What Makes
a Successful
Entrepreneur?
Evidence
from Brazil

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Abstract We report the results of a new survey on entrepreneurship in Brazil. In September 2006, we interviewed 400 entrepreneurs and 550 non-entrepreneurs of the same age, gender, education and location in 7 Brazilian cities. The data are used to test three competing hypotheses on entrepreneurship: the role of economic and legal institutions (security of property rights; access to credit); the role of sociological characteristics (family background, social networks); and the role of individual features (attitude towards risk, I.Q., self-confidence) in becoming an entrepreneur. In line with our previous research in China and Russia, we find that sociological characteristics have the strongest influence on becoming an entrepreneur. In contrast, success as an entrepreneur is primarily determined by the individual's smartness and higher education in the family. Entrepreneurs are not more self-confident than non-entrepreneurs; and overconfidence is bad for business success.

Introduction

Entrepreneurship is a relatively underdeveloped research topic. A growing body of research emphasizes the role of entrepreneurs and the development of a vibrant small and medium enterprise sector in the process of economic development (World Bank, 2003). Understanding the factors that enable and hinder entrepreneurial activities is thus at the heart of this research agenda. The Schumpeterian approach to growth (Aghion and Howitt, 1997) also advances the view that entrepreneurial dynamism is the key to innovation and growth. Schumpeter (1911) discussed the role of the entrepreneur in the process of economic development at length. He saw the entrepreneur as a creative, driven individual who finds "new combinations of [factors] of production" to develop a new product, corner a new market, or design a new technology. Schumpeter speculates about the psyche of the archetypal entrepreneur: he is motivated by a "dream to find a private kingdom, or dynasty… [driven by] the impulse to fight, to prove oneself superior to others, to succeed for the sake of… success itself."

There are three distinct perspectives on entrepreneurship in the social sciences. The first is the institutional perspective emphasized by economists and political scientists. This perspective focuses on the role of economic and legal institutions in fostering or restricting entrepreneurship. These have to do with credit constraints (Banerjee and Newman, 1993), the security of property rights (Besley, 1995; Johnson, McMillan and Woodruff, 2002; McMillan and Woodruff, 2001; Roland, 2000, Che and Qian, 1998, Djankov et al., 2003; Frye and Zhuravskaya, 2000), and the burden of regulations (De Soto, 2000; Djankov et al., 2002; Mullanathan and Schnabl, 2007; Amit et al, 2007).

The second perspective focuses on the sociological variables that are shaping entrepreneurship. Sociologists have long emphasized the role of values (Cochran, 1971) and social networks (Young, 1971) in promoting or discouraging entrepreneurial activities. Social networks may work through a variety of channels, such as family, relatives, friends, or social groups in general. Economists have recently studied the role of culture in promoting entrepreneurship (Iyer and Schoar, 2007)

The third perspective on entrepreneurship emphasizes individual characteristics of entrepreneurs. For example, psychologists have hypothesized about the psychological traits associated with entrepreneurs – such as a personal need for achievement (McClellan, 1961), belief in the effect of personal effort on outcomes (McGhee and Crandall, 1968; Lao, 1970), attitudes towards risk, and individual self-confidence (Liles, 1974). Personal characteristics of entrepreneurs is also a major theme of Lazear (2002), who used the survey data of Stanford University MBA graduates and found that those with a higher number of jobs and shorter job tenures before graduate school were most likely to become entrepreneurs afterwards. He concludes that individuals who become entrepreneurs have a special ability to acquire general skills, which they then apply to their own businesses.

The current project studies entrepreneurship from these three perspectives using a new data set in Brazil. Our broader research agenda is to conduct surveys in Brazil, Russia,

India and China. There are two reasons why we chose to study entrepreneurship in these countries. First, they are the largest emerging economies in the world. Second, because these are federal countries, we are able to exploit substantial regional variation in institutions and culture within those countries.

In this paper we report the findings from a survey conducted in Brazil in September 2006. The most striking result, which we also found in Russia and China (Djankov et al. 2005, 2006a, 2006b), is that entrepreneurs have many more entrepreneurs among their relatives (parents, aunts, uncles, siblings, cousins) and also among their childhood friends. There is a strong effect of the social environment on the choice to become an entrepreneur. We are able to provide some causal evidence of this, suing the size of the father's family as an instrument. However, social network effects do not play a significant role in determining success once the business starts operations. Instead, we find that smartness and the human capital of the father are the most important explanatory variables. Interestingly, we find no evidence that entrepreneurs are more self-confident than non entrepreneurs. Finally, we find that overconfidence is bad for success in business.

The rest of the paper is organized as follows. Section 2 describes the data. Section 3 provides analysis on who becomes an entrepreneur. Section 4 analyzes the factors for being a successful entrepreneur. Section 5 concludes.

2. Data

We surveyed a random sample of about 400 entrepreneurs – 100 in Sao Paulo and 50 in Curitiba and Londrina in the Sul region; Salvador and Feira de Santana in the Nordeste region; and Brazilia and Goiania in the Centro Oeste region. To capture regional heterogeneity in Brazil, the regions were selected to maximize the cross-regions variation in the business climate. We defined entrepreneur as an owner-manager of a business with five or more employees because we wanted to make sure that individuals whom we call entrepreneurs are not simply self-employed.

