

Opportunity vs Necessity: Understanding the Heterogeneity of Female Micro-Entrepreneurs

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Abstract

Entrepreneurs that voluntarily choose to start a business because they are able to identify a good business opportunity and act on it –*opportunity* entrepreneurs- are different in distinct dimensions from those who are forced to become so because of lack of other alternatives –*necessity* entrepreneurs. Relying on a unique dataset covering a wide array of characteristics, including cognitive, non-cognitive skills and managerial practices, for 10,000 female entrepreneurs in Mexico, we aim to understand the role of heterogeneity of micro-entrepreneurs over firm performance focusing on a specific criterion: the reason for opening their business. We document significant differences on many dimensions between these two groups, most importantly in terms of profitability, management, cognitive and non-cognitive skills. At the same time, using a discriminant analysis in order to find the combination of variables that best distinguish these two groups, we show that within the group of *necessity* entrepreneurs, about a third of them look like *opportunity* ones, according to their observable characteristics. Given that the definition of opportunity (necessity) entrepreneur is clearly endogenous, in addition to the descriptive analysis, we use an instrumental variable approach to identify the causal effect of being opportunity versus necessity on profitability and management performance. Being an opportunity entrepreneur is instrumented with the state GDP growth in the same year that her business was set up. Our results confirm that businesses led by opportunity entrepreneurs are significantly more profitable and better managed than those led by necessity ones.

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1 Introduction

Support programs for micro-businesses have become increasingly common in developing countries in recent years for at least two reasons: first, micro-enterprises employ a substantial fraction of individuals in these economies (about 47 percent in Mexico); and second, despite their prevalence, the majority of these micro-enterprises tend to stay small and have low productivity. However, the impact of such programs many of which provide business grants, training or a combination of both has been mixed at best. This raises the question about whether these impacts depend on characteristics or attitudes of the entrepreneur, which can be identified and measured for better targeting. In fact, some existing evidence suggests that, even though the mean effects of business training might be small and not significant, greater returns are concentrated in high-potential entrepreneurs, who are the most likely to adopt better entrepreneurial practices and earn higher profits after training (Calderon *et al.* 2013, De Mel *et al.* 2012, Fafchamps *et al.* 2014).

In this paper we aim to better understand the role of opportunity and necessity on firm performance. Are there specific characteristics that consistently differentiate those who choose to be so because they are able to recognize and act on good business opportunities, from those who become and remain entrepreneurs because they are unable to find a suitable paid job? If so, how could we classify opportunity vs necessity micro-entrepreneurs? Does facing a better chance to open a business that is not correlated with the social or cognitive skills causes a significant difference in the entrepreneurial performance? These are the questions we aim to answer by using a unique dataset which provides detailed information on business outcomes, access to credit, cognitive and non-cognitive skills for a large sample of female micro-entrepreneurs in selected urban areas in Mexico. These data come from the baseline survey for the evaluation of a large business training program implemented by the Ministry of Economy and the NGO CREA, for female entrepreneurs in Mexico, *Mujeres Moviendo México*.

We define opportunity and necessity entrepreneurs according to the reason for opening their business. This variable is self-reported by the entrepreneur, but we show that it is positively correlated with better business outcomes, like profitability and management practices. Our measure of opportunity is also correlated with higher measures of cognitive ability and some of non-cognitive abilities that are key for business performance. In addition, we observe

that opportunity is one of the variables that show a higher correlation with various measures of performance.

Given the large heterogeneity within the group of necessity entrepreneurs, we use a discriminant analysis approach in order to identify those necessity female entrepreneurs that behave as opportunity. We aim to pin down some observable characteristics that allow to identify within the necessity entrepreneurs those that most resemble to opportunity ones. Discriminant analysis is a technique of species classification that has been used before by de Mel, McKenzie and Woodruff (2010) to compare self-employed workers, wage workers and small and medium enterprise owners in Sri Lanka.

Finally, by using an instrumental variable approach, we aim to uncover how the performance of micro-entrepreneurs differs when they face an exogenous shock that pushes them to start a business acting on opportunities rather than being forced to become a self-employed in order to meet their needs. The GDP growth in the state and at the time when the business was opened is used as an instrument for our measure of opportunity.

Our results suggest that starting a business because of opportunity is correlated with a substantial better performance. An exogenous shock that leads a female micro-entrepreneur to act on opportunity is as important as other observable characteristics that are highly correlated with performance, such as cognitive and non-cognitive skills. Further, based on our discriminant analysis we find that business practices, education and non-cognitive skills are the main characteristics discriminating opportunities vs necessity entrepreneurs, with business practices being the most important and robust characteristic.

The relevance of our findings from a policy perspective is twofold. First, as mentioned before, identifying the observable characteristics that define opportunity entrepreneurs allows for a better targeting of business support programs, which can be focused on those entrepreneurs with the highest growth potential. This by no means implies disregarding necessity entrepreneurs. On the contrary, if some low-potential entrepreneurs are keeping open their unproductive micro-enterprises for lack of opportunities or skills to join the salaried workforce, they might be better served by interventions that helps them realize their low business performance and support their transition to salaried employment. Second, the fact that our analysis focuses on female entrepreneurs is also of great interest given that their businesses seem to be at a particular disadvantage when trying to scale-up. For instance,

in Latin America, micro-firms led by women have been found to have an even smaller size and lower productivity, compared to those led by men (Bruhn, 2009). Thus, the evidence provided in this paper can be readily applied to those in more need of targeted support.

2 Data

Our data comes from a baseline survey conducted in 2014 in eight urban areas in Mexico: Aguascalientes, Dolores Hidalgo, Irapuato, León, Mexico City, Querétaro, San Juan del Río and Toluca. This survey is part of a randomized-controlled trial to evaluate the impacts of a large-scale business training program for female micro-entrepreneurs. For the sampling design, a number of census tracks (called AGEBS by the Mexican Statistical Institute, INEGI) with relatively high concentration of commercial activity were chosen. The questionnaire was applied at establishments only to women who are business owners or partners, i.e. who take managerial, financial and marketing decisions, and whose firm has less than or equal to 5 employees or sales that are less than 4 million Mexican pesos per year (which is the definition of a micro-enterprise). Fixed and semi-fixed stands on the street, and dwellings in which the woman was found selling or producing something (or had a sign indicating so) also qualified as establishments. Figure 1 shows the distribution of daily profits for our Female Micro-entrepreneurs Survey and the same distribution for the ENAMIN survey (National Survey for Micro-firms in Mexico) which is a representative sample at the national and state level of Mexican Micro-entrepreneurs. The kernel density daily profits distribution of our sample is considerably similar to that observed from the ENAMIN sample at the national level.

Our survey has information on a broad range of variables: sociodemographic characteristics, current and initial business characteristics, business outcomes (sales, profits and costs), managerial practices, cognitive and non-cognitive skills of the entrepreneur, access to credit, growth expectations and obstacles, among others. The final sample consists of 10,275 female micro-entrepreneurs. To our knowledge, our survey is the first one measuring both cognitive and non-cognitive skills for such a large sample of micro-entrepreneurs in Mexico.

