



*INTER-AMERICAN DEVELOPMENT BANK
BANCO INTERAMERICANO DE DESARROLLO (BID)
RESEARCH DEPARTMENT
DEPARTAMENTO DE INVESTIGACIÓN
WORKING PAPER #605*

BECOMING AN ENTREPRENEUR

BY

HUGO ÑOPO
PATRICIO VALENZUELA

INTER-AMERICAN DEVELOPMENT BANK

MARCH 2007

**Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library**

Ñopo, Hugo.

Becoming an entrepreneur / by Hugo Ñopo, Patricio Valenzuela.

p. cm.

(Research Department Working paper series ; 605)

Includes bibliographical references.

1. Self-employed—Chile. 2. Businesspeople—Chile. 3. Self-employed women—Chile. I. Valenzuela, Patricio. II. Inter-American Development Bank. Research Dept. III. Title. IV. Series.

HD7156 .Ñ787 2007
658.041 Ñ787----dc-22

©2007

Inter-American Development Bank
1300 New York Avenue, N.W.
Washington, DC 20577

The views and interpretations in this document are those of the authors and should not be attributed to the Inter-American Development Bank, or to any individual acting on its behalf.

This paper may be freely reproduced provided credit is given to the Research Department, Inter-American Development Bank.

The Research Department (RES) produces a quarterly newsletter, *IDEA (Ideas for Development in the Americas)*, as well as working papers and books on diverse economic issues. To obtain a complete list of RES publications, and read or download them please visit our web site at: <http://www.iadb.org/res>.

Abstract¹

Using the 1996-2001 Chilean CASEN Panel Survey, this paper analyzes the impact on income of the switch from salaried employment to entrepreneurship (self-employment and leadership of micro-enterprises). By means of a *difference-in-differences non-parametric matching* estimator the paper alleviates problems of selection bias (on observable and unobservable traits) and creates the appropriate counterfactuals of interest. The results indicate that the income gains associated with the switch from salaried employment to entrepreneurship are positive, statistically significant and financially substantial. Even more, the results are qualitatively the same using mean and medians, suggesting that the impacts are not influenced by the presence of few “superstar winners.” Additionally, the income changes associated with the reverse switches (from self-employment to salaried jobs) are negative. The results also suggest interesting gender differences, as females show higher gains than males on the switch from salaried jobs to entrepreneurship and lower losses on the reverse switch.

JEL Classification: J16, J31, J41

Keywords: difference-in-differences, non-parametric matching, micro-enterprises

¹ The comments and suggestions of Omar Arias, Dante Contreras, Daniel Mejía and participants at the NIP 2006 Meetings are gratefully acknowledged. Corresponding author: Ñopo. Tel.: +1 202 623 2050; fax: +1 202 623 1772. Email address: hugon@iadb.org

1. Introduction

In conditions of high unemployment and low real wages it is important for economies to increase labor demand and create new sources of income. One way of doing so is to encourage the creation of new firms, in this generating not only new jobs but also profits for their owners. In this context, the economy benefits from encouraging individuals with entrepreneurial abilities to put in practice their traits and become entrepreneurs. Needless to say, the policy option of encouraging entrepreneurship comes at a cost, and hence it constitutes an interesting public policy issue (van Praag and Cramer, 2001).

The role of micro-enterprises as catalysts for economic development and as a refuge against poverty for important segments of the population has already been emphasized (Gulli, 1998, and Clark et al., 1999). Striving toward these objectives, many programs by governments, international organizations and NGOs encourage and support small firm ownership. The objectives of micro-enterprise programs—economic development, job creation, and self-sufficiency—make them different from other anti-poverty programs because they can find potentially efficient ways of helping people to help themselves (McKernan and Chen, 2005). With these resources flowing into the micro-enterprise sector, a relevant question arises: what are the individual gains associated with becoming an entrepreneur?

This study explores the impact on income generation of an individual who decides to run her/his own business either as a “self-employed worker” or a “micro-enterprise owner.”² We refer to labor income from the main activity, excluding other kinds of income (e.g., rental income or subsidies).³ By means of a *difference-in-differences* approach paired with a non-parametric matching estimator we analyze that impact for Chile between 1996 and 2001, using the CASEN Panel Survey. The period defined by those years was characterized by fast workforce growth, high unemployment and a decline in wages, and these negative shocks motivated active switching dynamics between the salaried sector and self-employment.

The relevance for Latin America of a study like the one we propose here rests on the fact that the employment share of the micro-enterprise sector in the region was more than 50 percent during the 1990s. In Chile, particularly, the importance of the sector is unquestionable, as it

² The terms “self-employed” and “micro-enterprise owner” will be defined with more precision, for the purposes of this paper, in the next section.

³ We will use indifferently the term income for employees and to self-employed and micro-enterprise owner, although in the last two it refers to revenues minus expenses.

represents 80 percent of firms and almost 40 percent of jobs, with a growing tendency (Valenzuela and Venegas, 2001). This sector is no longer considered to be a refugee segment of the economy with low productivity but is instead regarded as an economic engine endowed with great potential to create jobs and generate income. This makes the case of Chile even more interesting, as it represents an exception within the Latin American panorama where the self-employed earn, on average, more than non-micro-enterprise employees; in fact, self-employment constitutes an important source of higher incomes in Chile (Orlando and Pollack, 2000).

After this introduction we briefly survey the literature in Section 2 and then turn to a description of the data in Section 3. In Section 4 we discuss the methodological considerations for our empirical approach, and the main results are presented in Section 5. Section 6 concludes.

2. A Brief Literature Review

An important portion of the literature has focused on the determinants of being an entrepreneur, especially in the recent years. Along those lines Lazear (2004, 2005) postulates that individuals who are innately well versed in a variety of fields, being Jacks-of-All-Trades, have higher chances of becoming entrepreneurs. Silva (2006), however, questions those results with an analysis of longitudinal data, showing that changes in the spread of knowledge across different fields do not necessarily increase the prevalence of entrepreneurship. The work of Hamilton (2000) offers a complementary explanation on motivations for becoming an entrepreneur, highlighting the relevance of non-pecuniary benefits of the self-employment.

