This PDF is a selection from a published volume from the National Bureau of Economic Research

Volume Title: International Differences in Entrepreneurship

Volume Author/Editor: Josh Lerner and Antoinette Schoar, editors

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-47309-0; 978-0-226-47309-3

Volume URL: http://www.nber.org/books/lern08-2

Conference Date: February 1-2, 2008

Publication Date: May 2010

Chapter Title: Business Ownership and Self-Employment in Developing Economies: The Colombian Case

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Chapter URL: http://www.nber.org/chapters/c8217

hapter pages in book: (89 - 127)

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Business Ownership and Self-Employment in Developing Economies
The Colombian Case

Camilo Mondragón-Vélez and Ximena Peña

3.1 Introduction

There has been an increasing interest in the developing world to promote entrepreneurship as a crucial component of their policy agenda toward job creation, economic development, and growth. However, very little has been documented about entrepreneurs in these countries. In contrast, the establishment of stylized facts in the developed world in regard to this group's income participation, wealth accumulation, firm size, and job creation has generated a dynamic and growing literature in the area. Understanding entrepreneurial behavior in these countries is key for the design of appropriate economic policy. Our main goal is to characterize entrepreneurship in developing economies with substantial informal markets presence through a case study for Colombia. In particular, we explore the question of whether "pure" self-employment (defined by those who work just by themselves) in this environment is a form of or a path to entrepreneurship. We define entrepreneurs as individuals whose primary occupation is to run a business (working alone or employing others) and who are engaged in this occupation

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looking forward to grow or at least sustain their business in time. Thus, this definition excludes individuals engaged in a temporary activity to generate income while waiting to get hired as a paid worker.

There is no consensus around a precise definition of entrepreneurship in the literature. For example, Evans and Leighton (1989), Evans and Jovanovic (1989), and Blanchflower and Oswald (1998), among others, focus on self-employment. Cagetti and De Nardi (2006), Hurst and Lusardi (2004), and others define entrepreneurs as business owners. Quadrini (1999) and Akyol and Athreya (2009) consider both of these groups in their definition. The distinction across these two groups does not seem to be critical in the US economy, given that sensitivity analysis in some of these studies shows no significant differences in their main results across definitions.[1] Furthermore, calculations using the Survey of Consumer Finances (SCF) data indicate that roughly 70 percent of those that declare to be self-employed are also business owners. In contrast, our analysis shows that business owners and the self-employed in Colombia differ in important ways. For example, self-employment is more prevalent than business ownership: while the fraction of business owners within the employed remained at around 5 percent during the period of study, self-employment is much higher (20 percent to 30 percent in 1984 to 2006).[2] Therefore, not only do business ownership and self-employment need to be characterized separately, but the relationship between them also calls for clarification in this environment. Thus, what this chapter tries to determine is if individuals in developing economies who declare to work by themselves tend to have the same characteristics, motivations, and occupational dynamics as those who clearly run firms that employ others.

The Colombian case has all the ingredients of the typical Latin American country. Entrepreneurial activity (taking small and medium enterprises as a proxy) accounts for about 40 percent of total output, 48 percent of industrial employment, and 70 percent to 75 percent of employment in the retail and services sectors.[3] Colombia has a similar level of self-employment as other Latin American countries and displays similar informality levels, measured by the percentage of the labor force not covered by a pension

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1. See, for example, Hurst and Lusardi (2004).

2. While the Colombian data categorizes individuals as either *employers* or *self-employed who work alone* using a single question about primary occupation, widely used surveys for the United States such as the Survey of Consumer Finances (SCF) and the Panel Study of Income Dynamics (PSID) ask separate questions to determine occupation and business ownership. Given that we assume *employers* to be self-employed individuals who own a business that hires paid workers, the fraction of business owners to the total self-employed figure in Colombia does not include those self-employed who own single-worker businesses. Hence, one of the issues this chapter tries to address is if the typical self-employed in these economies is running some kind of firm.