Table 1 in the appendix provides a broad picture of our overall sample by showing descriptive statistics for the characteristics of businesses and entrepreneurs. Excluding outliers, identified as those entrepreneurs in the top top 1% of the profits distribution, on average,

micro-entrepreneurs in our sample are 45 years old and have 8.6 years of schooling, which corresponds to some secondary education. About 14 percent of them are classified as poor, which is very low, but consistent with the fact that they are in urban areas. The mean value of the capital in their business is \$19,300 pesos (~ 1378 USD), but the median capital is much lower (\$8000 pesos, ~ 571 USD). Mean age of the business is 107 months (about 9 years) and the median is 60 months (5 years). In addition, about 25 percent of businesses have been operating for 12 months or less, so a sizable portion of our sample is comprised by relatively young firms. Most female micro-entrepreneurs in our sample are self-employed, at least 75 percent have no other employees besides the entrepreneur herself.

Regarding sector of economic activity, approximately 62 percent of the businesses in our sample are in the retail sector, 33 percent in services, and only 5 percent in production. Mean daily profits are about 5.4 times the daily minimum wage in Mexico (MW= to 65.6 pesos in 2014), and median profits are about 2.3 times the minimum wage. These averages though hide a very large heterogeneity as the profits of those entrepreneurs in top quartile are four times those of the entrepreneurs in the bottom quartile.

There is considerable heterogeneity within our sample. The median value for self-reported daily profits is \$150 pesos, while the maximum values observed on this variable (excluding the top 1% outliers) is more than 18 times larger. In terms of the distribution of the value of capital for these firms, we observe that the 75th percentile is 57.5 times larger than the 25th percentile firm which capital value is around \$400 pesos.

In order to better understand the underlining drivers of this heterogeneity we focus on the differences between opportunity and necessity entrepreneurs focusing on four groups of characteristics: (i) Business performance measures; (ii) business practices; (iii) characteristics of the business and the entrepreneur; (iv) cognitive skills; and (v) non-cognitive skills.

The main outcome variables used in order to determine the differences between necessity and opportunity are measures of performance: (i) self-reported measures of weekly profits and (ii) composite business practice score (CBP score). Weekly profits are self-reported by the entrepreneur. CBP score is an index that measures how well entrepreneurs in our sample manage their business and is constructed considering measures of marketing, keeping stock, record keeping and financial planning, following Fafchamps and Woodruff (2014).

To identify the mechanisms that drive the difference in measures of performance between

opportunity and necessity entrepreneurs, we analyze a random shock in the economy that enhances growth and three main groups of observable characteristics: (i) business practices; (ii) characteristics of the business and the entrepreneur; (iii) cognitive skills, and (iv) non-cognitive skills.

As business characteristics, we use age of the business and the entrepreneur, the fraction of business with one or more workers (excluding the entrepreneur) and monthly salary expenses. We use the three measures of cognitive skills we have in our survey: Raven test, digit span recall test and years of schooling. For non-cognitive skills, we look at 13 measures personality traits that have been analyzed before in the entrepreneurship literature: the big five (agreeableness, conscientiousness, extraversion, intellect/ imagination and neuroticism), impulsiveness, locus of control, willingness to take risks, self-confidence, self-efficacy, optimism, self-satisfaction and trust. All the scores of the business practice index, cognitive tests and the individual non-cognitive skills are converted to standardized measures.

We classify the entrepreneurs in our sample as opportunity or necessity ones according to the reason for opening their business. If the micro-entrepreneur established that she opened her business because (i) she wanted to become independent, (ii) because she had money and found a good business opportunity or (iii) because she wanted to practice her major or career profile. Approximately 21 percent of our whole sample was classified in this category. Conversely, necessity entrepreneurs are those who started their business because they could not find a well-paid or suitable job and needed a source of income -70 percent of our sample was classified in this category. Our survey also captures women who started their business out of family tradition or other reasons, but we exclude these observations from the analysis. We are left with a sample of 8,949 entrepreneurs (1,888 classified as opportunity and 7,061 as necessity). Figure 2 of the appendix shows the kernel distribution of logarithm transformation of weekly profits. The distribution of the opportunity entrepreneurs is left skewed compared to the distribution of the necessity ones. As shown in Table 2 of the appendix, according to this definition and excluding the entrepreneurs that started a business because of family tradition, 21 percent of the businesses in our sample were started out of opportunity, whereas the remaining were started out of necessity.

For the empirical analysis, we first report the means of the variables for business performance and characteristics, and the cognitive and non-cognitive skills of the entrepreneur,

breaking the sample into opportunity and necessity entrepreneurs. We also report the results of tests of differences in means to provide some descriptive evidence on whether these two types of entrepreneurs look different according to key indicators of performance and skills. As a second step, we estimate a logistic regression for the probability of being an opportunity entrepreneur on the same characteristics included in the descriptive analysis. This intends to provide additional evidence of the correlations between those characteristics and the dependent variables, when they are all included at once. The third step is to use discriminant analysis to find the combination of variables that best distinguishes opportunity from necessity entrepreneurs. Finally, given that being an opportunity entrepreneur is potentially endogenous, we use an instrumental variable approach to estimate the effect of this variable on the profitability and management of the business.

3 Descriptive analysis

To compare entrepreneurs who report having opened their business out of opportunity and necessity in our full sample, Table 3 shows the means and the test for differences in means, for our variables of business performance and characteristics, and cognitive and non-cognitive skills. Regarding business performance, mean weekly profits and sales are higher for opportunity than for necessity entrepreneurs and the difference in means is statistically significant at any conventional level. Mean weekly sales per worker are also higher for opportunity entrepreneurs, but the difference is not statistically significant, probably because, as shown below, those entrepreneurs have a significantly larger number of workers. Opportunity entrepreneurs also have a higher composite business practice score, compared to necessity ones, and the difference is statistically significant. In conclusion, the opportunity entrepreneurs have both better performance and are manage their businesses significantly better. Regarding other characteristics of the business and the entrepreneur, opportunity entrepreneurs are 4 years younger than necessity ones on average, and their businesses are about 13 months younger. About 32 percent of opportunity entrepreneurs have at least one worker or more, whereas only 23 percent of necessity ones do. As a result, opportunity entrepreneurs have about double the salary expenses per month compared to necessity ones. All these mean differences are statistically significant. The next panel in Table 3 shows that, compared to

necessity entrepreneurs, opportunity ones also have higher mean cognitive skills, measured as standardized scores for the Raven and digit span recall tests, and 1.5 more years of schooling. The mean schooling for opportunity entrepreneurs (9.8 years) corresponds roughly to having finished secondary school and having the first year of high school, whereas the mean for necessity ones (8.25 years) corresponds to incomplete secondary school. Once again, all these mean differences are statistically significant. The last panel in Table 3 shows the mean difference in non-cognitive skills between the two groups of entrepreneurs. Opportunity entrepreneurs seem to have statistically significant higher mean scores for locus of control, impulsiveness, self-confidence, self-satisfaction, willingness to take risks, optimism and their attitude towards business growth, compared to their necessity counterparts. It is important to note that self-confidence, self-satisfaction, the willingness to take risks and optimism are precisely the traits that have the highest positive correlation with profits, according to the descriptive note by Calderon, Iacovone and Juarez (2015). Conversely, opportunity entrepreneurs have significantly lower scores than necessity ones for extraversion, conscientiousness and self-efficacy. Both types of entrepreneurs do not seem to differ significantly in other personality traits, like agreeableness, neuroticism, intellect/imagination, and their attitude towards trust.