After completing the surveys of entrepreneurs, we conducted a survey of about 550 non-entrepreneurs in the same cities using a near-identical survey. We defined non-entrepreneurs as individuals who are not working for their own business. 80% of respondents in the non-entrepreneur sample were chosen randomly conditional on matching the age, gender and educational attainment of entrepreneurs from the respective entrepreneur surveys, and 20% were chosen at random. In order to weigh correctly the data, we used the Brazilian census to determine the proportion of entrepreneurs in the cities we surveyed. In all the empirical analysis, the observations are weighted with weights equal to the inverse of the probability for a particular respondent (entrepreneur or non-entrepreneur) to get into our sample. The weights reflect differences in entrepreneurship, age, gender, and education across cities in the population, as well as city size.

Personal characteristics
We first provide characteristics from our entrepreneurs' sample and compare them to non entrepreneurs and failed entrepreneurs (people who once ran a business but closed it

down). All the means in Table 1 are conditional on age, gender and education. Brazilian entrepreneurs tend to come more from rural areas (24% against 9% for non entrepreneurs) and are less likely to have been born in a city. They have lived in more localities than non entrepreneurs (Table 1a). However, failed entrepreneurs have lived in even more localities than entrepreneurs. A similar pattern can be found for the number of professional activities. They are more likely to be protestant (15% against 9 % for non entrepreneurs) which is intriguing in an overwhelmingly catholic country. They are more likely to be married and less likely to be overweight. Entrepreneurs are roughly one cm taller than non entrepreneurs in our sample. Failed entrepreneurs are in less good health than entrepreneurs or non entrepreneurs.

In terms of education, Brazilian entrepreneurs do not report that they were more often among the top 10 % in school than non-entrepreneurs. Those who went to university were even less likely to report that they were among the top 10 %. However, failed entrepreneurs were roughly 50 percent less likely to have been among the top 10% compared to entrepreneurs.

Interestingly, Brazilian entrepreneurs do not exhibit more risk-loving attitudes than non entrepreneurs. They are even less likely than non entrepreneurs to take risky gambles on their income. However, entrepreneurs are somewhat more ready to take a risky gamble compared to failed entrepreneurs. Entrepreneurs appear also more patient than non entrepreneurs. When asked what minimum return they would require one month later after having invested $100 today, we found that the annual computed average discount rate was lower among entrepreneurs than among non entrepreneurs (18% against 24%). We asked similarly a question about hyperbolic discount rate (what return between $100 a year from now and one month later) and found that the percentage of respondents with hyperbolic discount rate was somewhat lower among non entrepreneurs. More than half appeared to have hyperbolic discounting!

We performed a test of cognitive ability based on short term recall and found that entrepreneurs did significantly better than non entrepreneurs. We used the answers to those questions to measure overconfidence or under-confidence. We asked respondents to rate themselves on the cognitive score. Respondents who stated that their answers were above average but were in reality below average were rated as overconfident whereas those who rated themselves as below average but were in reality above average were rates as under-confident. Looking at the conditional means we did not find here any significant differences between entrepreneurs and non entrepreneurs.

We next asked in our survey whether people would decide to retire if they received a windfall income equal to 100 times GDP per capita and 500 times GDP per capita (Table 1b). Entrepreneurs were significantly less ready to retire if they received a windfall income of 100 times GDP per capita (11% compared to 35% for non entrepreneurs). However, for 500 times GDP per capita there was no significant difference between the remaining entrepreneurs and non entrepreneurs (we tried even-larger differences and found the same result). Among the reasons for not willing to retire, no significant difference was observed between entrepreneurs and non entrepreneurs. The main reason

for not wanting to retire is the love of one's job. This motive is twice as high among entrepreneurs as among failed entrepreneurs whose main motive is greed.

Various questions were asked about social values to determine whether there are sharp differences between the values held by entrepreneurs compared to non entrepreneurs. The answer is no. Brazilian entrepreneurs put a significant higher value on the education of children than non entrepreneurs. Entrepreneurs value the importance of work significantly less than entrepreneurs. They value friendship significantly more. Such differences could be due to differences in values but they might also reflect a "cognitive dissonance" response to failure.

Entrepreneurs are significantly less accepting of avoiding payment for public transportation but are more accepting the idea of paying bribes to avoid regulations. However, the numbers are small (9% compared to 0%). In general, the responses show a low tolerance for corruption.

Responses to questions about trust revealed that entrepreneurs show more trust than non entrepreneurs and failed entrepreneurs (Table 1c). This is true for generalized trust, trust in businessmen, subordinates and other townsmen but there is no significant difference for trust in the different levels of government.

Sociological characteristics
The parents of entrepreneurs are not more highly educated than non entrepreneurs but the mothers of failed entrepreneurs were less highly educated than the mothers of entrepreneurs (Table 1d). The parents of entrepreneurs were however more often managers working with subordinates and less likely to be a worker. The difference is quite strong. In our entrepreneur sample 54% of fathers and 27% of mothers were directors or senior managers compared respectively to 18% and 3% for non entrepreneurs. Entrepreneurs come more often from wealthier families than non-entrepreneurs.

A striking characteristic which we also found in Russia and China is that entrepreneurs are much more likely to have friends and family entrepreneurs. In our Brazil sample, 81% of entrepreneurs have relatives who are businessmen, compared to 55 % among non entrepreneurs. Entrepreneurs report also more often to have relatives who are self-employed or who have a business with 5 or more employees. The average number of entrepreneurs in entrepreneur families is also significantly larger than among non entrepreneur families. We also asked people in the survey to remember their 5 best friends from school and then asked who became an entrepreneur. The difference is also striking here. We found that 70% of entrepreneurs had school friends who became entrepreneurs compared to 48% for non entrepreneurs. The same question about university friends yielded a positive answer with 78% of entrepreneurs compared to 33 % for non entrepreneurs. However, few report that the experience of their school or university friends affected their career choice.