3. According to the National Association of Financial Institutions (ANIF).

scheme.[4] Moreover, self-employment and informality are highly correlated in Colombia, given that this group shows the lowest access/contribution to social security. On the other hand, less than half of business owners have their firms registered, while only 5 percent of the self-employed register their business activities. In addition, the microdata for Colombia is remarkable. Despite the lack of panel data, the existence of retrospective questions in the Colombian National Household Survey, including previous job characteristics (occupation, economic sector, and firm size, among others), allow for a detailed analysis of transitions across occupations.[5]

We start by characterizing the different categories of "*nonwage earners*" (business owners and the self-employed) in section 3.2. While the relative size of business owners within the labor force has been stable at around 5 percent since the 1980s, the fraction of those self-employed increased from roughly 20 percent to 30 percent with the recession of the late 1990s and has maintained this higher level, despite the economic recovery cycle of the period from 2003 to 2006. We also document differences across these groups in several dimensions such as education, business industry, gender, age, hours worked, and informality. Business owners tend to be more educated than their self-employed peers. For example, 30 percent of business owners have a college education, compared to 11 percent for the self-employed (and 20 percent for wage earners). In regard to business industry, about three-fourths of the self-employed work in the services sector (of which almost half are engaged in trade). Business owners, on the other hand, show a higher participation in manufacturing and construction (40 percent in total, distributed in two-thirds and one-third, respectively). Finally, we show that the level of informality among the self-employed, measured by either social security coverage or pension contribution, is higher than that of business owners (which at the same time is below the one observed for wage earners). In addition, the levels of firm registration and registration renewal for business owners tend to be low. The differences across these groups of nonwage earners in education and the business industry are key dimensions in determining the type of entrepreneurship they are engaged in.[6]

We then characterize transitions across occupations and analyze the financial motivations of business owners and the self-employed. In section 3.3, we construct transition matrices across the different states and occupations (for one-year periods) of agents within the labor force: unemployed,

4. Note that self-employment is frequently considered a form of entrepreneurship by the entrepreneurship literature, while at the same time, it is used as a proxy for informality levels in the informality literature.

5. The evidence for Colombia presented in the World Bank's "Informality: Exit and Exclusion" flagship report (Perry et al. 2007) differs in important ways from other Latin American countries such as Argentina and the Dominican Republic.

6. Mondragón-Vélez (2009) shows these observable characteristics are highly correlated in the case of the US economy and determine different types of entrepreneurship.

wage earner, self-employed, and business owner. The analysis of these matrices across time shows that the high persistence that characterizes the employed (wage earners, self-employed, and business owners) is less sensitive to the business cycle for the nonwage earners. Moreover, while the majority of the new self-employed and business owners in the economy comes from the pool of wage earners rather than from unemployment, the transitions between self-employment and business ownership (and vice versa) are extremely low. This last fact can be interpreted as evidence against the idea of self-employment as a primary phase toward business ownership. Another interesting finding is that the flow of unemployment to self-employment is about eight times that of unemployment to business ownership. This argues in favor of the idea that self-employment is a temporary activity carried out by those who fail in the search for a paid job. In addition to the analysis of the transition matrices, we also characterize each of the flows involving self-employment or business ownership through the estimation of probit regressions on demographics, labor history, and business characteristics. The results imply that entry to self-employment (either from paid work or unemployment) is characterized by low human capital (defined by age and education) and a strong survival motive (for those with families to support). Entry to business ownership, on the other hand, is characterized by higher human capital and weaker survival motives. Exit flows generally show higher voluntary motivations for the self-employed, who return to a better job in paid work or end some temporary activity, than for business owners, who generally tend to exit due to the failure of their business ventures. These results argue once again against the idea of self-employment as a form of or a first step toward entrepreneurship.[7]

In section 3.4, we study the financial motivations of each of these groups of nonwage earners. The main findings show that while there are clear financial motivations for business owners that may justify the risk involved in running their own business, the self-employed's earnings are generally lower than those of their wage-earning peers. We show that while the distribution of earnings for business owners has a higher mean, median, and right skewness than that of wage earners, the earnings distribution of the self-employed shows lower levels for the same moments relative to wage earners. Furthermore, while the earnings gap between wage earners and business owners is positive and increases along the (earnings) distribution, that between wage earners and the self-employed is negative and decreases along the distribution.

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7. The evidence related to the transition flows and determinants of self-employment reinforce the findings of the World Bank's "Informality: Exit and Exclusion" study (Perry et al. 2007) in regard to the involuntary nature of self-employment in the case of Colombia. In other words, given a continuum of countries defined by the mix of voluntary versus involuntary entrance into self-employment, Colombia displays a higher share of involuntary entrance than other countries in the region.