Tables 4 and 5 show a similar comparison between opportunity entrepreneurs and subsamples of the top and bottom 25 percent in daily profits for necessity ones, respectively. The idea is to compare the best and worst-performing necessity entrepreneurs with opportunity ones. In Table 4, the top-quartile necessity entrepreneurs seem to outperform opportunity ones in terms of mean profits, sales and sales per worker, and the differences in these measures are statistically significant. The mean difference in the composite business practice score between these two groups is small and not significant, implying that the best-performing necessity entrepreneurs manage their business similarly to opportunity ones. As in the full sample, opportunity entrepreneurs have younger businesses (21 months) and are also younger themselves (1.5 years) than top necessity ones. However, they are less likely to have at least one worker or more, and have lower salary expenses per month. Another pattern that seems to be reversed in Table 4, compared to the full sample in Table 3, is that top necessity entrepreneurs have higher cognitive abilities than opportunity ones, even though they have 0.6 years less education. , but the mean differences are significant at 10 percent only. Regarding non-cognitive skills, we find no statistically significant mean differences between the two types

of entrepreneurs, except for locus of control, which favors opportunity ones, willingness to take risks and self-satisfaction, which favor top necessity ones. In summary, comparing top necessity entrepreneurs with opportunity ones yields less pronounced differences, and in some cases, such differences suggest that top necessity entrepreneurs have better performance and skills than opportunity ones.

In Table 5, we compare the same sample of opportunity entrepreneurs with necessity ones in the bottom quartile of daily profits. As would be expected, the mean differences obtained for the full sample in Table 3 are amplified and many of them become even more statistically significant. Opportunity entrepreneurs have higher mean profits and sales, have better cognitive and non-cognitive abilities, and have more years of education, compared to the bottom necessity ones.

Tables 3, 4, 5 show important differences in the observable characteristics of opportunity and necessity entrepreneurs, but also suggest that some of this latter group might in fact have the potential for growing and becoming more successful. To measure the correlations between the characteristics in previous tables and the probability of opening a business out of opportunity, in Table 6 we report the results from logit regressions. We include as regressor the CBP score, the age of the business and the entrepreneur, their salary costs, their cognitive and non-cognitive skills. These regressions do not have causal interpretation, but allow us to look more closely at the mere correlations between the probability of being an opportunity entrepreneur and these variables, when all of them are included at once. We use all the observations of opportunity entrepreneurs for estimation in all columns and we vary the subsample of necessity ones. We include all necessity entrepreneurs in column 1; only the first quartile of daily profits in column 2; only the second quartile in column 3 and so on.

Table 6 shows that, after controlling for characteristics of the business and the entrepreneur, the correlation of the management score with the probability of being an opportunity entrepreneur is always positive and statistically significant, except for the last column, where we compare opportunity entrepreneurs with the top necessity ones. This is consistent with the evidence for this variable in Table 4. The patterns for business characteristics somewhat resemble those for mean differences in Tables 4 and 5. Opportunity is negatively correlated with the age of the entrepreneur and the monthly salary expenses, except for the two top quartiles of necessity, as is the age of business in three out of five columns. Regarding

cognitive abilities, the Raven test score seems to have a negative, and sometimes statistically significant, correlation with opportunity, once other characteristics are included in the estimation, whereas the digit span recall test score has no significant correlation. The results for these variables differ from the patterns shown in the mean-difference tables. Conversely, years of schooling has a positive and statistically significant correlation with opportunity in all columns. In the bottom panel of Table 6, most measures of non-cognitive skills seem to have no statistically significant correlation with opportunity. Some positive correlations are found for extraversion, locus of control self-satisfaction, and attitude towards growth; negative correlations are only found for the willingness to take risks in columns 4 and 5.

As mentioned before, to complement the descriptive analysis presented so far, we use discriminant analysis to find the combination of variables that best distinguishes opportunity from necessity entrepreneurs, and then use the estimates to predict whether a given observation belongs to opportunity or necessity. Table 7 presents the results for our full sample of both necessity and opportunity entrepreneurs, and then for different quartiles of necessity ones as before. We also vary the set of characteristics that are used to separate entrepreneurs into different species. The last two columns of Table 7 show that, when including all the explanatory variables we have used in our descriptive analysis together, our model would classify 42 percent of the entrepreneurs as opportunity, whereas only 21 report themselves as being so (see Table 2). This is because some entrepreneurs who report themselves as necessity, are in fact more similar to opportunity ones, according to the discriminant analysis. In the second column of the first panel, about 63 percent of necessity entrepreneurs are correctly classified as being so, which means that the remaining 37 percent “appear” like opportunity ones.

The second column of Table 7, from the second to the bottom panel, shows that 74 percent of necessity entrepreneurs in the bottom quartile of profits are correctly classified as being so by the discriminant technique, whereas only 49 percent are in the top quartile. In addition, the percentage of necessity entrepreneurs correctly classified as such decreases monotonically with the profits quartile. This confirms that, as shown in our previous descriptive analysis, high-performing necessity entrepreneurs are very similar to opportunity ones and when we include only the most profitable of them (top quartile of the profits distribution) about half are “look like” opportunity ones. Instead, when we include only the least profitable of them

only a 25 percent “look like” opportunity ones.

The last piece of our descriptive analysis is to compare the characteristics of the necessity entrepreneurs that are classified as opportunity ones, based on their characteristics and the species classification technique, with the original self-reported opportunity and necessity ones. Table 8 shows the result of such comparison. Necessity entrepreneurs that are classified as opportunity have weekly profits that are greater than true necessity and lower than true opportunity ones. Both of these mean differences are statistically significant at 5 percent. Mean weekly sales are also significantly higher for incorrect necessity entrepreneurs compared to true necessity ones, but the difference is very small and not statistically significant when comparing them with true opportunity ones. Incorrectly classified necessity women are younger than the other groups, and their businesses are also younger. These differences are statistically significant and much larger when comparing them with true necessity women. On average, necessity entrepreneurs classified as opportunity have higher CBP score than the two other groups, which implies that they manage their businesses better even compared with true opportunity women. These entrepreneurs also have higher mean digit span tests and more years of schooling than the two other groups. The same holds for several measures of non-cognitive abilities, like locus of control, impulsiveness, self-confidence, willingness to take risks, self-satisfaction, optimism and attitude towards growth, many of which are positively correlated with profits. For all these measures of management, cognitive and non-cognitive abilities, necessity entrepreneurs classified as opportunity do better than both true necessity and opportunity ones, and the differences seem to be larger relative to the first group. In conclusion, the descriptive analysis suggests that necessity and opportunity entrepreneurs differ in key characteristics and abilities, but some among those starting their business out of necessity resemble their more able opportunity counterparts.

4 Instrumental Variable Approach

Opportunity entrepreneurs seem to perform better than necessity entrepreneurs. In order to analyze if the difference is driven mainly by the observable characteristics of the firm and

the entrepreneur discussed until now, we estimate the following linear regression:

$$y_i = \alpha + \beta opportunity_i + \Theta^T X_{it} + \psi_i \tag{1}$$

Where y_{it} represents a measure of performance –self-reported weekly profits and standardized CBP score. The variable *opportunity* is a dummy variable that takes the value of 1 when the female micro-entrepreneur self-reported that she started her business because (i) she wanted to become independent, (ii) because she had money and found a good business opportunity or (iii) because she wanted to practice her profession and 0 if she opened because she needed (see section 2, for further detail). The control variables used in this regression, X_{it} , contain the set of variables classified as (i) business practices (ii) characteristics of the business and the entrepreneur, (iii) cognitive skills, and (iv) non-cognitive skills. Robust standard errors are estimated for this equation.