Another portion of the literature has examined the difference between average earnings of salaried employees and those of self-employed workers. The studies in this line have found evidence that the initial earnings growth in a new business for entrepreneurs is larger than the growth in wages for salaried employees starting a new job (Brock and Evans, 1986; Rees and Shah, 1986; Borjas and Bronars, 1989; and Evans and Leighton, 1989). However, Hamilton (2000) points out some problems of this strand of the literature, particularly the existence of “superstar winners” upwardly biasing the results, the need for a longer time approach and the need for a proper account of incomes, expenses, earnings, wages and tax structures in the comparison between salaried employees and entrepreneurs.

On a different path, the literature on entrepreneurship has benefited from the evaluation of micro-enterprise programs. In the United States, longitudinal analysis of micro-enterprise

program participants suggests positive impacts on income (Clark et al., 1999, Himes and Servon, 1998), asset ownership (Raheim, 1996; Himes and Servon, 1998) and a reduction in enrollment in transfer programs (Raheim, 1996). However, experimental designs aimed at the reduction of selection biases on the evaluation of this type of programs find somewhat different results, with no increase in employment rates or income but interesting reductions in the length of unemployment spells (Benus et al., 1995). As the evidence on the benefits of becoming entrepreneur in this type of studies comes from the impact evaluation of interventions (programs aimed at promoting micro-entrepreneurship), there is an implicit exogenous provision of “an opportunity to become entrepreneur.” Our paper differs from that literature in the sense that it does not use that kind of exogenous intervention but uses the individual decision on becoming entrepreneurs over the course of five years.

In the particular case of Chile, the only study that evaluates the impact of being a micro-enterprise owner is Huaita and Valenzuela (2004). Focusing on women, they find a positive impact on income. We depart from that paper by trying to alleviate two of its most important limitations. First, their paper is a cross-section study that assesses differences in income between micro-entrepreneurs and wage earners at one point in time, controlling for differences in observable characteristics. It does not address the problem related to differences in unobservable characteristics. Second, that paper uses propensity score matching to create the counterfactuals of interest, and there are technical problems with the application of this technique within this context. The specific details about the limitations of the propensity score approach will be introduced later in the methodological section.

The theoretical framework that provides a context for our results is the one developed by van Praag and Cramer (2001). They propose a model of sector choice constructed on the basis of individuals’ comparisons between potential profits as entrepreneurs and wages as salaried employees, taking into consideration individual ability and risk aversion. In the case of Chile, the economic crisis that hit the country around 1998 had a negative impact on real wages, and that impact did not affect all economic sectors simultaneously. This generated an unusual situation in which the relative wages for different occupations changed significantly during a short period and hence the incentives to switch from one occupation to another, but especially from the salaried sector to the entrepreneurial segment of the economy, increased.

3. Definitions and Data

In this study we use the Chilean panel CASEN Survey 1996-2001, conducted by the Ministry of Planning (MIDEPLAN). CASEN is the most relevant socioeconomic survey in Chile, which is representative both at the national and regional level. The 1996 edition of CASEN was used as the basis for the construction of the panel. Then, a sample of households from the Third, Seventh, Eighth and Metropolitan Regions were re-interviewed in 2001; the population of these regions represents almost 60 percent of Chile's population. In order to maintain a representative sample in the regions just mentioned, we use the expansion factors of the survey in all our estimations.

Although there are several operative ways of defining the micro-enterprise sector (by the number of workers, the average sales or the level of fixed assets of the firm, among others), here we use the criteria used by FOSIS (*Fondo de Solidaridad e Inversión Social*). This definition classifies as a micro-enterprise a firm that has at most nine employees, including the owner, and in this instance the micro-entrepreneur is the individual directing the micro-enterprise. In addition, we distinguish between “self-employed individuals” (those directing micro-enterprises with only one worker) and “micro-enterprise owners” (those who have between one and eight dependent workers). Some studies exclude professional workers from the self-employed, especially those that analyze the relationship between self-employment and poverty. We did not, however, exclude professional micro-entrepreneurs from the sample of micro-enterprise owners. Table 1 shows descriptive statistics of the main variables of interest for salaried employees, self-employed workers and micro-enterprise owners, both in 1996 and 2001. Additionally, we split our sample between males and females.

The period between the years of data collection was characterized by an important increase in unemployment levels and a deterioration in real wages. Figure 1 shows the evolution of the unemployment rate and the annual real wage change for the whole economy. Of course, these averages include heterogeneities (not shown in the figure) such that some occupations/sectors experienced negative real growth during some periods between 1996 and 2001. In those cases, we think, the incentives to switch from salaried employment to entrepreneurship are the clearest (and this is particularly the case for service workers, vendors and merchants, operators and craftsmen, fitters, and unskilled workers). Table 2 shows information about the transitions among four sectors (salaried employment, self-employment,

micro-entrepreneurship and entrepreneurship) during the period of analysis. We focus our study on the transition from salaried employment to self-employment (7.64 percent of the active labor force in 1996) and from salaried employment to micro-entrepreneurship (1.2 percent); but we also evaluate the impact of the transitions from self-employment to salaried employment (6.5 percent) and from self-employment to micro-entrepreneurship (1.58 percent).

The outcomes of interest are monthly and hourly income from the main occupation. We explicitly refrain from considering the total income of individuals that could include other kinds of amenities (rental income, subsidies or tax benefits). As mentioned above, Hamilton (2000) raises several questions regarding the exercise of comparing measures or earnings between the self-employed and salaried workers. On the one hand, one plausible explanation for a positive and significant impact on profits of becoming an entrepreneur could be a lower tax burden per unit of earnings among entrepreneurs than among wage employees. On the other hand, entrepreneurs may have at their disposal more ways to under-report income (and hence evade taxation). We have at least two reasons to believe that tax burden and tax evasion should not play a significant role in explaining our results. On the one hand, in Chile the six poorer deciles of the workers have an income tax burden close to zero, regardless of whether they are self-employed or salaried workers (Engel et al., 1998). On the other hand, tax evasion tends to be smaller in the poorest deciles of the population where the self-employed are most numerous (Barra and Jorratt, 1999).