Altogether, the findings of this chapter suggest that in general, self-employment in this economy is neither a form or an initial phase toward entrepreneurship.[8] Using very different data sets, two other chapters contained in this volume have similar findings in regard to the marked differences in observable characteristics between different types of independent workers. Ardargna and Lusardi (using the cross-country Global Entrepreneurship Monitor data) find that those who enter entrepreneurship pursuing a business opportunity and those who enter entrepreneurship due to the lack of other available alternatives differ in important ways (see chapter 1 in this volume). On the other hand, De Mel, McKenzie, and Woodruff (using their own data from Sri Lanka) show that the majority of own-account workers tend to share the characteristics observed for wage workers rather than for business owners (see chapter 2 in this volume). Thus, further studies are required in order to develop new data sets, perform alternative estimations, explore these issues in other developing economies, and construct theoretical models that explain the behavior of this group of agents in such an environment.

3.2   Characterizing Entrepreneurship in Colombia

The literature considers alternative ways to define an individual as an entrepreneur. These include self-employment, business ownership, or a combination of the two. Given the structure of the data, we work with three separate categories of nonwage earners: business owners, self-employed, and self-employed* (see the appendix for a description of the data).[9] A scatter plot of the unemployment rate versus the fraction of business owners and self-employed reveals that while the former seems to be acyclic, the latter is countercyclical: the higher the unemployment rate, the higher the fraction of self-employed.[10] Figure 3.1, portraying the fraction and composition of non-

8. These findings shed light on the debate regarding informal employment usually associated with self-employment. From a labor supply perspective, informality has been traditionally attributed to segmentation or "dualism" in the labor market: informality, an insecure form of labor, is regarded as the only feasible alternative to unemployment. This view has been challenged by the observation that some workers seem to be voluntarily moving to the informal sector to improve their options. For example, agents might be attracted by a promising income stream associated with a successful transition into entrepreneurship or by the flexibility in working hours. This suggests a "microentrepreneurial" nature of informality (for example, see Cunningham and Maloney [2001], Maloney [2004], and Pisani and Pagan [2004]).

9. The Colombian data divides the population as either employed, unemployed, student, disabled, or inactive. Among the employed, it distinguishes between wage earners (in the private or public sectors); housekeepers, maids, cooks, or other servants; the self-employed; business owners; and nonpaid workers of family businesses. We consider housekeepers, maids, or servants as wage earners unless they declare to be self-employed in these type of occupations (which means that they work for other households as independent contractors and are thus classified as self-employed*).

10. An alternative exercise using gross domestic product (GDP) growth instead of the unemployment rate shows similar results.
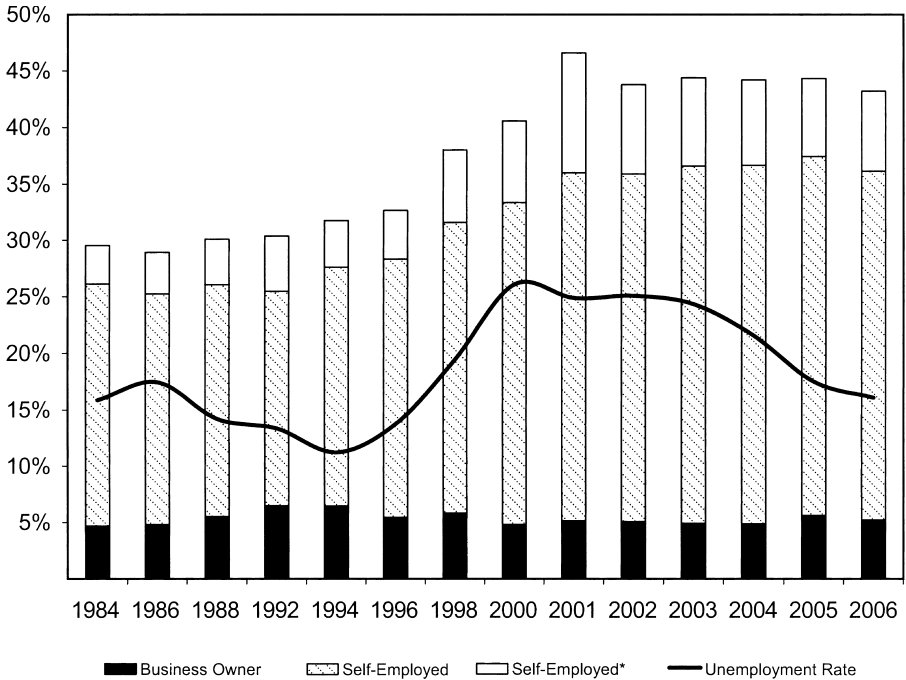
Fig. 3.1   Fraction of nonwage earners within the employed (1984 to 2006)
Note: See note 9.