Column 1 of Table 10 in the appendix shows that the opportunity measure presents a considerable and significant correlation with weekly profits, and this correlation is greater than any observable cognitive and non-cognitive skilled considered. Similar results are observed considering the standardized CBP score.

The opportunity measure is correlated with unobservable characteristics of the entrepreneur that encourages the individual to act whenever she observes an opportunity. Social networks or self-motivation are some examples for these unobservables. However, we want to consider the degree in which other circumstances unrelated to their individual treats and enhances a good opportunity affect their firms performance in the future.

We instrument *opportunity* with the interaction between the years in which the entrepreneur opened her business and the GDP growth observed in the state and time (year) in which she opened it. Since our sample registers profits and management performance observed during 2014, our assumption is that GDP growth at time when the business was set up is exogenous to profits (and management performance) various years later and only influences them through the choice of starting a business out of necessity or opportunity.

By using a two-stage least square (2SLS) estimation strategy we estimate the effect of having a good opportunity when an individual opened a business on future performance,

isolating this effect from individual abilities or social conditions. The first stage of our 2SLS estimation can be represented in the following way:

$$opportunity_{is} = \alpha + \beta GDPgrowth_{t_0s} + \Gamma^T X + \epsilon_{is} \quad (2)$$

where $GDPgrowth_{t_0}$ represents the GDP growth observed in state s where the entrepreneur i lives and she decides to open her business at time t_0 . Table 9 presents the first stage results. The instrument presents a strong correlation with the variable *opportunity*. Considering Equation 1 as the second stage of the regression we observed that the estimated parameters (presented in Column 2 Table 10) show that whenever there is a positive shock independent of the entrepreneurial traits the firm's performance is approximately 4.6 times better in terms of weekly profits. The coefficient of the 2SLS regression is significantly greater than the OLS estimated parameter, indicating that it is possible that *optimism* is measured with error. According to Column (3) of the same table this result is not robust when controlling for non-cognitive skills.

Analyzing the CBP score in Table 11 we can see that *opportunity* is a variable that positively affects the managerial skills. If we instrument the variable *opportunity* (see Column 2, Table 11) the estimates establish that managerial skills increase 3.3 times whenever there is a good economic opportunity that the entrepreneur faces in the environment. This result is robust even after controlling for cognitive and non-cognitive skills. In addition, this table shows that memory measured through the digit span test and non-cognitive skills as the inclination to take risk and be self-satisfy are important factors that determine managerial performance.

Factors that enhance good opportunities for individuals seem to be positively affecting profits and managerial skills independent of their personal traits. It is possible that considering the local average treatment effects (LATE), the women entrepreneurs that are responding to these economic conditions are the ones who are generating these considerable effects. However, these results show that economic conditions matter for future performance.

5 Conclusions

Entrepreneurship programs are increasingly common in many countries. Among these programs, those targeting female entrepreneurs are especially important given the emerging evidence that businesses led by women face specific obstacles. However, a key finding of previous studies analyzing the characteristics of entrepreneurs is the substantial heterogeneity among them, even within narrowly defined groups. Further, given the large number of micro-entrepreneurs in developing countries, a major challenge for policy makers is understanding the key drivers of such heterogeneity in order to improve the targeting and design of support programs.

Relying on a unique dataset covering a wide array of characteristics, including cognitive, non-cognitive skills and managerial practices, for 10,000 female entrepreneurs in Mexico, in this paper we focus on a specific element differentiating female entrepreneurs: being an opportunity versus a necessity one. We document significant differences on many dimensions between these two groups, most importantly in terms of profitability, management, cognitive and non-cognitive skills. At the same time, we show that within the group of *necessity* entrepreneurs, about a third of them look like *opportunity* ones, according to their observable characteristics. Given that the definition of opportunity (necessity) entrepreneur is clearly endogenous, in addition to the descriptive analysis, we use an instrumental variable approach to identify the causal effect of being opportunity versus necessity on profitability and management performance. We instrument being an opportunity entrepreneur with the state GDP growth in the same year that her business was set up. Our results confirm that businesses led by opportunity entrepreneurs are significantly more profitable and better managed than those led by necessity ones.

These results have important implications for policy makers interested in developing successful programs for supporting female entrepreneurs. First, they suggest that, in general, entrepreneurs who started their business because of necessity are characterized by low profitability and weak management of their companies. For this type of entrepreneurs, programs helping them to improve their prospects for salaried employment may be more beneficial than keeping them in their self-employment status. However, our results also suggest that some entrepreneurs among necessity ones resemble their opportunity counterparts. Identifying this subgroup and targeting programs to them could certainly improve their profitability. Finally,

our results suggest that facing a positive shock that affects the probability of becoming an opportunity entrepreneur has long-lasting effects in the firm performance.

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6 Appendix

Figure 1: Kernel density $\ln(\text{daily profits})$ from Female Micro-Entrepreneur Survey vs ENAMIN

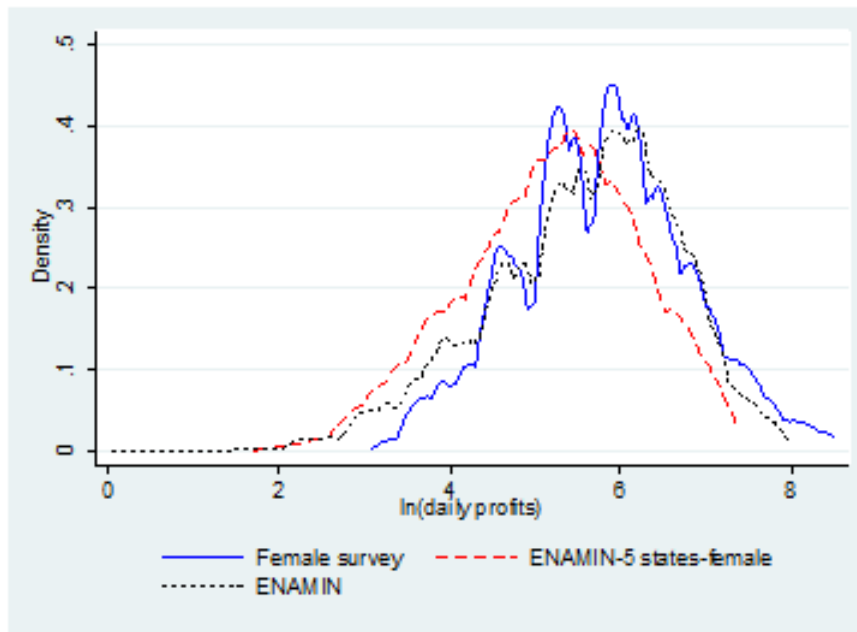


Figure 2: Distribution of weekly profits ($\log(x+1)$ transformation) by Opportunity/Necessity