4. Methodological Considerations

Given that this study evaluates the impact of switching from salaried employment to entrepreneurship, we restrict our attention to those individuals who were salaried workers in 1996. Among them, we compare two groups of individuals according to their labor market situation in 2001: those who remained in the salaried sector (“stayers”) and those who became micro-entrepreneurs (“switchers”). Borrowing the language from the impact evaluation literature, we classify the latter as the “treatment” and the former as the “control” group. Additionally, taking into account that among the micro-entrepreneurs we distinguish between the self-employed (no dependent workers) and micro-enterprise owners (between one and eight dependent workers), we consider each of these two types of micro-entrepreneurship a separate treatment.

Exploiting the panel nature of the data on the treatment and control groups outlined above, we compute a difference-in-differences matching estimator to measure the impact of becoming an entrepreneur. The matching technique removes observable differences between the “treatment” group and the “control” group before the treatment (in this case, in the year 1996). Hence matching will yield unbiased estimates of the “treatment” effect when selection is only on observable traits. Nonetheless, we are aware that one of our additional problems is that it there could exist selection on unobservable traits such as entrepreneurial ability, personality, confidence or motivation. The difference-in-differences element of our estimator allows us to address these issue as long as those unobservable traits are constant over time.

In matching, the ideal control group must have the same joint distribution for all traits that affect the outcome as the treatment group. The closer the joint distributions, the better the control group. One popular way in which the impact evaluation literature attempts to make the distributions of observable characteristics of treatment and control groups similar is by using propensity score matching. However, in this setup the use of that technique is somewhat limited due the fact that the treatment fails to satisfy the “unconfoundness” assumption (or “ignorable treatment” or “conditional independence”) that Rosenbaum and Rubin (1983) state as a necessary condition. Namely, it could be the case that the treatment is not exogenously given. There are good reasons to believe that the “treatment” (becoming an entrepreneur) is not exogenously given; as this is required for a proper identification of the treatment effect we use non-parametric matching. It could be the case that those who decide to become entrepreneurs do so based on the human capital they have accumulated and in the talents that they have. Some of these human capital characteristics are observable in the sense that there are variables in the survey that measure them (age, schooling, marital status and geographic location, among others). It is necessary then to take those characteristics into account, using the available information and a matching technique that is not based on propensity scores (in this case, we use non-parametric matching on characteristics).

Thus, under the framework of *difference-in-differences*, we introduce the non-parametric matching procedure in order to obtain a control group of “stayers” with the same characteristics as members of the “switchers” group (in 1996). In this process we re-sample all “switchers” without replacement and match each observation to one synthetic salaried employee (“stayer”),

obtaining an average of the characteristics of all salaried employees with exactly the same characteristics X. The matching algorithm in its basic form can be summarized as follows:

- Step 1: Select from the sample one individual who is “self-employed” (“micro-entrepreneur”) in 2001, without replacement.
- Step 2: Select all the “salaried employees” in 2001 who have the same characteristics X as the “self-employed” (“micro-entrepreneur”) previously selected.
- Step 3: With all the individuals selected in Step 2, construct a synthetic individual whose characteristics are equal to the average of all of them and “match” him/her to the original “self employed” (“micro-entrepreneur”).
- Step 4: Put the observations of both the original individual and the synthetic one in their respective new samples of matched individuals.
- Repeat steps 1 through 4 until the original “self-employed” (“micro-entrepreneur”) sample is exhausted.

In this way, the algorithm delivers a set of matched “self-employed” (“micro-entrepreneur”) and “salaried employee” individuals for whom the distributions of the observable characteristics X are equal (in 1996). Then, the comparison of related outcomes (monthly and hourly labor earnings) is made from the comparison of these two groups. The literature on impact evaluation refers to the set of matched individuals as being on the *common support* of observable characteristics. It is claimed that such a comparison on the common support suffers less from problems of selection bias based on observable characteristics. Also, as a result of the application of the algorithm, we are left with two sets of unmatched individuals: those “switchers” whose observable characteristics have no counterpart among the “stayers” and, vice-versa, those “stayers” whose observable characteristics have no counterpart among the “switchers.” For additional details on the computation of the matching estimators and standard errors, as well as for a detailed proof of the consistency of the estimator obtained from this method, see Ñopo (2004).

5. Results

This section reports our main empirical results for the impact of becoming an entrepreneur (self-employed or micro-enterprise owner). Using the dataset and methodology described in the previous two sections we explore the impact on monthly and hourly income. We split our sample between women and men to evaluate gender differences. Hence, for each female (or male) who switched to self-employment (or micro-entrepreneurship) in 2001 we seek an individual who is similar to her/him in a set of observable characteristics in 1996 but remained a salaried worker in 2001. For the set of observable characteristics we try four combinations. The first considers age and years of schooling, and the second adds marital status to the previous two. The third adds the zone where the worker lives (urban vs. rural). Finally, the fourth adds an indicator variable for whether the individual lives in the Metropolitan Region or not.

Provided that the impact estimators are computed from the comparison of matched individuals, it becomes relevant to explore the percentage of individuals who end up being matched after the application of the algorithm described above. That is, borrowing again the impact evaluation language, we are interested in the measure of the common support. Table 3 shows the corresponding percentages of salaried workers, self-employed workers and micro-entrepreneurs for whom we were able to find the desired matches. There are two issues to highlight. First, as this is a non-parametric method, it suffers from the “curse of dimensionality.” Namely, as the number of control characteristics increases, the likelihood of finding matches goes down, and consequently the percentage of matched individuals (or equivalently, the measure of the common support) decreases. Second, the percentage of matched individuals is greater among the groups who switched to self-employed and micro-entrepreneur than among the group who remained salaried workers. This may be linked to the traditional claim that there exists some sort of “entrepreneurial ability,” which, in this case, is correlated with the set of observable characteristics. Thus, while a fraction of self-employed workers and micro-enterprise owners can switch from salaried employment to entrepreneurship, a smaller percentage of salaried employees have the combination of observable characteristics that would allow them to switch. Even more, this is related to the issue of selection on observables discussed above. Those who select into self-employment or micro-entrepreneurship are not a random sample of the universe of workers in the labor force; they are selected in a non-random way. To compare those who switched sector with those who did not it is necessary to properly take this into

account. The differential matching percentages (or, using the language of impact evaluation, the different measures of the common supports) reflects the way in which our method addresses this issue.