wage earners together with the unemployment rate between 1984 and 2006, confirms the previous observations and generates new insights. First, note that the fraction of nonwage earners in the economy tends to be stable over long periods of time. The average fraction of nonwage earners increased permanently in the late 1990s from nearly 30 percent in 1984 to 1998 to about 40 percent after the year 2000. This structural change coincided with the biggest recession of the Colombian economy in the past decades. However, while the average fraction of business owners has remained relatively stable around 5 percent, the self-employed increased from around 20 percent in 1984 to 1996 to over 30 percent in the subsequent period. Similarly, the self-employed* went from 4 percent until 1996 to 7 percent between 1998 and 2006.[11] Interestingly, the fraction of self-employed is responsive to the unemployment rate only when it increases. That is, when the unemployment rate increases, so does the fraction of self-employed; however, when unemployment decreases, the fraction of self-employed remains at the same level.

11. Given that our sample covers the seven main cities, it is important to note that the behavior of this group is related to internal migration to urban areas due to the situation of violence concentrated in rural areas.

Thus, the occupational structure in Colombia for the past twenty years has been relatively stable, with 30 percent to 45 percent of the employed characterized as nonwage earners—a group mainly dominated by the self-employed. There was, however, a structural break in the composition of the employed associated with the economic recession of the late 1990s that resulted in a higher participation of all kinds of self-employment. In order to assess the impact of these dynamics of entrepreneurial activity in the economy, the next subsection characterizes the different groups of nonwage earners on several dimensions to understand the types of entrepreneurship they are involved in and the kind of entrepreneurs they are.[12]

3.2.1   Educational Differences

We start by documenting the education composition of the Colombian workforce. Over the period of study, the country has been undergoing a successful transformation, where the overall education level of the workforce has steadily increased from 7.26 years of schooling on average (with a standard deviation of 3.93) in 1984 to 9.62 (with a standard deviation of 4.26) in 2006. We consider four education categories: incomplete primary, completed primary, completed secondary, and completed tertiary education. Nonwage earners are more common at lower than at higher levels of education. The fraction of nonwage earners observed at the lowest levels of education increased steadily in the period from 1984 to 2006 from 41 percent to 63 percent for those with less than primary education and from 39 percent to 49 percent for those with completed secondary education. The behavior at the highest levels of education is somewhat different. The proportion of high school graduates in nonwage-earning activities increased from 19 percent in 1984 to 30 percent in 2006, while the fraction of college graduates in nonwage-earning activities has remained fairly stable at around 27 percent throughout the period of study. Today, more than half of the low educated (completed primary or less) who are employed and about one-third of those with more than a high school degree are either self-employed or business owners. Given that nonwage earners are about 43 percent of all the employed, low-educated individuals tend to be nonwage earners more than paid workers.

The differences in the education composition across occupations is sizeable. Despite the overall increase in the education level of the workforce, the differences in education composition across occupations remained fairly stable over time. Thus, in table 3.1, we present figures for 2006 only. First, business owners and wage earners show the highest education levels. The main difference between these two lies in the composition of the two top education levels; while in both groups, at least 67 percent completed second-

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12. The information available does not allow for the analysis of differences in the access to credit.

Table 3.1   Educational composition of the employed (2006)

	A Education composition by occupation				
	Wage earners (%)	Business owners (%)	Self-employed (%)	Self-employed* (%)	Total employed (%)
< Primary	5	6	13	23	9
Primary+	27	27	41	54	33
Secondary+	48	37	35	22	42
College+	20	30	11	0	17
	B Mean differences on years of education (relative to wage earners)				
	Wage earners	Business owners	Self-employed	Self-employed*	
Mean	10.69	10.49	8.47	6.41	
Difference		0.21	2.22	4.29	
p-value		0.04	0.00	0.00	

ary education, 30 percent of business owners finished college, compared to 20 percent of wage earners. Hence, business owners are the most educated group. The self-employed and self-employed* are less educated than the average of the employed. Self-employed*, in particular, shows the lowest education levels. Taking into account that business owners are about 5 percent of the employed, the contribution of business ownership is proportional to its size for all education levels except college graduates. Therefore, those at the highest education level that choose to be nonwage earners tend to be business owners rather than self-employed. The bottom panel of table 3.1, which shows a difference of means test on schooling (for each occupation relative to wage earners), confirms the results.[13]