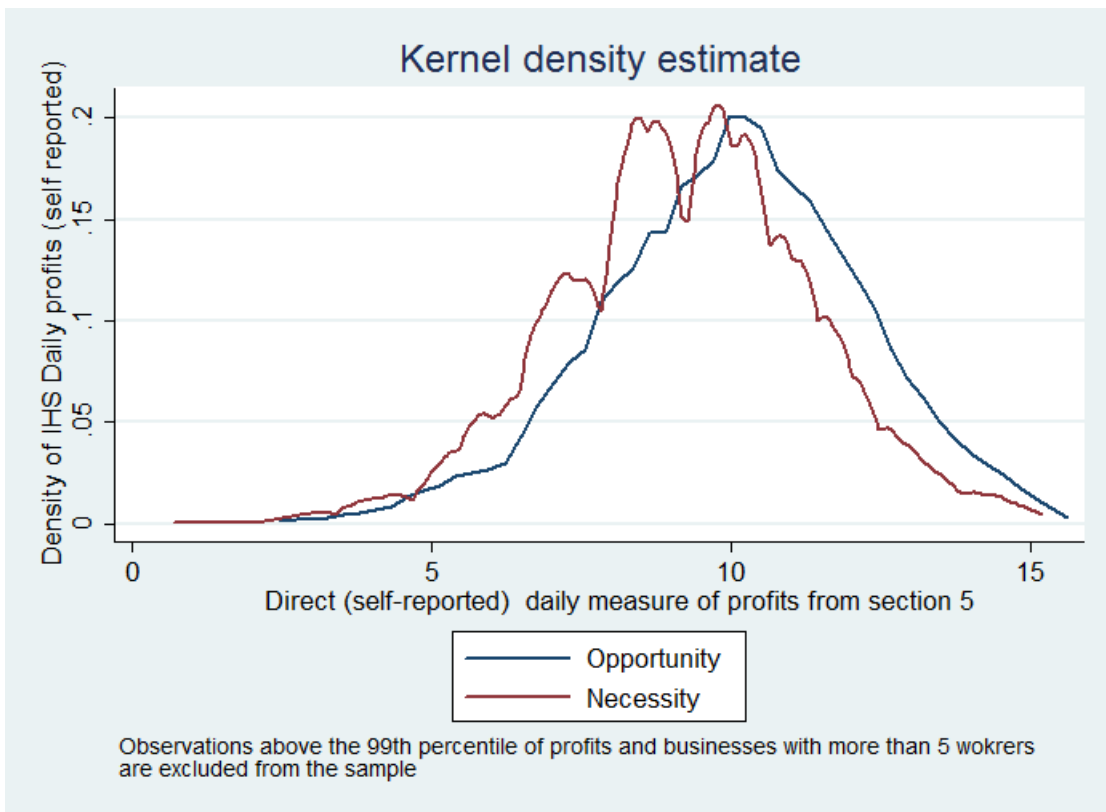


Table 1: Summary statistics

Variable	Mean	Standard dev.	Min	Max	p25	p50	p75	Obs.
Business outcomes								
Direct (self reported) daily measure of sales	876.3684	2176.906	3	91000	200	400	850	9174
Direct (self reported) weekly measure of sales	3317.042	4038.014	1	29000	850	2000	4000	8434
Indirect calculation of daily sales (P*Q) ¹	582.1139	887.5484	0	8075	100	300	665	10037
Indirect calculation of monthly sales (P*Q)	8497.878	14941.57	0	131900	755	3160	9500	10033
Direct (self-reported) daily measure of profits	270.2673	343.2474	1	2800	80	150	300	8088
Direct (self-reported) weekly measure of profits	1288.606	1625.62	4	12800	350	800	1500	8388
Indirect calculation of daily profits ((P-C)*Q)	-593.0533	61387.57	-6141260	2555	14	66	185	10037
Indirect calculation of monthly profits ((P-C)*Q)	745.1948	36766.24	-2014410	45600	30	700	2450	10033
Costs: monthly salary expenses	431.0178	1391.256	0	10200	0	0	0	8542
Total capital	17518.61	24280.45	0	112500	400	6500	23000	10037
Investment ²	752.9043	3921.814	0	48000	0	0	0	10027
Composite Business Practice score ³	2.06e-09	1	-1.417539	3.303462	-.845296	-.1299929	.5853103	10028
Business and household characteristics								
Marginality index (geographic area)	-1.85e-09	1	-1.845309	4.336222	-.7126234	-.1384898	.5738916	9821
Household poverty ⁴	.140704	.3477332	0	1	0	0	0	10085
Household poverty: score of the 5 dimensions (0-5)	.1590481	.4225974	0	5	0	0	0	10085

¹The indirect calculation of daily and weekly sales is obtained by adding the profits (price*quantity) of the three most sold products

²Investment is measured as the capital purchased during the last 6 months

³The Composite Business Practice (CBP) score includes marketing, stock, records and financial planning.

⁴The household poverty measure is a dummy equal to one if the household has any of the following characteristics: floor made of soil, roof made of waste materials or cardboard, overcrowded (more than 2.5 people per room), no water in the house or land where the house is, no toilet. The household poverty score adds up the number of these characteristics that the household has.

Total number of workers	1.356966	.7163669	1	5	1	1	2	10085
Age of business in months	110.6383	134.328	1	960	12	60	168	9939
Age of entrepreneur	45.3861	13.7923	12	90	35	45	55	10000
Growth expectation	.8865178	.3171972	0	1				10028
Access to finance ⁵	.3500794	.4770183	0	1				10072
Reason to open the business								
Opportunity	.182945	.3866406						10085
Family	.0674269	.2507723						10085
Necessity	.6894398	.4627459						10085
Other	.0567179	.2313143						10085
Sector								
Retail	.6243927	.4843033						10085
Services	.3280119	.4695125						10085
Industry	.0466039	.2107993						10085
Cognitive skills								
Total score of raven test	-2.11e-09	1	-1.816711	2.604337	-.7114488	.0253924	.7622337	9576
Total score digit span test	-9.83e-09	1	-2.107748	3.05475	-.8171238	-.1718115	.4735008	9972
Years of schooling	8.579493	4.156668	0	18	6	9	12	9831
Principal component score of raven, digit span and schooling	9.92e-10	1	-2.812855	3.235296	-.7140867	-.0175605	.7073391	9327
Non-cognitive skills								
Big five: Extraversion	-9.44e-09	1	-4.476956	2.949048	-.7639543	-.0213539	.7212464	10085
Big five: Agreeableness	-8.56e-09	1	-5.34387	4.146494	-.5986881	-.1241699	.3503483	10085

⁵Dummy variable that equals one if the entrepreneur has financial access

Big five: Conscientiousness	-5.02e-11	1	-3.92272	3.818783	-.8261185	-.0519682	.722182	10085
Big five: Neuroticism	7.89e-10	1	-3.861923	2.917331	-.4722959	.2056295	.5445922	10085
Big five: Intellect/Imagination	-7.89e-09	1	-6.172722	2.80894	-.7837247	.1144416	.5635247	10085
Attitude towards growth	-1.26e-08	1	-1.4755	1.511663	-.7287095	.0180814	.7648722	9995
Self satisfaction	4.79e-09	1	-2.445371	1.773579	-.5702819	-.1015097	.8360347	9901
Optimism	-3.27e-09	1	-3.384655	.7900596	-.6015118	.3262025	.7900596	9725
Trust	-2.16e-09	1	-1.335933	2.54093	-.6897892	-.0436454	.6024985	10067
Self efficacy	-4.35e-09	1	-1.159775	4.585492	-.8006958	-.0825375	.6356208	10054
Locus of control	-6.36e-09	1	-2.556283	3.507964	-.5348677	-.0295138	.4758402	10051
Impulsiveness	3.15e-09	1	-4.727341	2.83443	-.4063292	.1337972	.6739237	10064
Self confidence	-8.55e-09	1	-2.639109	2.080878	-.6331141	-.1611154	.6648823	10014
Attitude towards risk	-1.15e-08	1	-2.794634	1.366515	-.4828849	-.0205351	.9041647	9659