Having explored the four sets of observable characteristics outlined above, showing empirically both the curse of dimensionality and the relevance of the non-overlapping supports in our sample of workers, we will privilege expositional clarity for the rest of the paper. For that reason we will focus on two sets of explanatory variables: the one that considers age, education and marital status; and the one that adds zone to the previous three. It is worth mentioning at this point that the results obtained from the use of the other two sets of observable characteristics (which we are not reporting) do not differ too much from the results that we are presenting here. They are available from the authors upon request.

Table 4 reports average observable characteristics for salaried employees, self-employed workers and micro-enterprise owners in and out of the common support for each of the two sets of matching characteristics that we are considering. Analyzing the characteristics of the matched and unmatched individuals (i.e., those who are in and out of the common support) is illustrative as it provides an idea of the potential size of the selection bias. Our results suggest some interesting differences. First, in terms of age the stories differ by gender. For males, the matched individuals are younger than the unmatched ones. For females, the unmatched are younger than the matched among the self-employed but not among the micro-entrepreneurs. Second, the analysis of education also reveals interesting facts, especially among micro-entrepreneurs. For both genders, the average education of those who decide to become micro-entrepreneurs and have no counterpart among salaried workers is substantially above than that one of the other two groups (non-comparable salaried workers and matched individuals, respectively). On the other hand, the average education of those who moved into self-employment is less than that of unmatched salaried workers and matched individuals. Third, regarding marital status, most of the males in the common support are (formally or informally) married and most of the females in the common support are single. Finally, most of the people in the common supports live in urban areas.

We now turn to the comparisons of interest (outcomes involving hourly and monthly income) between comparable switchers and stayers. Table 5 reports the monthly income gains associated with the switch from salaried employment to entrepreneurship (self-employment and

micro-entrepreneurship) and their respective standard errors, for both males and females. The “Treatment Group” rows show the estimations of the income changes between 1996 and 2001 for those who switched sectors. The “Control Group” rows show the analogous income changes for those who remained salaried workers during the period of analysis.

Note that the control groups show a decrease in real wages during the period analyzed in all but one case (female self-employment). This is in line with our motivating hypothesis that the reduction in real wages motivated the switch from employee to self-employed, especially considering that Chile experienced inflation of 22 percent between December of 1996 and December of 2001.

The difference-in-differences estimators are obtained from subtracting the changes in real wages for stayers from those of the switchers.⁴ Considering our two specifications, the impact of becoming self-employed on males is at least 114,976 Chilean pesos per month, which represents an increase of around 63 percent of the average income of salaried male workers in 1996. Similarly, the impact of becoming a micro-entrepreneur is at least 107,874 pesos per month, representing an income increase of around 24 percent. Among females the impact of becoming self-employed is higher than 146,194 pesos, representing an increase greater than 60 percent of the average income of salaried female workers in 1996, and the impact of becoming a micro-entrepreneur is 168,657 pesos, equivalent to 79 percent. Hence, the impact of becoming a micro-entrepreneur is positive, statistically significant and financially substantial. The evidence also suggests that these impacts are slightly higher among females. These impacts roughly represent between two and three times the Chilean minimum wage (which was 65,500 pesos by the end of 1996 and 105,500 pesos by the end of 2001).

The greater impact on women may reflect that, although women earn less than men overall, gender disparities tend to be smaller outside of the salaried sector, where self-employed workers are less likely to be subject to some sort of wage discrimination based on pure taste (a-la-Becker). This is in line with the results of Ñopo, Saavedra and Torero (2007) for Peru when comparing racial differences in earnings between wage earners and self-employed.

Measuring the impact of becoming an entrepreneur in terms of hourly income permits us to control for changes in the number of hours worked per month. The hourly income gains

⁴ We report standard errors only for the difference-in-differences estimators, not for the changes for switchers and stayers.

associated with the switch from salaried employment to entrepreneurship and their respective standard errors are reported in Table 6. The reduction in real wages experienced by the control group can also be seen here. Among males, the impact of becoming self-employed is over 537 pesos per hour, which represents an income increase of more than 58 percent, and the impact of becoming a micro-entrepreneur is over 627, representing more than 33 percent. Among females the impact of becoming self-employed is more than 1,847 pesos, representing an increase of around 120 percent, and the impact of becoming a micro-entrepreneur is 928 pesos, or 69 percent. Therefore, the results are qualitatively similar to the results of Table 5 (i.e., there is a significant impact on hourly income, which is greater for women than men). Nonetheless, there are some differences in the magnitude of the percentage impacts. The differences between the estimated percentage impacts in monthly income and hourly wages suggest the existence of changes in the number of hours devoted to work as well.

One plausible explanation for the positive and significant impact on the gains from becoming an entrepreneur could be that a few “superstar winners” (Rosen, 1986) influence the average statistics. To rule out that possibility we replicated our results using medians instead of means and they remain qualitatively unchanged. For the sake of brevity we are not including the related tables in this paper but they are available upon request. Thus, our results indicate that the income gains associated with the switch from salaried employment to entrepreneurship are not only positive, statistically significant and financially substantial, but they are also not influenced by outliers.