Legal and Economic Institutions
Finally, we asked questions bout the business climate and found that entrepreneurs are in general more optimistic than non entrepreneurs except for the clarity of tax rules (not the level of taxes!). However, responses to questions about the business climate were not very optimistic in general (Table 1e). Corruption and crime are viewed as serious problems. Entrepreneurs complained more about theft of property. They have a less positive view of central government and find more that that it creates obstacles for business. Trust in courts is much lower for entrepreneurs than for non entrepreneurs when it comes to defending oneself either against other businesses or against government (roughly less than 50 percent for entrepreneurs as compared to roughly two thirds for non entrepreneurs).

Summary
To summarize, there are some important differences between entrepreneurs and non entrepreneurs in Brazil. It seems that the most important difference relates to the social origins and the social environment of entrepreneurs. Parents of entrepreneurs have had positions of leadership in their job. There are significantly more entrepreneurs in the families of entrepreneurs and also among school and university friends.

These differences were equally striking in the surveys in Russia and China. There are, however, also some differences. Risk-taking attitudes in Russia and especially in China were significantly higher among entrepreneurs compared to non entrepreneurs. Greed (not willing to retire because of money aspirations) seemed also to be driving entrepreneurs in Russia and China but not Brazil. The value of work also appeared to distinguish entrepreneurs more from non entrepreneurs in Russia and China. Brazilian entrepreneurs scored quite higher on cognitive scores which was not the case in China. Brazilian entrepreneurs exhibit more trust than non entrepreneurs, a characteristic which was not present in the other countries. However, the general level of trust in Brazil is not that high. Pessimism on institutions, especially relative to courts appears in Brazil to be higher than in China and comparable to Russia.

3. Who Becomes an Entrepreneur?
In this section, we report results of probit and multi-variate regression analysis on who becomes an entrepreneur (Table 2). All analyses control for age, gender and education (including a quadratic effect) and include city fixed effects. The first column is a probit regression. The main results that come out confirm the descriptive analysis in the previous section. The main effects are related to the social environment. Having a father as a boss or a director has a positive effect on becoming an entrepreneur and so is the fact of having entrepreneurs among relatives or friends. A lower education of the father has a positive effect. Among the personal characteristics, the cognitive score and height have a positive effect and so does greed. Risk-taking is not significant and achievement in education (above the 10% in the last place of study) is not either. We also used as regressors some birth-order variables but they are not significant.

Column 2 presents OLS regression with the number of years as entrepreneur used as a dependent variable. The results are roughly the same except that fewer variables are

significant. The father's position is again important and so are entrepreneurs among childhood friends and height. Greed is not significant and neither are entrepreneurs in the family. However, being the only child has a positive effect.

Column 3 studies failed entrepreneurs, i.e. people who were once entrepreneurs but stopped their business. The results look similar to those we found for entrepreneurs but with a few differences. The most striking difference is a negative coefficient on risk-taking, suggesting that failed entrepreneurs did not like risk. Greed also loses significance. These two results are exactly the same in China. This suggests that social networks certainly play a big role in the decision to become an entrepreneur but absence of risk-taking and greed are reasons to quit. Another important difference which we did not find in the case of China is that entrepreneurs have a higher cognitive score than non entrepreneurs whereas failed entrepreneurs do not. Failed entrepreneurs are thus less smart, less greedy and less risk-taking.

Column 4 looks at non-entrepreneurs who thought seriously about becoming an entrepreneur but did not. The differences with entrepreneurs are again quite similar. The social network variables are all significant but cognitive score and greed are not significant and risk-taking has a negative coefficient. This mirrors our China results where we found the same differences except for the cognitive scores. Interestingly, in both countries, the characteristics of both failed entrepreneurs and of those who thought seriously about being an entrepreneur differ in the same way compared to entrepreneurs.

Table 3 looks at the differences between entrepreneurs, failed entrepreneurs and non entrepreneurs using a multinomial logit framework. Again, having family and relatives run a business is higher among entrepreneurs and failed entrepreneurs and lower among non entrepreneurs. Entrepreneurs tend to be greedier, which is not the case for failed entrepreneurs and non entrepreneurs. Failed entrepreneurs are less risk-taking. We also introduce the distinction between entrepreneurs by opportunity and entrepreneurs by necessity. The former became business owners because they seized a business opportunity. They are the true entrepreneurs in the Schumpeterian sense. The latter became business owners primarily because they lost their job or because of economic decline in their previous sector. What are the main differences we found? Entrepreneurs by opportunity do better on the cognitive score and have stronger family and social links to entrepreneurs. Fathers were also more often in a position of leadership. Taking into account the results of the Chinese and Russian survey however, we do not find a consistent pattern across countries when comparing these two groups.

So far we have not provided a causal link between the social environment and the choice to become an entrepreneur. It could very well be that an unobserved variable affects both the choice of the individual and his parents and relatives to become an entrepreneur. In Table 4, we provide two stage least squares estimations of the entrepreneurship choice where we instrument entrepreneurship by the size of the father's family. Indeed, size of the family of the father might affect his or his sibling's choice to become an entrepreneur. A large family size may force children to fight more to survive and make them more likely to become entrepreneurs. According to psychologists and sociologists, family size

and birth order are said to influence one's character and values (see e.g. Sulloway, 1997). It is also potentially a valid instrument as family size of the father is unlikely to have an affect on somebody's choice to become an entrepreneur.