Observations for businesses with more than 5 workers (including entrepreneur) are excluded from the sample

For all business outcome variables, except for CBP score, the descriptives are calculated removing observations above the 99th percentile of each variable

For all variables that are not business outcomes, the sample for calculating descriptive statistics excludes observations above the 99th percentile of daily profits

Table 2: Proportion of opportunity by quartile of weekly profits

	Proportion of opportunity
Full sample	.21
First quartile of weekly profits	.1356
Second quartile of weekly profits	.1881
Third quartile of weekly profits	.2356
Fourth quartile of weekly profits	.2758

Table 3: Mean difference test Opportunity vs Necessity (full sample)

	Opportunity group mean	Necessity group mean	p-value	
Measures of performance				
Weekly profits (self reported)	1937.635	1349.177	588.4576***	1.26e-12
Weekly sales (self reported)	4507.258	3540.586	966.6726***	1.31e-07
Weekly sales/workers	4395.353	4302.254	93.09963	.7776329
Composite Business Practice score (standarized)	.3060325	-.0842768	.3903093***	1.29e-51
Business characteristics				
Age of entrepreneur	41.81658	45.92807	-4.111494***	4.77e-31
Age of business in months	90.59086	103.6411	-13.05026***	.0000466
Proportion with one worker or more	.3185	.2278	.0907***	.0000
Costs:monthly salary expenses	1025.357	498.751	526.6064***	5.84e-12
Cognitive skills				
Total score of raven test (standarized)	.0827833	-.0211648	.1039482***	.0000841
Total score of digit span test (standarized)	.1459293	-.0328984	.1788277***	5.72e-12
Years of schooling	9.789416	8.251668	1.537748***	1.31e-45
Non-cognitive skills				
Extraversion (standarized)	-.0365413	.0155396	-.0520809**	.0430861
Agreeableness (standarized)	-.0093652	.0075027	-.0168679	.5074504
Conscientiousness (standarized)	-.069074	.0121551	-.0812292***	.0015348
Neuroticism (standarized)	-.0246642	.0130341	-.0376982	.1432771
Intellect/imagination (standarized)	.0074094	-.0046432	.0120526	.635746
Self efficacy (standarized)	-.0957561	.0110521	-.1068082***	.0000364
Locus of control (standarized)	.0954217	-.0202922	.1157139***	8.77e-06
Impulsiveness (standarized)	.0480202	-.0170598	.06508**	.0116913
Self confidence (standarized)	.1074716	-.0390423	.1465139***	1.49e-08
Attitude towards risk (standarized)	.0975181	-.0298163	.1273345***	1.44e-06
Self satisfaction (standarized)	.1163573	-.0443902	.1607475***	7.42e-10
Optimism (standarized)	.138387	-.0400507	.1784377***	1.21e-11
Attitude towards trust (standarized)	.0137271	-.0011845	.0149116	.5669594
Attitude towards growth (standarized)	.0621355	-.0119533	.0740888***	.0046092
Observations	8949			

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

Table 4: Mean difference test Opportunity group vs top 25% of daily profits for Necessity

	Opportunity group mean	Necessity group mean	Mean difference	p-value
Measures of performance				
Weekly profits (self reported)	1937.635	3398.169	-1460.534***	2.52e-20
Weekly sales (self reported)	4507.258	8898.376	-4391.117***	7.84e-36
Weekly sales/workers	4395.353	7558.159	-3162.806***	9.17e-11
Composite Business Practice score (standarized)	.3060325	.2559537	.0500788	.2083584
Business characteristics				
Age of entrepreneur	41.81658	43.3497	-1.533121***	.0013669
Age of business in months	90.59086	111.8615	-21.27061***	1.01e-06
Proportion with one worker or more	.3185935	.3748925	-.056299***	0.0015
Costs:monthly salary expenses	1025.357	1451.622	-426.2651***	.0036929
Cognitive skills				
Total score of raven test (standarized)	.0827833	.1619808	-.0791975**	.0349545
Total score digit span test (standarized)	.1459293	.2135321	-.0676028*	.0710074
Years of schooling	9.789416	9.161713	.627703***	.000032
Non-cognitive skills				
Extraversion (standarized)	-.0365413	.0115596	-.0481008	.1928893
Agreeableness (standarized)	-.0093652	.0532649	-.0626301*	.0945029
Conscientiousness (standarized)	-.069074	-.0247944	-.0442796	.2394807
Neuroticism (standarized)	-.0246642	-.014709	-.0099552	.7927225
Intellect/imagination (standarized)	.0074094	.0346711	-.0272616	.4612176
Self efficacy (standarized)	-.0957561	-.0768504	-.0189057	.5912536
Locus of control (standarized)	.0954217	-.0688499	.1642716***	.0000123
Impulsiveness (standarized)	.0480202	.1210343	-.0730141*	.053711
Self confidence (standarized)	.1074716	.0689652	.0385064	.2954655
Attitude towards risk (standarized)	.0975181	.2431774	-.1456593***	.0000417
Self satisfaction (standarized)	.1163573	.253991	-.1376337***	.0001128
Optimism (standarized)	.138387	.1728365	-.0344495	.3096182
Attitude towards trust (standarized)	.0137271	.0287478	-.0150207	.6870126
Attitude towards growth (standarized)	.0621355	.0162987	.0458368	.2181091
Observations	3057			

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

Table 5: Mean difference test Opportunity group vs bottom 25% of daily profits for Necessity

	Opportunity group mean	Necessity group mean	Mean difference	p-value
Measures of performance				
Weekly profits (self reported)	1937.635	352.2917	1585.343***	2.06e-56
Weekly sales (self reported)	4507.258	1019.37	3487.888***	8.09e-61
Weekly sales/workers	4395.353	1125.24	3270.113***	1.20e-11
Composite Business Practice score (standarized)	.3060325	-.3077975	.61383***	9.51e-66
Business characteristics				
Age of entrepreneur	41.81658	48.78365	-6.967073***	4.95e-44
Age of business in months	90.59086	97.2115	-6.620637	.1129568
Proportion with one worker or more	.3185935	.1286015	.189992***	0.0000
Costs:monthly salary expenses	1025.357	94.26603	931.0913***	2.59e-20
Cognitive skills				
Total score of raven test (standarized)	.0827833	-.1366803	.2194637***	1.05e-09
Total score digit span test (standarized)	.1459293	-.1479782	.2939075***	2.81e-17
Years of schooling	9.789416	7.322581	2.466836***	6.11e-60
Non-cognitive skills				
Extraversion (standarized)	-.0365413	.0519213	-.0884626**	.0125446
Agreeableness (standarized)	-.0093652	.0102368	-.0196019	.5733208
Conscientiousness (standarized)	-.069074	.0474942	-.1165682***	.0009297
Neuroticism (standarized)	-.0246642	.0268696	-.0515338	.1503824
Intellect/imagination (standarized)	.0074094	-.0358004	.0432098	.2205171
Self efficacy (standarized)	-.0957561	.1007754	-.1965314***	1.85e-08
Locus of control (standarized)	.0954217	-.0057254	.1011471***	.0037154
Impulsiveness (standarized)	.0480202	-.0898478	.137868***	.0000923
Self confidence (standarized)	.1074716	-.1545144	.261986***	4.09e-14
Attitude towards risk (standarized)	.0975181	-.1875923	.2851104***	5.61e-16
Self satisfaction (standarized)	.1163573	-.2879227	.40428***	2.68e-30
Optimism (standarized)	.138387	-.2539352	.3923222***	1.77e-27
Attitude towards trust (standarized)	.0137271	.004553	.009174	.7961079
Attitude towards growth (standarized)	.0621355	-.0690056	.1311412***	.0001555
Observations	3319			

