 if he worked in a large enterprise, 0 otherwise	-0.0266***	-0.140***	0.173***
(reference variable: 1 if he worked in a micro enterprise, 0 otherwise)			
Parents' socio-economic class			
1 if parents were in the first quantile of the wealth index distribution, 0 otherwise	-0.00874	-0.0130	0.0247
1 if parents were in quintiles 2-4 of the wealth index distribution, 0 otherwise	-0.00501	-0.0462**	0.0581**
(reference variable: 1 if parents were in the fifth quintile of the wealth index distribution, 0 otherwise)			
Father's employment			
1 if his father worked as entrepeneur, 0 otherwise	0.239***	-0.194***	-0.0149
1 if his father worked as an employee, 0 otherwise	0.00660	-0.208***	0.215***
1 if his father worked as a domestic worker, 0 otherwise	0.0416	-0.0963*	0.0766
(reference variable: 1 if father worked as self-employed, 0 otherwise)			
1 if father worked in a SME, 0 othewise	0.0142	0.00221	-0.0235
1 if father worked in a large enterprise, 0 otherwise	0.0744***	0.00625	-0.0962**
(reference variable: 1 if father worked in a micro enterprise, 0 otherwise)			
Number of Observations	4717	4717	4717
R-squared	0.131	0.0933	0.0798

Probit estimates

The other covariages included in the regression are: number of siblings, number of siblings squared, father's years of schooling, father's years of schooling squared, dummies for if he lived with his father or mother (at 14), ranked middle level with respect to his classmates (at 14), ranked high level with respect to his classmates (at 14), has worked in the US legally, has worked in the US ilegally, father worked in the US, father worked in the agricultural sector, father worked in the industry sector, father worked in the construction sector, father worked in the trade sector, father worked in the transport sector., father worked in the services sector.

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

Estimates about the decision to become an entrepreneur, self-employed, or an employee suggest that occupational mobility between fathers and sons differs by economic sector. Table 11 shows the marginal effects of the father's occupation on the probability of individuals' occupational decisions. Having an entrepreneur as a father is an important predictor for entrepreneurship especially in the service sector. It increases the probability by 0.36. The magnitude of the effect in the agriculture, industry, trade, and other service sectors varies between 0.19 and 0.26. In the construction and transport sectors, the positive effect is not statistically significant. For the self-employed and for employees, the coefficient of having a father with the same occupation is statistically significant in every sector. For both groups, the

sector where the highest proportion of sons ends up with the same occupation as their fathers is the transport sector.

Table 11. Probability of Being an Entrepreneur, Self-Employed, or Employee, by Sector

	Father was					
	Entrepreneur	Self-employed	Employed	Entrepreneur	Self-employed	Employed
	All sectors			**Trade**		
1 if his father worked as entrepeneur, 0 otherwise	0.239***	-0.0108	-0.0149	0.213***	0.0749	-0.123*
1 if his father worked as an employee, 0 otherwise	0.00660		0.215***	0.0119		0.172***
1 if his father worked as self-employed, 0 otherwise		0.216***			0.168***	
Number of Observations	4,717	4,717	4,717	455	450	462
R-squared	0.131	0.0933	0.0798	0.156	0.109	0.109
	Agriculture			**Transport**		
1 if his father worked as entrepeneur, 0 otherwise	0.219***	-0.107**	0.0507	0.0945	-0.108	0.209***
1 if his father worked as an employee, 0 otherwise	-0.0126		0.223***	-0.0379		0.369***
1 if his father worked as self-employed, 0 otherwise		0.210***			0.369***	
Number of Observations	1785	1785	1785	241	234	257
R-squared	0.173	0.103	0.0863	0.216	0.217	0.151
	Industry			**Services**		
1 if his father worked as entrepeneur, 0 otherwise	0.192**	0.102	0.00312	0.365***	0.0193	-0.218**
1 if his father worked as an employee, 0 otherwise	0.0269		0.240***	0.0341		0.124**
1 if his father worked as self-employed, 0 otherwise		0.256***			0.148***	
Number of Observations	741	741	741	557	603	603
R-squared	0.0907	0.0995	0.0887	0.213	0.100	0.110
	Construction			**Other Services**		
1 if his father worked as entrepeneur, 0 otherwise	0.250	-0.0547	-0.00768	0.265***	0.0171	-0.0443
1 if his father worked as an employee, 0 otherwise	0.00293		0.256***	0.0140		0.240***
1 if his father worked as self-employed, 0 otherwise		0.268***			0.256***	
Number of Observations	364	369	378	474	488	490
R-squared	0.236	0.119	0.0906	0.266	0.104	0.108