The regressions we report use as "relative-entrepreneur" variable either a dummy variable for whether the father and his siblings are (or were) entrepreneur or a dummy variable for whether father or siblings are (or were) entrepreneur or self-employed. The instrument is the log of the size of the father's family. To check for robustness, in columns 3 and 4 we exclude families with over 18 kids and in columns 5 and 6, we exclude families with over 14 lids and entrepreneurs who required initial financing (in order to eliminate any potential bequest motive which might invalidate the research design).

In Table 5, we did the same exercise but with an instrumental variable probit maximum likelihood estimation. We see that the instrumented variable is significant in most specifications. The "Childhood friends entrepreneurs" variable remains strong while many of the other variables are less robust. Risk-taking is negative in some specifications but positive or not significant in others. A similar remark holds for the father's position as boss or director. We conclude that there is a clear effect of family on the choice of becoming an entrepreneur.

4. What makes a successful entrepreneur?

The previous section looked at what affects the choice of becoming an entrepreneur. Now we raise a different question: what determines entrepreneurial success? The answer is provided in Table 6. The first two columns are regressions with sales growth. We asked entrepreneurs whether the sales growth in the previous year was negative, between 0 and 5%, between 5 and 10% and so on. Here the findings are striking. The family and relative entrepreneur variables lose significance. The two main variables that play a positive role are school achievement (above 10% in the last place of study) and whether the father had a higher education or not. Note that inheritance of business is significant but has a negative coefficient.

The interpretation of that coefficient is however less clear. It might reflect a higher initial size of business (which light thus grow less) but also less competence of the entrepreneur. Columns 3 and 4 measure success by using employment growth as an alternative dependent variable. Here the results are somewhat different. Businessmen among childhood friends and height are the two main positive variables. Since we have data on the number of employees when the business started, we used this as a regressor and the coefficient is negative.

One might ask whether successful entrepreneurs have the special character trait of being overconfident relative to the rest of the population. We measured overconfidence in two ways. The first is the traditional one being used by psychologists. Respondents are asked to give a low and a high estimate of the length of the Nile river. Overconfident people tend to give very narrow intervals for the estimate. We also measured overconfidence

using our cognitive score results. We asked people to estimate whether their score would be below or above average. We thus ranked people in four categories depending on their score and their estimate of their score: high normal (above average and correctly guessing), low normal (below average and correctly guessing), high modest (above average but rating oneself below average) and low arrogant (below average but rating oneself above average). Our high modest types are underconfident while our low arrogant types are overconfident.

The results for our dependent variables are shown in Table 7.[1] The bold coefficient associated to "low arrogant" measures the effect of overconfidence (low normal is the omitted variable) whereas the bold coefficient associated to "high modest" measures the effect of under-confidence (high normal is the omitted variable). We also include the discount rate as a regressor. The first two columns show the probit results for becoming an entrepreneur. We find no significant effect for either overconfidence or under-confidence. The only effect we are picking up is entrepreneurs having a higher cognitive score and being aware of it. The next two columns show probit regressions for failed entrepreneurs. We do not find a significant effect for overconfidence but find a negative coefficient associated to under-confidence which means that under-confident people are less likely to be found among failed entrepreneurs. The next two columns give OLS results for years as an entrepreneur. Here we find a negative and significant coefficient associated to overconfidence. This suggests that overconfidence is not good to stay in business. The last two columns give the clearest results. Here the dependent variable is sales growth which measures success as an entrepreneur. Here we find that both overconfidence and under-confidence have a negative effect on sales growth. We also find that a higher discount rate, i.e. a lower patience is negatively associated with sales growth. We conclude that overconfidence or under-confidence both play a negative role when it comes to determining success as an entrepreneur.

5. Conclusions

We report the results of a new survey on entrepreneurship in Brazil. The data are used to test three competing hypotheses on entrepreneurship: the role of economic and legal institutions (security of property rights; access to credit); the role of sociological characteristics (family background, social networks); and the role of individual features (attitude towards risk, I.Q., self-confidence) in becoming an entrepreneur. In line with our previous research in China and Russia, we find that sociological characteristics have the strongest influence on becoming an entrepreneur. In contrast, success as an entrepreneur is primarily determined by the individual's smartness and higher education in the family. Entrepreneurs are not more self-confident than non-entrepreneurs; and overconfidence is bad for business success.

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[1] We used all the controls and variables showed in other tables but display here only the results on over- and under-confidence.

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Table 1a. Personal characteristics of Brazilian entrepreneurs relative to non entrepreneurs and failed entrepreneurs

	Entrepre neurs	Non Entrepre neurs	p-value for test of difference in means		Failed entrepre neurs	p-value for test of difference in means	
Born in rural area, %	24	09	0.00	***	30	0.53	
Born in city or town, %	76	91	0.00	***	70	0.53	
Number of localities lived in	2.65	2.30	0.04	**	3.67	0.06	*
Catholic, %	67	70	0.65		48	0.03	**
Protestant, %	15	09	0.02	**	28	0.18	
Married, %	77	61	0.00	***	46	0.00	***
Overweight, %	22	32	0.03	**	18	0.71	
Was in top 10% in school, %	36	39	0.58		26	0.31	
Was in top 10% in high school, %	34	30	0.51		17	0.02	**
Was in top 10% in university, %	33	43	0.09	*	18	0.05	*
Speaks foreign languages, %	29	19	0.05	**	18	0.27	
Would participate in $10 or $20 gamble, %	46	51	0.41		38	0.36	
Would participate in $20 gamble, %	19	22	0.58		08	0.03	**
Would participate in 1 or 2 percent of monthly income gamble, %	43	49	0.44		38	0.62	
Would participate in 2 percent of monthly income gamble, %	18	29	0.05	**	15	0.52	
Discount rate, %	18	24	0.02	**	16	0.76	
Hyperbolic discounting, %	62	59	0.70		44	0.09	*
Overconfidence (by I.Q. test)	09	14	0.13		02	0.19	
Underconfidence (by I.Q. test)	29	24	0.36		20	0.27	
I.Q. score	2.86	2.44	0.04	**	2.51	0.14	

Notes: *, **, *** Significance at the 10 %, 5%, 1% level.