We conclude the analysis by exploring the income changes associated with switches that have self-employment as a departure point (moving either to the salaried sector or to micro-entrepreneurship). Tables 7 and 8 report these results within a setup that is similar to the one used for Tables 5 and 6 (i.e., for two sets of matching characteristics and split by gender).⁵

The results indicate an income loss associated to the switch from self-employment to the salaried sector and a gain from self-employment to micro-entrepreneurship, both for males and females. Interestingly, both the income gains and the income losses are smaller for females than males in this case, although these gender differences are not substantial. The estimators obtained

⁵ We neither report the measures of the common support nor the statistics of the sets of matched and unmatched individuals (as we did in Tables 3 and 4). They are available from the authors upon request.

for the monthly income changes as well as for the hourly income changes are qualitatively similar.

6. Conclusions

The micro-enterprise sector has progressed rapidly in the last decades in Latin America, both in terms of magnitude and labor conditions (wages). During this time the perception of the sector has changed as well. It is no longer considered to be a segment of the economy with low productivity and a refuge against poverty; instead it is regarded as an economic engine endowed with great potential to create jobs and generate income. In Chile the importance of the micro-enterprise sector is particularly important, as it represents most of the firms in the country and accounts for almost half of jobs.

This paper analyzes the decision and the impact on income of the switch from salaried employment to entrepreneurship. We explain the decision to become an entrepreneur in times of crisis in the labor market (i.e., high unemployment and low real wages) and the success of this decision according to the theoretical framework proposed by van Praag and Cramer (2001). Empirically, by means of the difference-in-differences estimator and using non-parametric matching we alleviate problems of selection bias and create the appropriate counterfactuals of interest. Our results indicate that the income gains associated with the switch from salaried employment to entrepreneurship are positive, statistically significant and financially substantial. Moreover, the results of the switch do not seem to be influenced by the presence of “superstar winners.”

One plausible explanation for the positive and significant impact on income of becoming an entrepreneur could be a lower tax burden on entrepreneurs than on wage employees as results of tax evasion. Nevertheless, it should be noted that in Chile the six poorer deciles of the workers have an income tax burden close to zero (Engel et al., 1998). In addition, tax evasion tends to be smaller in the poorest deciles of the population where the self-employed are most prevalent (Barra and Jorratt, 1999). Thus, the tax burden and tax evasion would not have a significant role in explaining our results, especially among those who switched to self-employment.

In conditions of high unemployment and low real wages, when it is important to increase labor demand and create new sources of higher incomes, encouraging the creation of new firms appears to be an interesting alternative. It not only results in gains to the entrepreneurs who

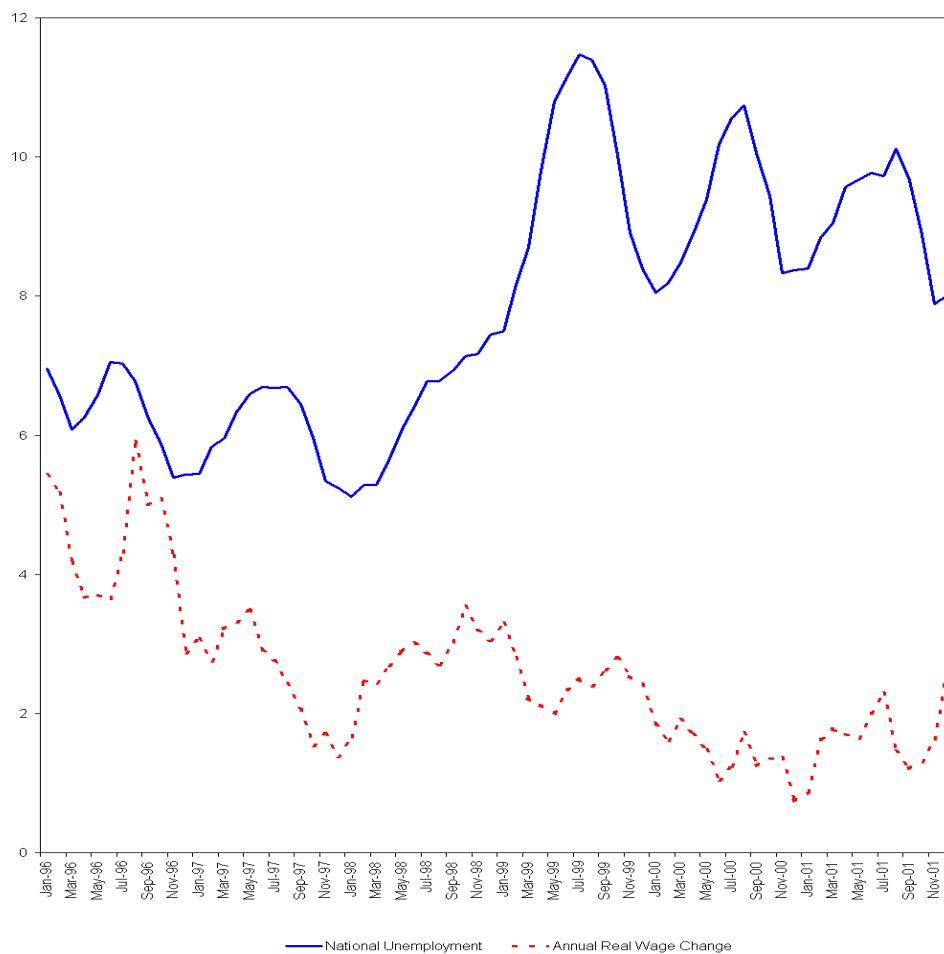
switch sectors, but also generates positive externalities through job creation and aggregate demand. Nonetheless, there are other public policy issues that should be investigated further in order to determine the optimal level of entrepreneurship that the economy should encourage.