Probit estimates. For a complete list of independent variables included in the regressions see Table 7.
*** p<0.01, ** p<0.05, * p<0.1

4.4 Entrepreneurship and Profits

To measure the effect of entrepreneurship on income, the income of entrepreneurs, Y_1, is compared to that of non-entrepreneurs, Y_0. The effect on income is $\Delta = Y_1 - Y_0$. Because two outcomes cannot be observed at the same time for a given individual, mean effects are estimated. The parameter of interest is what in the evaluation literature is called treatment on the treated:

$$E(\Delta \mid T=1) = E(Y_1 - Y_0 \mid X, T=1) = E(Y_1 \mid X, T=1) - E(Y_0 \mid X, T=0) \qquad (3)$$

where X denotes a set of conditioning variables, $T=1$ if an individual is entrepreneur (treated), and $T=0$ if an individual is non-entrepreneur (non-treated).

The first expectation, $E(Y_1 \mid X, T=1)$, can be estimated, but the data for the second expectation, $E(Y_0 \mid X, T=1)$ are missing. Matching estimators are used to impute that expectation.

The idea is to pair each treated individual with observable similar non-treated individuals, so that after conditioning on a set of observable characteristics, Z, the Y_0 distribution observed for the matched non-treated individuals can be substituted for the missing Y_0 distribution for treated individuals. The main assumption of matching methods is that the non-treated outcome Y_0 is independent of treatment conditional on Z. In this way, the difference in the mean values of the income outcomes can be attributable to entrepreneurship. It is assumed, then, that selectivity in entrepreneurship depends only on observable characteristics.

The set of observable characteristics used to do the matching includes individual characteristics that are not affected by the choice of becoming an entrepreneur, such as age, years of schooling, whether the individual lived in a city when younger, years of work experience, etc. It also includes characteristics of the individual's parents, such as years of schooling, socio-economic class, and whether the father was an entrepreneur, self-employed, or employed worker.

Matching on many variables could generate the problem that for some combinations of characteristics of treated individuals, no non-treated pairs are available. To reduce the "high dimensionality problem" that arises when Z is large, the propensity score theorem by Rosenbaum and Rubin (1983) is applied. It states that when matching on Z is valid, then matching on the propensity score $\Pr(T = 1 \mid Z)$ is also valid. This is the conditional probability of becoming an entrepreneur. The model previously estimated is used to obtain the propensity scores for each individual.

The mean effect of entrepreneurship on income, ΔY, is calculated using the estimator:

$$\Delta Y = \frac{1}{N}\sum_{i \in N}\left(Y_i - \frac{1}{J}\sum_{j \in J} Y_J \right) \qquad (4)$$

where N is the number of entrepreneurs and J is the number of propensity score matched non-entrepreneurs.

The effects of being an entrepreneur on individual income are estimated for four groups of individuals: entrepreneurs in general and entrepreneurs with parents from each socio-economic class. Table 12 presents the estimated impacts.[11] Notice that the simple mean difference in incomes is higher than the estimated propensity score matching effect for every

[11] Only the estimates using a neighborhood radius of 0.002 are presented in Table 12, but several bandwidth values were tested and the magnitude of the effects changes slightly for the cases that pass the matching quality tests.

group of entrepreneurs but quintile 1. This suggests that, in general, the simple difference in means overestimates the size of the effects.