Table 1b. Values of Brazilian entrepreneurs relative to non entrepreneurs and failed entrepreneurs

	Entrepreneurs	Non Entrepreneurs	p-value for test of difference in means		Failed entrepreneurs	p-value for test of difference in means	
Retire if won 100 times GDP per capita, %	11	35	0.00	***	17	0.24	
Retire if won 500 times GDP per capita, %	10	14	0.33		25	0.17	
Not retire because likes job, %	61	58	0.68		30	0.00	***
Not retire because wants more money, %	14	19	0.35		37	0.03	**
Friends are very important, %	63	68	0.40		79	0.00	***
Relations with parents are very important, %	83	77	0.07	*	91	0.09	*
Education of children is very important, %	97	90	0.03	**	98	0.41	
Financial well-being is very important, %	73	74	0.84		84	0.12	
Personal independence is very important, %	70	70	0.99		65	0.61	
Power is very important, %	18	14	0.29		13	0.52	
Religion is very important, %	54	45	0.08	*	46	0.42	
Work is very important, %	82	77	0.22		63	0.04	**
Intellectual achievement is very important, %	54	53	0.96		57	0.76	
Can justify to some degree avoiding a fare on transport, %	33	45	0.03	**	39	0.44	
Can justify to some degree paying bribe to avoid regulations, %	09	-01	0.00	***	-02	0.03	**
Can justify to some degree paying bribe to avoid competition, %	03	02	0.72		02	0.55	
Can justify to some degree accepting a bribe, %	02	01	0.62		02	0.90	
Can justify to some degree buying stolen, %	01	06	0.31		01	0.03	**
Respect of others is very important for job satisfaction, %	55	70	0.03	**	48	0.34	

Table 1c. Trust of Brazilian entrepreneurs relative to
non entrepreneurs and failed entrepreneurs

	Entrepreneurs	Non Entrepreneurs	p-value for test of difference in means		Failed entrepreneurs	p-value for test of difference in means	
Most people can be trusted, %	10	05	0.02	**	06	0.13	
a lot of trust in family members, %	74	75	0.63		60	0.13	
A lot of trust in friends, %	38	40	0.68		27	0.16	
A lot or some trust in colleagues, %	83	76	0.18		79	0.59	
A lot or some trust in businessmen, %	77	59	0.01	***	67	0.31	
A lot or some trust in subordinates, %	93	80	0.00	***	70	0.01	***
A lot or some trust in other people in town, %	69	53	0.04	**	62	0.48	
A lot or some trust in compatriots, %	69	60	0.26		61	0.45	
A lot or some trust in foreigners, %	50	43	0.29		53	0.69	
A lot or some trust in local government, %	38	38	0.99		39	0.99	
A lot or some trust in regional government, %	39	37	0.78		37	0.85	
A lot or some trust in central government, %	32	32	0.97		35	0.81	

Table 1d. Social characteristics of Brazilian entrepreneurs relative to non entrepreneurs and failed entrepreneurs

	Entrepreneurs	Non Entrepreneurs	p-value for test of difference in means		Failed entrepreneurs	p-value for test of difference in means	
Father with higher or uncompleted higher education, %	13	17	0.31		19	0.43	
Father was director of organization or senior manager, %	54	18	0.00	***	49	0.67	
Father was a worker, %	32	52	0.00	***	37	0.58	
Father had 10 or more subordinates, %	26	12	0.00	***	19	0.34	
Mother with higher or uncompleted higher education, %	09	10	0.72		00	0.00	***
Mother was director of organization or senior manager, %	27	03	0.00	***	24	0.77	
Mother was a worker, %	44	57	0.07	*	50	0.58	
Mother had 10 or more subordinates, %	09	04	0.22		20	0.17	
Family wealth was above average at 16, %	17	11	0.09	*	24	0.56	
Family wealth was below average at 16, %	34	31	0.55		23	0.06	*
Has relatives who are self-employed, %	55	34	0.00	***	53	0.85	
Number of relatives who are self-employed	0.97	0.59	0.00	***	1.03	0.77	
Has relatives who are businessmen, %	81	55	0.00	***	77	0.52	
Number of relatives who are businessmen	2.05	0.99	0.00	***	1.63	0.14	
Has relatives who have a business with 5 or more employees, %	77	60	0.10	*	76	0.95	
Number of relatives who have a business with 5 or more employees	1.28	0.46	0.00	***	0.91	0.07	*
Has school friends who are entrepreneurs, %	70	48	0.02	**	67	0.77	
Number of school friends who are entrepreneurs,	1.44	0.64	0.00	***	1.27	0.52	
Experience of school friends influenced career choice, %	04	03	0.80		09	0.09	*
Has university friends who are entrepreneurs, %	78	33	0.00	***	63	0.17	
Number of university friends who are entrepreneurs,	1.30	0.43	0.00	***	0.63	0.00	***
Experience of university friends influenced career choice, %	07	08	0.95		12	0.32	