3.2.2   Sector Composition

Now we explore the sector composition of nonwage earners. For this purpose, we constructed ten sector categories from the reported two-digit economic sector classification: primary sector (agriculture, farming, and extracting activities); manufacture I (food, beverages, textiles, clothing, and shoes); manufacture II (intermediate goods); manufacture III (furniture and capital goods); construction (construction and distribution of gas, water, and electricity); trade (wholesale and retail trade); entertainment (hotels, restaurants, bars, and other entertainment services); transportation; financial, real estate, and business services (finance, insurance, business, telecommunications, courier, information technology, equipment rental, and

13. The results shown for the difference-of-means test assume unequal variance across occupations. The only difference when the assumption of equal variance is imposed is that the difference between wage earners and business owners is significant only at levels above 6 percent.

real estate); and other services (education, health, and security). We present the sector composition in the industry (primary, manufacturing, and construction) and the services sectors focusing on private-sector wage earners, business owners, and the self-employed.[14]

Although the services sector has gradually increased its share of employment in all occupations since the 1980s, wage earners and business owners are relatively more concentrated in industry than the self-employed. The shares of wage earners and business owners in the industry and services sectors are around 40 percent and 60 percent, respectively, whereas for the self-employed, the proportions are 25 percent and 75 percent, respectively. However, although the former exhibit similar shares in the industry and services sectors, the *composition within each group of sectors* differs. While for wage earners, primary and construction on average account for nearly 8.5 percent, this figure is around 15 percent for business owners. The difference is compensated by a higher share of manufacture I and II for wage earners (see figures 3.2 and 3.3). There are also important composition differences between these two occupations in the services sectors. While business owners are more prevalent than wage earners in trade and Entertainment (35 percent and 26 percent, respectively), the latter are more concentrated in transportation, finance, and business services, as well as in health and education and personal services. The differences between wage earners and the self-employed are more striking; while manufacture I and II account for 27 percent of wage earners, they are only 13 percent of the self-employed. In addition, trade on average represents 36 percent for the self-employed and only 19 percent for wage earners.

Let us now focus on the sector composition of "nonwage earners." For business owners within the industry sectors, primary and manufacture III have compensated the cyclicality of construction and manufacture I. Manufacture II faced a sharp decline, passing from around 12 percent in the period from 1984 to 2001 to 5 percent in recent years, while manufacture III went from less than 1 percent at the beginning of the period to 4 percent in the final years. In addition, trade accounts for an important share for business owners, explaining (on average) about half of the activity in the services sectors.

As can be seen in figure 3.4, for the self-employed within industry, the activity in construction increased in the late 1980s into the mid-1990s, decreased in the late 1990s, and has maintained a level above 10 percent since 2000; the activity in manufacture I declined gradually from 15 percent in the mid-1980s to a level below 10 percent in recent years. The activity in manufacture II dropped from almost 5 percent for the period from 1984 to 2001

14. The primary, manufacture III, and other services sectors are not included in the graphs for simplification purposes but are included in the aggregate analysis. Also recall that all the self-employed* are in the same sector (i.e., household services)

Industry

Services
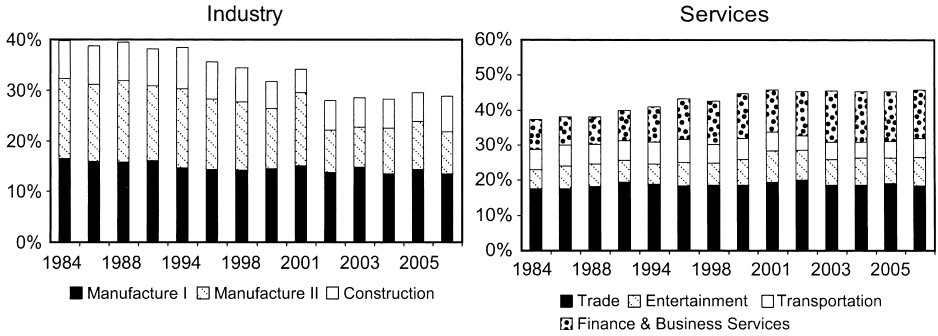
Fig. 3.2   Private wage earners sector composition