For the group of all entrepreneurs, entrepreneurship increases income by 17 percent. The effect is also positive when estimations are done for entrepreneurs with parents from different socioeconomic classes. The effect observed for entrepreneurs with parents who belonged to the first quintile (46 percent) and the fifth quintile (28 percent) are higher than those observed for entrepreneurs with middle-class parents (13 percent).[12]

Table 12. Estimated Impacts on Individual Income for Entrepreneurs

	Mean Income Entrepreneurs	Mean Income Non-entrepr.	Effect (Standard error)	Observations Entrepreneurs	Observations Non-entrepr.
All	Means difference (Entrepr. - Non-entrepr.)				
	5,554	4,047	1,507	320	4,153
			(266)		
	Treatment on the treated (Propensity score matching)				
	5,342	4,565	776	309	3,900
			(307)		
Parents in quintile 5	Means difference (Entrepr. - Non-entrepr.)				
	8,706	6,693	2,013	89	716
			(935)		
	Treatment on the treated (Propensity score matching)				
	8,392	6,507	1,884	73	416
			(992)		
Parents in quintiles 2-4	Means difference (Entrepr. - Non-entrepr.)				
	4,524	3,795	729	178	2,443
			(243)		
	Treatment on the treated (Propensity score matching)				
	4,468	3,938	529	168	2,137
			(269)		
Parents in quintile 1	Means difference (Entrepr. - Non-entrepr.)				
	3,720	2,759	961	53	994
			(297)		
	Treatment on the treated (Propensity score matching)				
	3,862	2,628	1,233	48	760
			(603)		

The treatment on the treated effects are estimated with the radius caliper method with a bandwith 0.002

[12] To assess the quality of the matching, a statistical test for the difference of population means is performed. It consists of comparing the average values of the covariates used to estimate the probability of being an entrepreneur (propensity score model) between treated and non-treated groups. With p-values greater than 0.05 the null cannot be rejected at 5 percent. In this case, for every variable, it cannot be rejected that the means are the same after the matching is performed.

In order to make comparisons, the same exercise is undertaken for the group of self-employed (see Table 13). In this case, self-employment increases income only by 1.5 percent. When estimations are done for the self-employed with parents from different socioeconomic classes, a positive difference—8 percent—in earnings can be observed only for those with parents who belonged to the fifth quintile. Contrary to the case of entrepreneurs, the effect observed for the self-employed of parents who belonged to the first quintile is negative (-14 percent) and negligible for those of parents who belonged to quintiles 2-4.[13] However, we cannot conclude that self-employment leads to different earnings levels, except for the case of the self-employed with parents in the first quintile, because the differences are not statistically significant.

Table 13. Estimated Impacts on Individual Income for Self-Employed

	Mean Income Self-employed	Mean Income Non-self-employed	Effect (Standard error)	Observations Self-employed	Observations Non-self-employed
	Means difference (Self-employed - Non-self-employed)				
	3,698	4,380	-682	1,479	2,994
All			(145)		
	Treatment on the treated (Propensity score matching)				
	3,723	3,666	56	1,457	2,961
			(172)		
	Means difference (Self-employed - Non-self-employed)				
	6,974	6,894	80	217	588
Parents in quintile 5			(663)		
	Treatment on the treated (Propensity score matching)				
	6,851	6,345	505	180	440
			(984)		
	Means difference (Self-employed - Non-self-employed)				
	3,561	3,971	-410	809	1,812
Parents in quintiles 2-4			(132)		
	Treatment on the treated (Propensity score matching)				
	3,583	3,595	-11	800	1,773
			(142)		
	Means difference (Self-employed - Non-self-employed)				
	2,372	3,139	-767	453	594
Parents in quintile 1			(130)		
	Treatment on the treated (Propensity score matching)				
	2,403	2,793	-389	420	485
			(175)		

The treatment on the treated effects are estimated with the radius caliper method with a bandwith 0.002

[13] As in the case for entrepreneurs, to assess the quality of the matching for self-employed, a statistical test for the difference of population means is performed. Also in this case, for every variable, it cannot be ruled out that the means are the same after the matching is performed.