References

- Barra, P., and M. Jorratt. 1999. "Estimación de la Evasión Tributaria en Chile." Santiago, Chile: Servicio de Impuestos Externos, Departamento de Estudios.
http://www.sii.cl/aprenda_sobre_impuestos/estudios/tributarios13.htm.
- Benus, J. et al. 1995. "Self-Employment Programs: A New Re-Employment Strategy, Final Report on the UI Self-Employment Demonstration." *Unemployment Insurance Occasional Paper 95-5*. Washington, DC, United States: U.S. Department of Labor.
- Borjas, G., and S. Bronars. 1989. "Consumer Discrimination and Self-Employment." *Journal of Political Economy* 97: 581-605.
- Brock, W., and D. Evans. 1986. *The Economics of Small Businesses: Their Role and Regulation in the U.S. Economy*. New York, United States: Holmes and Meier.
- Clark, P. et al. 1999. *Microenterprise and the Poor: Findings from the Self-Employment Learning Project Five-Year Survey of Microentrepreneurs*. Washington, DC, United States: Aspen Institute.
- Engel, E., A. Galetovic and C. Raddatz. 1998. "Reforma Tributaria y Distribución del Ingreso en Chile." Serie Economía 40. Santiago, Chile: Universidad de Chile, Centro de Economía Aplicada.
- Evans, D., and L. Leighton. 1989. "Some Empirical Aspects of Entrepreneurship." *American Economic Review* 79: 519-35.
- Gulli, H. 1998. *Microfinance and Poverty: Questioning the Conventional Wisdom*. Washington, DC, United States: Inter-American Development Bank.
- Hamilton, B. 2000. "Does Entrepreneurship Pay? An Empirical Analysis of the Returns to Self-Employment." *Journal of Political Economy* 108(3): 604-631.
- Himes, C., and L. Servon. 1998. *Measuring Client Success: An Evaluation of ACCION's Impact on Microenterprises in the United States*. U.S. Issues Series No. 2. Boston, United States: Acción International.
- Huaita F., and P. Valenzuela. 2004. "Ingresos y Microempresarias en Chile." <http://ideas.repec.org/p/wpa/wuwpla/0508010.html>
- Inter-American Development Bank (IDB). 2003. *IDB Group Support to the Micro-enterprise Sector (2000 - 2002): Achievements, Lessons and Challenges*. Washington, DC, United States: IDB.

- Lazear, E.P. 2004. "Balanced Skills and Entrepreneurship." *American Economic Review* 94(2): 208-211.
- . 2005. "Entrepreneurship." *Journal of Labor Economics* 23(4): 649-680.
- McKernan, S., and H. Chen. 2005. "Small Business and Micro-enterprise as an Opportunity- and Asset-Building Strategy." Opportunity and Ownership Project 3. Washington, DC, United States: Urban Institute.
- Ñopo, H. 2004. "Matching as a Tool to Decompose Wage Gaps." IZA Discussion Papers 981. Bonn, Germany: Institute for the Study of Labor (IZA).
- Ñopo, H., J. Saavedra and M. Torero. 2007. "Ethnicity and Earnings in a Mixed Race Labor Market." Forthcoming in *Economic Development and Cultural Change*.
- Orlando, M.B, and M. Pollack. Molly. 2000. "Micro-enterprises and Poverty: Evidence from Latin America." Washington, DC, United States: Inter-American Development Bank. Working Paper.
- Raheim, S. 1996. "Micro-enterprise as an Approach for Promoting Economic Development in Social Work: Lessons from the Self-Employment Investment Demonstration." *International Social Work* 39(1):69-82.
- Rees, H., and A. Shah. "An Empirical Analysis of Self-Employment in the U.K." *Journal of Apply Econometrics*: 95-108.
- Rosen, S. 1986. "The Economics of Superstars." *American Economic Review* 71: 845-58.
- Rosenbaum, P., and D. Rubin. 1983. "The Central Role of Propensity Score in Observational Studies for Causal Effects." *Biometrika* 70(1): 41-55.
- Silva, O. 2006. "The Jack-of-All-Trades Entrepreneur: Innate Talent or Acquired Skill?" IZA Discussion Papers 2264. Bonn, Germany: Institute for the Study of Labor (IZA).
- Valenzuela, M., and S. Venegas. 2001. *Mitos y Realidades de la Microempresa en Chile: Un análisis de género*. Santiago, Chile: Centro de Estudios de la Mujer.
- Van Praag, M., and J.S. Cramer. 2001. "The Roots of Entrepreneurship and Labour Demand: Individual Ability and Low Risk Aversion." *Economica* 68(269): 45-62.

Figure 1: Unemployment Rate versus Annual Real Wage Change
(percentage)



Sources: INE (<http://www.ine.cl>) and Central Bank of Chile (<http://www.bcentral.cl>)