Industry

Services
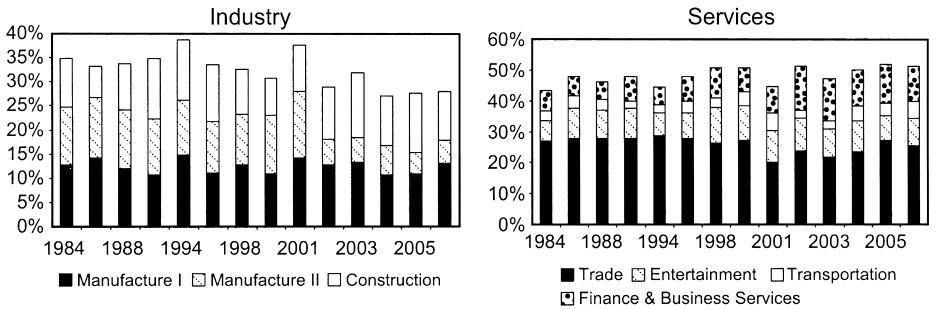
Fig. 3.3   Business owners sector composition

(a) Industry
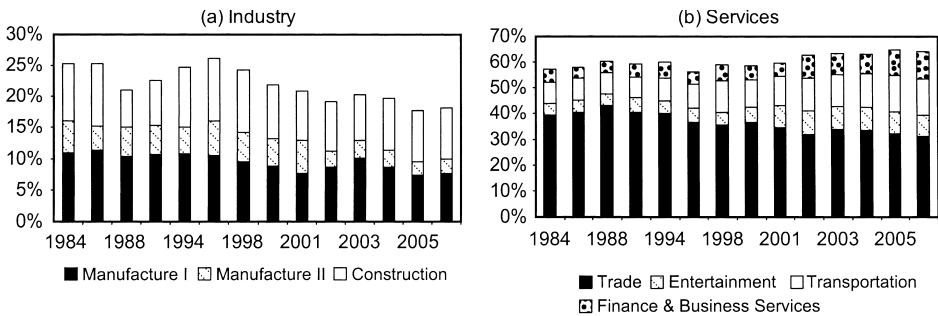
(b) Services

Fig. 3.4   Self-employed sector composition

to just below 3 percent in the last four years. Thus, the recession of the late 1990s reduced self-employment in the manufacturing sectors.[15] Regarding the services sectors, even though trade dominates this group, its participation has declined from around 40 percent until the mid-1990s to 32 percent

15. Manufacture III increased its participation from levels below 1 percent in the late 1990s and early 2000s to around 2.5 percent since 2002.

in the last five years. Entertainment and transportation increased their participations from 5 percent and 8 percent up to the late 1990s to 9 percent and 14 percent since the year 2000, respectively. Finally, the finance, business, and other services industry increased its participation from around 5 percent until 2001 to around 9 percent in the past five years. In sum, while business owners are relatively more concentrated in the manufacturing sectors, the self-employed are concentrated in the services sectors (especially trade).

3.2.3   Gender, Age, and Hours Worked

The self-employed and business owners also differ in regard to other covariates. For example, there is great variation in the gender composition across occupations, which is fairly constant through time. For instance, whereas women comprise 47 percent of wage earners, they account for 33 percent of business owners, 36 percent of the self-employed, and 91 percent of the self-employed*. Thus, despite the fact that their participation rate is lower than that of men, women are the majority of the self-employed*, and they are underrepresented in the remaining nonwage-earning categories. In addition, nonwage-earning groups tend to be older than wage earners. In 2006, the average age of wage earners was 34.5, while the comparable figures for business owners, the self-employed, and the self-employed* are 43.9, 40.8, and 39.7, respectively. Finally, on average, business owners work more hours per month than any other group, followed by wage earners, the self-employed, and finally, the self-employed*.[16]