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

Table 6: Logistic regression

	(1)	(2)	(3)	(4)	(5)
	Opportunity ⁶	Opportunity ⁷⁸	Opportunity ⁹	Opportunity ¹⁰	Opportunity ¹¹
Measures of performance					
Composite Business Practice score (standarized)	0.286*** [0.0340]	0.557*** [0.0560]	0.338*** [0.0461]	0.208*** [0.0461]	0.0725 [0.0476]
Business characteristics					
Age of entrepreneur	-0.0138*** [0.00288]	-0.0231*** [0.00413]	-0.0101*** [0.00378]	-0.00483 [0.00385]	-0.00623 [0.00421]
Age of business in months	-0.000203 [0.000307]	0.00102** [0.000437]	-0.0000397 [0.000405]	-0.00113*** [0.000401]	-0.00124*** [0.000429]
Costs:monthly salary expenses	0.0000256** [0.0000101]	0.000407*** [0.0000681]	0.000228*** [0.0000370]	0.0000443** [0.0000189]	-0.0000367*** [0.0000131]

⁶Column (1) includes the full sample

⁷Column (2) includes all observations for which reason to open business is opportunity, and observations within the first quartile of daily profits for which reason to open business is necessity

⁸Convergence was not achieved in this sample. The iterations were limited to 100 in order to obtain a result. Coefficients are similar to those obtained from a probit model where convergence was achieved.

⁹Column (3) includes all observations for which reason to open business is opportunity, and observations within the second quartile of daily profits for which reason to open business is necessity

¹⁰Column (4) includes all observations for which reason to open business is opportunity, and observations within the third quartile of daily profits for which reason to open business is necessity

¹¹Column (5) includes all observations for which reason to open business is opportunity, and observations within the last quartile of daily profits for which reason to open business is necessity

Cognitive skills					
Total score of raven test (standarized)	-0.0703**	-0.106**	-0.0217	-0.0381	-0.145***
	[0.0346]	[0.0523]	[0.0454]	[0.0466]	[0.0500]
Total score of digit span test (standarized)	0.00296	-0.0152	-0.0377	-0.0815	-0.0564
	[0.0366]	[0.0572]	[0.0486]	[0.0506]	[0.0516]
Years of schooling	0.0544***	0.0716***	0.0431***	0.0762***	0.0458***
	[0.00928]	[0.0135]	[0.0121]	[0.0125]	[0.0134]
Non-cognitive skills					
Extraversion (standarized)	0.106***	0.140***	0.0618	0.105**	0.0516
	[0.0342]	[0.0512]	[0.0456]	[0.0466]	[0.0497]
Agreeableness (standarized)	-0.00952	-0.00625	-0.0166	-0.0121	-0.0821*
	[0.0339]	[0.0514]	[0.0449]	[0.0460]	[0.0491]
Conscientiousness (standarized)	0.00429	-0.0132	0.00316	0.0164	-0.0405
	[0.0337]	[0.0519]	[0.0450]	[0.0464]	[0.0480]
Neuroticism (standarized)	-0.0187	-0.0346	-0.0168	-0.0225	-0.0143
	[0.0338]	[0.0503]	[0.0462]	[0.0464]	[0.0485]
Intellect/imagination (standarized)	-0.0442	-0.0796	-0.0486	-0.0383	-0.0278
	[0.0350]	[0.0526]	[0.0460]	[0.0470]	[0.0495]
Self efficacy (standarized)	0.0454	0.0492	0.0648	-0.0171	-0.0227
	[0.0369]	[0.0519]	[0.0477]	[0.0498]	[0.0536]
Locus of control (standarized)	0.0724**	0.0213	0.0732*	0.101**	0.140***

	[0.0324]	[0.0495]	[0.0430]	[0.0441]	[0.0470]
Impulsiveness (standarized)	0.0270	0.0411	0.0834*	-0.0275	-0.0400
	[0.0330]	[0.0504]	[0.0434]	[0.0450]	[0.0471]
Self confidence (standarized)	0.0458	0.0718	0.0276	-0.00161	0.0886*
	[0.0355]	[0.0532]	[0.0467]	[0.0485]	[0.0507]
Attitude towards risk (standarized)	-0.0367	0.0235	-0.0167	-0.161***	-0.280***
	[0.0364]	[0.0527]	[0.0475]	[0.0499]	[0.0544]
Self satisfaction (standarized)	0.0965**	0.222***	0.0470	0.0371	-0.0444
	[0.0398]	[0.0586]	[0.0520]	[0.0548]	[0.0575]
Optimism (standarized)	0.0245	0.0883	0.0157	-0.0622	-0.0671
	[0.0403]	[0.0562]	[0.0523]	[0.0561]	[0.0624]
Attitude towards trust (standarized)	0.0135	0.0361	0.0382	0.0446	-0.00871
	[0.0330]	[0.0478]	[0.0438]	[0.0437]	[0.0471]
Attitude towards growth (standarized)	0.0464	0.0346	0.102**	0.0990**	0.0788
	[0.0330]	[0.0502]	[0.0440]	[0.0451]	[0.0482]
Constant	-1.252***	0.568**	-0.0175	-0.175	0.539**
	[0.167]	[0.248]	[0.219]	[0.225]	[0.246]
Observations	6281	2344	2574	2377	2154
Pseudo R^2	0.0477	0.1555	0.0719	0.0465	0.0376

Standard errors in brackets

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

Table 7: Discriminant analysis

Variable set used in classification	Opportunity correctly classified (%)	Necessity correctly classified (%)	Classified as opportunity (%)	Classified as necessity (%)
Full sample				
Measures of performance only (1)	52.37	62.85	40.37	59.63
Business characteristics only (2)	59.18	56.19	46.48	53.52
Cognitive skills only (3)	59.06	56.45	47.17	52.83
Non-cognitive skills only (4)	57.13	53.53	48.78	51.22
All variables combined	60	62.75	42.06	57.94
Opportunity group and first quartile of self reported daily profits of Necessity group				
Measures of performance only (1)	52.37	73.06	39.98	60.02
Business characteristics only (2)	59.18	64.48	46.84	53.16
Cognitive skills only (3)	59.06	62.64	48.40	51.60
Non-cognitive skills only (4)	57.13	61.55	48.05	51.95
All variables combined	60.00	74.11	43.13	56.87
Opportunity group and second quartile of self reported daily profits of Necessity group				
Measures of performance only (1)	52.37	64.29	44.78	55.22
Business characteristics only (2)	59.18	56.11	51.30	48.70
Cognitive skills only (3)	59.06	54.86	52.44	47.56
Non-cognitive skills only (4)	57.13	54.44	51.78	48.22
All variables combined	60.00	62.89	48.65	51.35
Opportunity group and third quartile of self reported daily profits of Necessity group				
Measures of performance only (1)	52.37	57.59	47.45	52.55
Business characteristics only (2)	59.18	52.17	53.73	46.27
Cognitive skills only (3)	59.06	56.48	52.20	47.80
Non-cognitive skills only (4)	57.13	47.86	54.59	45.41
All variables combined	60.00	58.17	51.33	48.67
Opportunity group and fourth quartile of self reported daily profits of Necessity group				
Measures of performance only (1)	52.37	48.54	52.35	47.65
Business characteristics only (2)	69.36	44.88	58.06	41.94
Cognitive skills only (3)	59.06	46.40	57.47	42.53
Non-cognitive skills only (4)	57.13	41.26	58.10	41.90
All variables combined	60.00	49.46	56.92	43.80