Table 1: Average Sample Characteristics

Variables	Males			Females		
	Salaried employee	Self-employed	Micro-enterprise owner	Salaried employee	Self-employed	Micro-enterprise owner
1996						
Monthly income (Ch\$ 1996)	126,215	227,658	895,497	105,427	148,802	433,277
Hours of work per month	196	198	214	175	175	195
Hourly wages (Ch\$ 1996)	754	1,495	6,034	779	1,208	4,713
Number of people at home	4.95	4.65	4.41	4.81	4.66	4.79
Age	35.90	43.53	51.02	35.72	43.87	50.96
Education (in years)	9.17	7.80	10.50	10.46	8.13	9.67
Training (%)	23.86	34.62	53.13	28.72	34.23	54.17
Own housing (%)	53.72	65.02	79.69	60.56	63.99	66.67
Married (%)	65.87	75.03	85.94	43.04	63.10	66.67
Urban zone (%)	78.90	79.86	85.94	86.07	87.20	95.83
<i>Economic sector</i>						
Diversified (%)	0.66	0.60	0.00	0.94	0.00	0.00
Agriculture (%)	24.56	22.20	21.88	7.75	5.06	4.17
Mining (%)	3.53	1.45	0.00	0.08	0.00	0.00
Manufacturing (%)	19.18	9.65	15.63	11.50	14.58	8.33
Utilities (%)	0.99	0.12	0.00	0.23	0.00	0.00
Construction (%)	14.21	12.55	3.13	0.94	0.60	0.00
Retail, trade and restaurants (%)	11.01	28.59	37.50	19.80	60.12	62.50
Transport (%)	7.36	10.37	4.69	1.72	2.68	4.17
Financing (%)	3.39	1.81	7.81	5.79	2.08	4.17
Social services (%)	15.10	12.67	9.38	51.25	14.88	16.67
Observations	2,716	829	64	1,278	336	24
Variables	Males			Females		
	Salaried employee	Self-employed	Micro-enterprise owner	Salaried employee	Self-employed	Micro-enterprise owner
2001						
Month income (Ch\$ 2001)	152,151	229,179	517,525	131,580	194,001	447,363
Hours of work for month	188	190	212	172	177	224
Hourly wages (Ch\$ 2001)	952	1,444	2,703	904	1,445	2,358
Number of people in home	4.89	4.68	4.37	4.83	4.29	4.32
Age	37.66	44.82	48.82	36.81	45.58	50.50
Education (in years)	9.48	8.27	10.56	10.80	8.93	9.82
Training (%)	30.95	39.20	55.05	31.12	43.49	50.00
Own housing (%)	59.07	67.11	73.39	66.13	70.48	76.32
Married (%)	66.32	74.76	87.16	47.05	59.37	68.42
Urban zone (%)	76.93	76.09	88.07	86.55	86.67	94.74
<i>Economic sector</i>						
Diversified (%)	0.39	0.36	0.00	0.40	0.00	0.00
Agriculture (%)	25.39	24.76	14.68	7.70	4.44	2.63
Mining (%)	2.56	0.61	0.00	0.07	0.00	0.00
Manufacturing (%)	17.54	9.10	14.68	10.58	14.60	13.16
Utilities (%)	1.33	0.12	0.00	0.20	0.32	0.00
Construction (%)	11.69	16.14	10.09	0.87	0.00	0.00
Retail, trade and restaurants (%)	10.64	24.76	36.70	20.28	60.63	60.53
Transport (%)	9.24	10.80	6.42	3.08	1.59	7.89
Financing (%)	5.22	2.18	6.42	6.09	4.76	10.53
Social services (%)	16.00	11.17	11.01	50.67	13.65	5.26
Observations	2,856	824	109	1,494	315	38

Source: Authors' elaboration based on data from CASEN Panel Survey

Table 2: Sectorial Transitions 1996-2001

From:	To:	Percentage
Salaried employee	Salaried employee	67.55
	Self-employed	7.64
	Micro entrepreneur	1.20
	Entrepreneur	0.35
Self-employed	Salaried employee	6.50
	Self-employed	12.87
	Micro entrepreneur	1.58
	Entrepreneur	0.22
Micro entrepreneur	Salaried employee	0.19
	Self-employed	0.71
	Micro entrepreneur	0.60
	Entrepreneur	0.19
Entrepreneur	Salaried employee	0.11
	Self-employed	0.03
	Micro entrepreneur	0.19
	Entrepreneur	0.08
Total		100

Source: Authors' elaboration based on data from CASEN Panel Survey

Table 3: Measure of the Common Support

	Controlling by			
	(i)	(ii)	(iii)	(iv)
	Age and education	Age, education and marital status	Age, education, marital status and zone	Age, education, marital status, zone and Metropolitan Region
Men				
Salaried Employees	0.370	0.297	0.246	0.128
Self-Employed	0.862	0.745	0.641	0.417
Salaried Employees	0.059	0.045	0.041	0.014
Microenterprise Owne	0.573	0.537	0.526	0.185
Woman				
Salaried Employees	0.134	0.084	0.069	0.048
Self-Employed	0.786	0.682	0.674	0.412
Salaried Employees	0.021	0.008	0.008	0.001
Microenterprise Owne	0.810	0.130	0.130	0.009

Source: Authors' elaboration based on data from CASEN Panel Survey

Table 4: Average Statistics for Salaried Employees, Self-Employed Workers and Micro-Enterprise Owners in and out of the Common Support for Each Set of Matching Characteristics

	Controlling by					
	(ii)			(iii)		
	Age, education and marital status			Age, education, marital status and zone		
	Matched salaried and self-employed	Unmatched salaried	Unmatched self-employed	Matched salaried and self-employed	Unmatched salaried	Unmatched self-employed
Males						
Average age	34.1	37.9	42.5	34.0	37.8	37.9
Average education	10.1	9.6	8.8	10.3	9.5	8.6
Marital status (%)	82.0	73.9	65.8	83.0	74.9	58.6
Urban Zone (%)				96.5	83.1	74.0
Monthly Income (1996)	173,569	182,654	454,173	168,937	185,357	354,312
Hourly Income (1996)	993	1,206	2,870	979	1,204	2,234
Hours of Work (1996)	192.2	193.2	192.6	194.4	192.9	182.1
N° of People at Home (1996)	4.65	4.74	4.85	4.56	4.76	5.11
Females						
Average age	28.3	37.6	49.8	28.3	36.8	37.5
Average education	11.0	11.4	9.6	11.6	11.3	13.3
Marital status (%)	30.3	50.0	62.4	34.5	47.4	90.9
Urban Zone (%)				97.5	93.7	99.2
Monthly Income (1996)	115,800	165,881	123,221	113,030	165,413	122,600
Hourly Income (1996)	806	1,109	887	829	1,101	880
Hours of Work (1996)	164.5	174.3	158.2	158.2	174.9	158.2
N° of People at Home (1996)	4.39	4.65	3.62	4.53	4.63	3.60
	Matched salaried and micro-enterprise owner	Unmatched salaried	Unmatched micro-enterprise owner	Matched salaried and micro-enterprise owner	Unmatched salaried	Unmatched micro-enterprise owner
Males						
Age	34.2	36.9	38.3	33.7	36.9	38.6
Education	9.9	9.8	15.6	10.1	9.8	15.4
Marital status (%)	93.3	76.0	14.2	92.8	76.1	16.1
Urban Zone (%)				100.0	86.0	94.0
Monthly Income (1996)	190,861	182,999	362,360	197,252	182,693	356,871
Hourly Income (1996)	990	1,150	1,668	1,023	1,147	1,645
Hours of Work (1996)	202.2	194.0	218.0	203.2	194.0	217.4
N° of People at Home (1996)	4.74	4.69	3.29	4.78	4.68	3.37
Females						
Average age	43.1	36.8	37.5	43.1	36.8	37.5
Average education	11.9	11.3	13.3	11.9	11.3	13.3
Marital status (%)	10.9	47.4	90.9	10.9	47.4	90.9
Urban Zone (%)				100.0	93.8	99.2
Monthly Income (1996)	177,614	162,303	456,409	177,613	162,302	456,409
Hourly Income (1996)	928	1,092	2,638	928	1,092	2,638
Hours of Work (1996)	195.0	173.3	175.4	195.1	173.3	175.4
N° of People at Home (1996)	3.46	4.64	4.01	3.46	4.64	4.02