Table 1e. Attitudes towards Economic and Legal Institutions

	Entrepre neurs	Non Entrepre neurs	p-value for test of difference in means		Failed entrepren eurs	p-value for test of difference in means	
Favorable attitude of population towards entrepreneurs, %	63	55	0.15		55	0.31	
A very serious problem for small businesses:							
- taxes , %	74	71	0.61		70	0.58	
- tax rules, %	70	61	0.09	*	71	0.89	
- competition, %	21	34	0.01	**	35	0.19	
- poor courts, %	66	69	0.73		73	0.58	
- difficulties of raising finance , %	49	64	0.01	***	64	0.20	
- administrative regulations , %	46	66	0.01	***	58	0.43	
- corruption , %	80	84	0.44		79	0.82	
- crime , %	84	85	0.85		78	0.17	
- nontransparent "rules-of-game", %	60	71	0.06	*	77	0.11	
Courts function fairly well, %	46	38	0.14		51	0.56	
Banks function fairly well, %	74	71	0.58		79	0.45	
Police functions fairly well, %	54	47	0.30		68	0.08	*
Government functions fairly well, %	50	61	0.04	**	53	0.71	
Government does not hamper business, %	45	61	0.01	***	61	0.08	*
Entrepreneurs often pay bribes to avoid complying with regulations, %	48	63	0.01	**	60	0.34	
Entrepreneurs often pay bribes to change rules of running business, %	44	60	0.01	**	62	0.10	
Entrepreneurs are often subject to theft of property, %	66	55	0.03	**	43	0.05	**
Entrepreneurs are often subject to rackets, %	41	59	0.00	***	41	0.99	
Entrepreneurs can protect themselves in courts against business relations, %	47	71	0.00	***	70	0.00	***
Entrepreneurs can protect themselves in courts against government, %	42	67	0.00	***	56	0.11	

Notes: *, **, *** Significance at the 10 %, 5%, 1% level.

Table 2. Who becomes an entrepreneur

dependent variable	Entrepreneur	Years as entrepreneur, OLS	Was an entrepreneur	Thought about being an entrepreneur
Father had higher education	-0.00365	-0.07741	0.07916	-0.19272
	[0.01]**	[0.61]	[0.39]	[0.01]**
Father was a boss or director	0.00782	0.65475	0.05852	-0.16687
	[0.00]***	[0.00]***	[0.48]	[0.08]*
Mother was a boss or director	0.00558	0.18247	-0.02959	0.04036
	[0.12]	[0.60]	[0.83]	[0.81]
Members of family running a business	0.00501	0.13377	0.18318	0.14553
	[0.00]***	[0.36]	[0.02]**	[0.05]**
Childhood friends running a business	0.0115	0.65302	0.17379	0.17751
	[0.00]***	[0.00]***	[0.01]**	[0.01]**
Cognitive score	0.00109	-0.02284	-0.03849	-0.0286
	[0.01]***	[0.68]	[0.30]	[0.34]
Height (cm)	0.00023	0.01412	-0.00245	-0.01374
	[0.01]***	[0.07]*	[0.70]	[0.06]*
Risk-taking (relative income gamble)	-0.00033	-0.04245	-0.1102	-0.17219
	[0.81]	[0.76]	[0.05]**	[0.09]*
Above 10% in last place of study	0.00036	0.06752	0.12828	0.10589
	[0.76]	[0.65]	[0.05]**	[0.24]
Greed	0.0021	0.1499	-0.02765	0.04367
	[0.04]**	[0.14]	[0.70]	[0.69]
first child	-0.00009	0.29943	0.08069	-0.05846
	[0.95]	[0.11]	[0.17]	[0.72]
last child	-0.00163	0.30018	0.13474	0.25663
	[0.25]	[0.16]	[0.29]	[0.08]*
only child	-0.00292	0.63648	0.41884	-0.03947
	[0.19]	[0.05]*	[0.02]**	[0.88]
log number of siblings	-0.00184	0.04119	0.0475	0.00492
	[0.19]	[0.73]	[0.56]	[0.97]
Observations	671	742	436	276
R-squared		0.08		

Note: Robust p values in brackets. All regressions control for age, gender, education and education squared and have city fixed effects.