Measures of performance (1) include Composite Business Practice score; Business characteristics (2) include: age of entrepreneur, age of business, proportion with one worker or more and monthly salary expenses; Cognitive skills (3) include raven (standardized) test score, digit span (standardized) test score and years of schooling; Non-cognitive skills (4) include (standardized) measures of agreeableness, conscientiousness, extraversion, intellect/imagination, neuroticism, impulsiveness, locus of control, risk attitude, self-efficacy, optimism, self-confidence, self-satisfaction, attitude towards trust and attitude towards growth.

Table 8: Mean difference test Opportunity and Necessity vs Necessity incorrectly classified)

	Mean Opportunity	Mean Necessity	Mean Necessity incorrectly class.	Opp - Nec. incorrect	Nec - Nec. incorrect
Weekly profits (self reported)	1937.64	1349.18	1695.27	242.36**	-476.57***
Weekly sales (self reported)	4507.26	3540.59	4514.88	-7.62	-1335.31***
Weekly sales/workers	-155.58	4302.25	4550.94	.7776	-305.79
Composite Business Practice score (standarized)	.3060	-.0843	.6524	-.3463***	-.9997***
Age of entrepreneur	41.82	45.93	38.00	3.81***	10.76***
Age of business in months	90.59	103.64	77.86	12.73***	35.09***
Costs:monthly salary expenses	1025.36	498.75	1012.41	12.95	-741.54***
Total score of raven test	.0828	-.0212	.1169	-.0341	-.1907
Total score digit span test	.1459	-.0329	.2606	-.1146***	-.3990***
Years of schooling	9.7894	8.2517	11.1381	-1.3487***	-3.9420***
Extraversion (standarized)	-.0365	.0155	.0219	-.0698**	-.0240
Agreeableness (standarized)	-.0094	.0075	-.0872	-.0312	-.0194
Conscientiousness (standarized)	-.0691	.0121	-.0094	.0182	.1346***
Neuroticism (standarized)	-.0247	.0130	.0112	-.0152	.0304
Intellect/imagination (standarized)	.0074	-.1451	.0121	-.0038	-.0214
Self efficacy (standarized)	-.0958	.0111	.1754	.0494	.2116
Locus of control (standarized)	.0954	-.0203	.1010	-.0710**	-.2652***
Impulsiveness (standarized)	.0480	-.0170	.2225	-.0529	-.1599***
Self confidence (standarized)	.1075	-.0390	.1713	-.1150***	-.3548***
Attitude towards risk (standarized)	.0975	-.0298	.2962	-.0738**	-.2767***
Self satisfaction (standarized)	.1164	-.0444	.2612	-.1798***	-.4639***
Optimism (standarized)	.1384	-.0400	-.0131	-.1228***	-.4133***
Attitude towards trust (standarized)	.0137	-.0012	.0149	.0268	.0162
Attitude towards growth (standarized)	.0621	-.0120	.1491	-.0870***	-.2188***

Table 9: Results from first stage of the 2SLS estimation strategy

	(1)	(2)
	Opportunity	Opportunity
State growth rate	0.420**	0.405**
in year when business opened	[0.179]	[0.179]
Age of entrepreneur	-0.0024***	-0.0026***
	[0.000475]	[0.000498]
Raven test score (standardized)	-0.0125**	-0.0116*
	[0.00592]	[0.00620]
Digit span test score (standardized)	0.0093	0.00661
	[0.00631]	[0.00661]
Years of schooling	0.0122***	0.0110***
	[0.00154]	[0.00159]
Locus of control (standardized)		0.0113**
		[0.00563]
Attitude towards risk (standardized)		-0.00237
		[0.00621]
Self satisfaction (standardized)		0.0126*
		[0.00684]
Optimism (standardized)		0.0079
		[0.00659]
Constant	0.209***	0.230***
	[0.0299]	[0.0310]
Observations	5770	5383
R^2	0.028	0.030
F-statistic	34.28	19.28

Standard errors in brackets

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

Table 10: Weekly profits $\log(x+1)$ transformation (without top 1%)

	(1) Weekly profits ($\log(x+1)$ transformation)	(2) Weekly profits ($\log(x+1)$ transformation)	(3) Weekly profits ($\log(x+1)$ transformation)
Opportunity	0.231*** [0.0324]	4.636* [2.737]	3.492 [2.166]
Age of entrepreneur	-0.00399*** [0.00114]	0.00189 [0.00733]	0.00109 [0.00616]
Raven test score (standarized)	0.0266* [0.0138]	0.114*** [0.0440]	0.0705** [0.0349]
Digit span test score (standarized)	0.0894*** [0.0146]	0.113*** [0.0345]	0.106*** [0.0287]
Years of schooling	0.0107*** [0.00390]	-0.0290 [0.0325]	-0.0173 [0.0246]
Locus of control (standarized)	-0.0209* [0.0127]		-0.0681* [0.0383]
Attitude towards risk (standarized)	0.0587*** [0.0139]		0.0764*** [0.0275]
Self satisfaction (standarized)	0.159*** [0.0161]		0.143*** [0.0310]
Optimism (standarized)	0.0313** [0.0159]		0.0254 [0.0337]
CBP score (standarized)	0.134*** [0.0140]		
Constant	6.623*** [0.0706]	5.809*** [0.641]	5.994*** [0.533]
Observations	6464	4813	4549
Model	OLS	IV	IV
F statistic from first stage	.	25.61	14.37

Standard errors in brackets

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

Table 11: Composite Business Practice score

	(1)	(2)	(3)
	Composite Business Practice score (standardized)	Composite Business Practice score (standardized)	Composite Business Practice score (standardized)
Opportunity	0.251*** [0.0281]	3.258** [1.557]	2.897* [1.557]
Age of entrepreneur	-0.00265*** [0.000888]	0.00342 [0.00423]	0.00429 [0.00449]
Raven test score (standardized)	0.0146 [0.0118]	0.0621** [0.0291]	0.0379 [0.0276]
Digit span test score (standardized)	0.0681*** [0.0122]	0.0573** [0.0278]	0.0489* [0.0251]
Years of schooling	0.0611*** [0.00306]	0.0228 [0.0199]	0.0288 [0.0180]
Locus of control (standardized)	0.00176 [0.0110]		-0.0350 [0.0267]
Attitude towards risk (standardized)	0.112*** [0.0116]		0.129*** [0.0213]
Self satisfaction (standardized)	0.0796*** [0.0127]		0.0655** [0.0311]
Optimism (standardized)	0.00457 [0.0123]		-0.0404 [0.0259]
Constant	-0.448*** [0.0566]	-1.058*** [0.364]	-1.064*** [0.391]
Observations	7634	5770	5383
Model	OLS	IV	IV
F statistic from first stage	.	34.28	19.28

Standard errors in brackets

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