It is concluded that entrepreneurs are more successful than non-entrepreneurs. The positive effect of entrepreneurial activity on income suggests that entrepreneurs have characteristics that make them succeed in entrepreneurial life that non-entrepreneurs do not necessarily have. This argument is supported by the finding that an alternative activity such as self-employment does not seem to make a difference on income. Assuming that family credit constraints restrict entrepreneurial entry and that entrepreneurs are equally distributed across socio-economic classes, we could further conclude that entrepreneurial success is affected by entry barriers. The implications of the results are twofold. On the one hand, that the relative effect on income is higher for those with parents who belonged to the lowest quintile suggests that entrepreneurs are successful once barriers to entrepreneurial activities such as lack of credit are eliminated. On the other hand that the effect on income for those entrepreneurs with parents who belonged to quintile 5 is bigger than that for those from quintiles 2-4, suggests that the success/survival rate decreases with barriers to entrepreneurial activities such as lack of credit.

5. Concluding Remarks

Based on the MSMS-2006 that collects current and retrospective information on respondents and their parents, entrepreneurial activity in Mexico is analyzed. The study is done within the scope of the intergenerational social mobility theory, i.e., socioeconomic changes experienced by individuals compared with their parents. Under this retrospective context, socioeconomic characteristics of parents and their relative position on the social strata are explored as possible determinants of adult children, i.e., survey respondents' achievements, and mainly, entrepreneurs' achievements.

According to the definition used in this work, 8.3 percent of the male individuals in the sample are entrepreneurs. In comparison with the whole sample, entrepreneurs' monthly household income is 35 percent higher. Once social classes are defined, 7.6 percent of middle-class individuals report being entrepreneurs, 5.7 percent for the lower classes and 16.9 percent for the upper classes.

In order to analyze whether entrepreneurial activity is a good vehicle for mobility, a wealth asset index is estimated for two birth cohorts—1942-1964 and 1965-1981—of respondents and their parents. Numbers from the intergenerational transition matrices for respondents and their parents' asset indices suggest that there are more options for entrepreneurs'

upward mobility, but also that for entrepreneurs with lower-class parents it is more difficult to move to the top quintile. Results of the econometric analysis suggest that, as opposed to self-employed and employed individuals, the wealth of entrepreneurs is determined to a higher degree by their parents' wealth, at least for the younger generation, i.e., those born between 1965 and 1981.

In the second part of the study, probit models are estimated to identify the determinants of the decision whether to become an entrepreneur. The independent variables include predetermined respondents' socio-demographic characteristics. Results show that the probability increases when the respondents' father was an entrepreneur. This positive effect is also obtained within economic sectors. Having an entrepreneur father is an important predictor of entrepreneurial activity in the service sector. Also, the probability of becoming an entrepreneur is higher for those whose father worked in a large firm, as opposed to a SME or microenterprise. It can be concluded that in Mexico, the decision to become an entrepreneur is strongly determined by the father's occupation, and not necessarily by the individual's initial wealth or educational attainment.

Finally, using the propensity score matching method, the mean effect of entrepreneurial activity on income is estimated. Applying the "caliper" method, for the group of all entrepreneurs, entrepreneurship is found to increase income by 17 percent. When the exercise is made by socioeconomic classes, the effects observed for entrepreneurs with parents who belonged to the extreme quintiles, i.e., the first and fifth, are significantly higher than that observed for entrepreneurs with middle-class parents.

Previous results suggest that entrepreneurs are exceptional individuals, or outliers. Also, barriers to entrepreneurial activities increase the relative effect on income.

The analysis has some limitations. The most important one is that it is not possible to identify all entrepreneurs who were engaged in entrepreneurial activities before the survey was conducted. Therefore, the results might be biased towards successful entrepreneurs. Further analysis should be done to arrive at some policy implications. For example, it is important to analyze whether credit restrictions limit options to increase the number of successful entrepreneurs. In any case, not all individuals have the potential to become entrepreneurs, just as not all individuals have the potential to become pianists or professional baseball players.

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