Table 3 Multinomial logit analysis of entrepreneurship

Dependent variable	Entrepreneur	Failed Entrepreneur	Non Entrepreneur	Entrepreneur By opportunity	Entrepreneur By necessity	Non Entrepreneur
Father had higher education	-0.00268	0.07217	-0.06949	-0.00313	-0.00013	0.00327
	[0.20]	[0.44]	[0.46]	[0.03]**	[0.61]	[0.03]**
Father was a boss or director	0.00477	0.05929	-0.06405	0.00278	0.00041	-0.00319
	[0.00]***	[0.47]	[0.44]	[0.01]***	[0.10]	[0.01]***
Mother was a boss or director	-0.00114	-0.02873	0.02987	0.00017	0.00055	-0.00073
	[0.51]	[0.84]	[0.83]	[0.90]	[0.12]	[0.66]
Members of family running a business	0.00641	0.19565	-0.20206	0.00465	0.00066	-0.00531
	[0.00]***	[0.03]**	[0.02]**	[0.04]**	[0.18]	[0.03]**
Childhood friends running a business	0.0075	0.16747	-0.17496	0.00483	0.00061	-0.00544
	[0.00]***	[0.02]**	[0.01]**	[0.00]***	[0.10]*	[0.00]***
Cognitive score	0.00081	-0.03792	0.0371	0.00068	0.00011	-0.00079
	[0.15]	[0.33]	[0.34]	[0.06]*	[0.27]	[0.05]*
Height (cm)	0.00017	-0.00265	0.00249	0.00016	0.00005	-0.0002
	[0.07]*	[0.69]	[0.71]	[0.11]	[0.06]*	[0.05]*
Risk-taking (relative income gamble)	-0.00019	-0.11532	0.11551	-0.00097	-0.00027	0.00123
	[0.88]	[0.05]**	[0.05]**	[0.46]	[0.17]	[0.33]
Above 10% in last place of study	0.00091	0.12984	-0.13076	0.00083	0.00023	-0.00107
	[0.53]	[0.03]**	[0.03]**	[0.34]	[0.36]	[0.30]
Greed	0.00518	-0.03115	0.02597	0.00104	0.00013	-0.00118
	[0.00]***	[0.67]	[0.73]	[0.22]	[0.49]	[0.16]
first child	0.00169	0.0752	-0.07689	0.0012	-0.00027	-0.00093
	[0.25]	[0.18]	[0.18]	[0.22]	[0.37]	[0.41]
last child	-0.00052	0.13114	-0.13062	-0.00024	-0.00027	0.00051
	[0.78]	[0.28]	[0.29]	[0.83]	[0.46]	[0.70]
only child	0.00042	0.36853	-0.36896	-0.00396	-0.00067	0.00463
	[0.93]	[0.02]**	[0.02]**	[0.10]*	[0.37]	[0.08]*
log number of siblings	-0.00083	0.03881	-0.03798	-0.00007	-0.00015	0.00022
	[0.62]	[0.64]	[0.64]	[0.95]	[0.60]	[0.87]
Observations	788	788	788	589	589	589

Note: Robust p values in brackets. All regressions control for age, gender, education and education squared and have city fixed effects.

Table 4 Two stage least square estimation of entrepreneurship

Father or siblings entrepreneur	0.0948		0.1216		0.0376	
	[1.57]		[2.16]**		[1.84]*	
Father or siblings entrepreneur or Self-employed		0.1635		0.1765		0.0459
		[1.66]*		[1.70]*		[1.86]*
Father had higher education	-0.0091	-0.001	-0.0073	0.0048	-0.0035	-0.0011
	[0.71]	[0.05]	[0.51]	[0.23]	[0.48]	[0.13]
Father was a boss or director	-0.0122	-0.0282	-0.0284	-0.035	-0.0002	0.0013
	[0.45]	[0.67]	[0.97]	[0.73]	[0.02]	[0.09]
Mother was a boss or director	-0.0074	-0.0227	-0.0121	-0.0244	0.0041	0.0026
	[0.37]	[0.67]	[0.53]	[0.65]	[0.37]	[0.20]
Childhood friends running a business	0.0379	0.0268	0.037	0.0263	0.0146	0.0122
	[3.30]***	[1.64]	[2.85]***	[1.43]	[2.74]***	[1.89]*
Cognitive score	0.0051	0.0048	0.0055	0.0055	0.0015	0.0015
	[1.32]	[1.28]	[1.30]	[1.38]	[0.86]	[0.99]
Height (cm)	0.0006	0.0009	0.0006	0.0002	0.0002	0.0002
	[1.27]	[1.22]	[0.77]	[0.20]	[0.67]	[0.44]
Risk-taking (relative income gamble)	-0.019	-0.0261	-0.0243	-0.0259	-0.0064	-0.0055
	[1.74]*	[1.41]	[2.11]**	[1.38]	[1.32]	[1.05]
Above 10% in last place of study	-0.0049	-0.0014	-0.0071	-0.0025	-0.0024	-0.0014
	[0.56]	[0.11]	[0.68]	[0.20]	[0.47]	[0.26]
Greed	0.0081	0.0055	0.0087	0.0068	0.0042	0.0042
	[0.79]	[0.56]	[0.69]	[0.66]	[0.80]	[0.95]
first child	-0.0117	-0.0191	-0.0125	-0.0175	-0.0016	-0.0016
	[0.79]	[1.05]	[0.83]	[1.07]	[0.27]	[0.30]
last child	-0.0124	-0.019	-0.017	-0.0216	-0.0041	-0.0042
	[0.68]	[0.79]	[0.88]	[0.93]	[0.52]	[0.57]
Only child	0.0213	-0.0141	0.0269	-0.0305	0.015	-0.0012
	[1.39]	[0.33]	[1.58]	[0.57]	[2.03]**	[0.08]
Observations	611	611	605	605	382	382

Table 5 Instrumental variable probit estimation (maximum likelihood) of entrepreneurship