Source: Authors' elaboration based on data from CASEN Panel Survey

Table 5: Difference-in-Differences: Monthly Income

	(ii)		(iii)	
	Salaried employee to Self-employed	Salaried employee to Micro-enterprise owner	Salaried employee to Self-employed	Salaried employee to Micro-enterprise owner
Monthly Income, Ch\$				
Males				
Treatment Group	113,793	126,437	124,387	127,361
Control Group	-1,183	17,484	-15,805	19,487
Total Effect	114,976	108,953	140,192	107,874
	[2,851]	[15,014]	[3,207]	[14,761]
Females				
Treatment Group	182,962	151,181	185,354	151,181
Control Group	-5,140	-17,476	39,160	-17,476
Total Effect	188,102	168,657	146,194	168,657
	[4,555]	[2,900]	[4,070]	[2,901]
Monthly Income, Ch\$ (%)				
Males				
Treatment Group	0.618	0.369	0.644	0.366
Control Group	-0.012	0.106	-0.033	0.120
Total Effect	0.630	0.262	0.677	0.246
	[0.017]	[0.070]	[0.019]	[0.064]
Females				
Treatment Group	0.8357	0.537	0.848	0.537
Control Group	-0.1324	-0.257	0.251	-0.257
Total Effect	0.968	0.794	0.597	0.794
	[0.029]	[0.015]	[0.024]	[0.016]

Source: Authors' elaboration based on data from CASEN Panel Survey

[]: Standard errors.

Table 6: Difference-in-Differences: Hourly Income

	(ii)		(iii)	
	Salaried employee to Self-employed	Salaried employee to Micro-enterprise owner	Salaried employee to Self-employed	Salaried employee to Micro-enterprise owner
Income by Hour, Ch\$				
Males				
Treatment Group	451	678	459	683
Control Group	-85	48	-155	56
Total Effect	537	631	613	627
	[20]	[124]	[21]	[123]
Females				
Treatment Group	1,573	894	1,579	894
Control Group	-274	-34	-327	-34
Total Effect	1,847	928	1,906	928
	[46]	[16]	[43]	[16]
Income by Hour, Ch\$ (%)				
Males				
Treatment Group	0.528	0.447	0.543	0.446
Control Group	-0.050	0.099	-0.072	0.112
Total Effect	0.578	0.348	0.615	0.334
	[0.018]	[0.091]	[0.019]	[0.093]
Females				
Treatment Group	0.835	0.598	0.833	0.598
Control Group	-0.372	-0.087	-0.285	-0.087
Total Effect	1.207	0.685	1.118	0.685
	[0.034]	[0.016]	[0.029]	[0.016]

Source: Authors' elaboration based on data from CASEN Panel Survey

[]: Standard errors.

Table 7: Difference-in-Differences: Monthly Income

	(ii)		(iii)	
	Self-employed to Salaried employee	Self-employed to Micro-entrepreneur	Self-employed to Salaried employee	Self-employed to Micro-entrepreneur
Monthly Income, Ch\$				
Males				
Treatment Group	-124,036	143,352	-177,168	171,002
Control Group	20,000	1,555	33,539	2,310
Total Effect	-144,036	141,797	-210,707	168,692
	[4,406]	[15,322]	[6,046]	[15,375]
Females				
Treatment Group	-137,669	88,630	-151,318	88,630
Control Group	-27,827	-15,622	-28,048	-15,622
Total Effect	-109,842	104,252	-123,270	104,252
	[6,701]	[-]	[7,592]	[-]
Monthly Income, Ch\$ (%)				
Males				
Treatment Group	-0.508	0.439	-0.656	0.528
Control Group	0.052	0.050	0.125	0.053
Total Effect	-0.560	0.389	-0.781	0.475
	[0.018]	[0.073]	[0.022]	[0.092]
Females				
Treatment Group	-0.522	0.132	-0.565	0.132
Control Group	-0.1424	-0.064	-0.144	-0.064
Total Effect	-0.380	0.196	-0.421	0.196
	[0.039]	[-]	[0.044]	[-]

Source: Authors' elaboration based on data from CASEN Panel Survey

[]: Standard errors.

Table 8: Difference-in-Differences: Hourly Income

	(ii)		(iii)	
	Self-employed to Salaried employee	Self-employed to Micro-entrepreneur	Self-employed to Salaried employee	Self-employed to Micro-entrepreneur
Income by Hour, Ch\$				
Males				
Treatment Group	-954	1,468	-1,195	2,046
Control Group	160	147	224	149
Total Effect	-1,114	1,321	-1,419	1,897
	[277]	[332]	[409]	[451]
Females				
Treatment Group	-1,030	244	-1,153	244
Control Group	-2	130	-3	130
Total Effect	-1,028	114	-1,150	114
	[31]	[-]	[38]	[-]
Income by Hour, Ch\$ (%)				
Males				
Treatment Group	-0.530	0.743	-0.712	1.067
Control Group	0.179	0.053	0.268	0.055
Total Effect	-0.709	0.690	-0.980	1.012
	[0.024]	[0.154]	[0.038]	[0.207]
Females				
Treatment Group	-0.912	0.067	-1.033	0.067
Control Group	-0.013	0.102	-0.014	0.102
Total Effect	-0.899	-0.035	-1.019	-0.035
	[0.032]	[-]	[0.037]	[-]

Source: Authors' elaboration based on data from CASEN Panel Survey

[]: Standard errors.