Father or siblings entrepreneur	1.845		2.074		1.797	
	[0.641]***		[0.415]***		[0.802]**	
Father or siblings entrepreneur or self-employed		2.17		2.22		1.949
		[0.347]***		[0.297]***		[0.670]***
Father had higher education	-0.063	-0.03	-0.106	-0.123	-0.089	0.184
	[0.059]	[0.062]	[0.067]	[0.075]	[0.073]	[0.319]
Father was a boss or director	-0.354	-0.427	0.516	0.393	0.5	0.377
	[0.513]	[0.053]***	[0.075]***	[0.405]	[0.783]	[0.062]***
Mother was a boss or director	-0.108	0.258	0.283	0.265	0.056	0.286
	[0.363]	[0.333]	[0.327]	[0.083]***	[0.087]***	[0.092]***
Childhood friends running a business	-0.003	0.067	-0.003	0.059	-0.023	0.329
	[0.075]	[0.298]	[0.269]**	[0.304]	[0.354]	[0.427]
Cognitive score	0.124	0.089	-0.026	0.096	0.098	0.089
	[0.020]	[0.053]*	[0.020]	[0.019]	[0.024]	[0.024]
Height (cm)	0	0.013	0.003	0	0.004	0.002
	[0.004]	[0.005]	[0.005]	[0.011]	[0.005]	[0.016]
Risk-taking (relative income gamble)	0.185	-0.311	-0.361	-0.292	-0.194	0.123
	[0.053]***	[0.143]**	[0.137]***	[0.131]**	[0.304]	[0.052]**
Above 10% in last place of study	0.031	0.068	-0.01	-0.033	0.11	-0.048
	[0.063]	[0.157]	[0.156]	[0.062]	[0.204]	[0.063]
Greed	0.057	0.049	0.116	0.082	0.037	0.088
	[0.186]	[0.149]	[0.061]	[0.143]	[0.217]	[0.187]
first child	-0.217	-0.207	0.213	0.159	-0.215	0.174
	[0.095]**	[0.099]*	[0.345]	[0.106]	[0.112]	[0.120]
last child	0.169	0.17	0.181	0.139	0.143	-0.239
	[0.144]	[0.146]	[0.148]	[0.150]	[0.275]	[0.156]
Only child	-0.001	-0.097	0.166	-0.499	-0.736	-0.501
	[0.107]	[0.220]	[0.134]	[0.247]	[0.254]	[0.254]
chi2-test: (instrument)	19.43	3.02	15.79	3.15	15.15	4.64
p-value	0	0.08	0	0.08	0	.03
Observations	611	611	605	605	382	382

Table 6 Characteristics of successful entrepreneurs

Dependent variable	Sales growth	Sales growth	Employment growth	Employment growth
Father had higher education	0.25552	0.31329	-0.09831	-0.0531
	[0.07]*	[0.06]*	[0.47]	[0.71]
Father was a boss or director	-0.07674	-0.11056	0.18436	0.17107
	[0.63]	[0.41]	[0.16]	[0.20]
Mother was a boss or director	-0.08822	-0.00887	0.00682	0.00506
	[0.66]	[0.96]	[0.97]	[0.98]
Members of family running a business	-0.11103	-0.10689	0.07799	0.04392
	[0.68]	[0.70]	[0.63]	[0.79]
Childhood friends running a business	0.20469	0.20246	0.28772	0.26563
	[0.20]	[0.22]	[0.01]**	[0.01]**
Cognitive score	0.04286	0.05562	-0.00829	-0.00218
	[0.45]	[0.33]	[0.81]	[0.94]
Height (cm)	0.00405	0.00537	0.01229	0.01109
	[0.43]	[0.38]	[0.01]***	[0.01]**
Risk-taking (relative income gamble)	-0.12937	-0.12704	-0.0585	-0.0466
	[0.21]	[0.27]	[0.77]	[0.80]
Above 10% in last place of study	0.45975	0.3846	0.10012	0.06657
	[0.00]***	[0.01]**	[0.40]	[0.58]
Greed	0.09043	0.12644	0.11007	0.12934
	[0.54]	[0.34]	[0.15]	[0.10]*
first child		0.4748		0.39762
		[0.08]*		[0.12]
last child		0.19051		0.46626
		[0.40]		[0.03]**
only child		0.10177		0.70951
		[0.75]		[0.15]
log number of siblings		0.33792		0.124
		[0.02]**		[0.40]
inherited the business	-0.44697	-0.41481	-0.42109	-0.44436
	[0.02]**	[0.05]*	[0.24]	[0.21]
Business size at start			-0.77875	-0.76672
			[0.00]***	[0.00]***
Observations	348	347	353	352
R-squared	0.14	0.16	0.47	0.49

Note: Robust p values in brackets.

Table 7 Over-and under-confidence and discounting

	Entrepreneurs relative to non entrepreneurs	Entrepreneurs relative to non entrepreneurs	Failed entrepreneurs	Failed entrepreneurs	Years as entrepreneur, OLS,	Years as entrepreneur, OLS,	Sales growth	Sales growth
Discount rate	-0.00084	-0.00084	-0.02417	-0.02417	-0.16931	-0.16931	-0.31305	-0.31305
	[0.35]	[0.35]	[0.36]	[0.36]	[0.02]**	[0.02]**	[0.00]***	[0.00]***
Overconfidence (Nile interval)	-0.00055	-0.00055	0.02862	0.02862	-0.04618	-0.04618	-0.00078	-0.00078
	[0.73]	[0.73]	[0.72]	[0.72]	[0.76]	[0.76]	[1.00]	[1.00]
Low arrogant	**-0.00097**	-0.00286	**-0.00457**	-0.04605	**-0.43179**	-0.41523	**-0.6391**	-0.94297
	[0.57]	[0.01]***	**[0.97]**	[0.77]	**[0.00]***	[0.12]	**[0.08]***	[0.01]**
High modest	0.00425	**0.00022**	-0.13119	**-0.16811**	-0.22797	**-0.21141**	-0.08812	**-0.39199**
	[0.18]	**[0.92]**	[0.32]	**[0.07]***	[0.31]	**[0.45]**	[0.72]	**[0.05]***
Low normal		-0.00308		-0.04264		0.01656		-0.30387
		[0.03]**		[0.72]		[0.94]		[0.10]
High normal	0.00448		0.04364		-0.01656		0.30387	
	[0.03]**		[0.72]		[0.94]		[0.10]	
Inherited business							-0.59174	-0.59174
							[0.01]***	[0.01]***
Observations	545	545	361	361	605	605	280	280
R-squared					0.09	0.09	0.23	0.23

Robust p values in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%