3.2.4   Informality and the Nonwage-Earner Occupations

To understand the nature of entrepreneurship in the presence of a sizeable informal sector, it is important to disentangle the relationship between nonwage-earning activities and informal markets at the micro level. However, there are several distinct conceptual understandings of informality, and each one entails a different definition of the phenomenon. For this purpose, we use alternative definitions of informality and explore how they interact with the nonwage-earning categories defined previously.[17]

The informality module in the household survey allows for several empirical definitions of informality from the worker's perspective. The "official" definition of the Colombian government, adopted by the National Statistics Department (DANE), is largely driven by firm size. This definition states that informal workers are those who (a) work in firms with ten or

16. These figures, in addition to those describing earnings per hour, are interesting facts in regard to the nonpecuniary benefits associated with entrepreneurship—a topic that is out of the scope of this chapter.

17. By defining informality as noncompliance with labor market regulations such as social security provision, workers have no formal insurance against illness, unemployment, and/or old age. From the firm's perspective, informality is undesirable, because it is associated with low productivity levels. The causality of this relationship, however, is an empirical question that is out of the scope of this chapter.

fewer employees; (b) are unpaid family aids and housekeepers; (c) are self-employed (except for independent professionals); or (d) are business owners of firms with ten or less employees. Note that it does not include any criteria regarding compliance with labor market regulations. Under this definition, the informal activity has been steadily increasing its share in Colombia from about 50 percent in 1984 to over 56 percent in 2006. This increase in informality is considered high and is frequently quoted in the domestic debate.

Alternative definitions of informality are given by social security coverage and contribution. In contrast with the official definition, informality remains stable throughout the period of study under every social-security-related definition. The first of these definitions is given by *access and contribution to health insurance*. According to this criterion, the percentage of informal workers was around 44 percent in 2006. *Pension contribution* is another way to define informality. The percentage of workers who do not contribute to the pensions system has an inverted u-shape: it increased from 58.6 percent in 1996 to 61 percent in 2000 and then decreased steadily to reach 54.7 percent in 2006. Overall, pension contribution is more volatile and follows the economic cycle closer than health access and contribution. Informality is higher if measured through pension contributions than if measured through health coverage, suggesting either that agents value health over old-age insurance or the existence of informal insurance mechanisms (such as the subsidized health coverage program for low-income families currently in place or the contribution of one member of the household that provides coverage to other noncontributing members of the household). The relationship between the alternative definitions of informality is summarized in figure 3.5. The data correspond to the year 2006, though the relationship portrayed is similar during all the period of interest.

While over 40 percent of the employed are considered formal under all
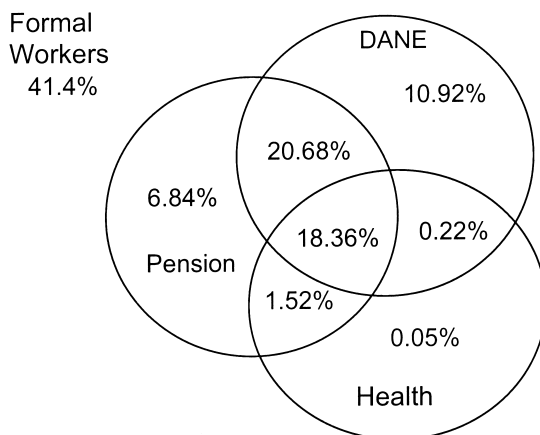
Fig. 3.5   **Dimensions of informality: Venn diagram (2006)**

definitions, 18 percent belong to the intersection of the three categories and are thus considered informal under every criteria. As shown in figure 3.5, the official definition captures a large fraction of those considered informal based on compliance with social security regulations, essentially because noncompliance is a small-firm phenomenon. Small firms find it easier to stay below the government radar and evade contributions. Thus, although the official definition does not include any criteria regarding social security coverage, it captures the phenomenon indirectly. Those considered informal by lack of health access and contribution are almost a subset of those who do not contribute to pensions, who are mostly captured in the official definition. However, there are important differences between those defined as informal through pension contribution and those classified as informal according to the government's definition. To examine the variation of informality across time and occupation, we focus on health access and contribution. Figure 3.6 shows that there are large differences in the size of informality across occupations (and relatively stable in time). While wage earners have the lowest informality rates (almost 30 percent), followed by business owners (with nearly 50 percent), the informality levels of both the self-employed and self-employed* are around 80 percent.

An alternative way to define informality is through business registration. Since firm registration in Colombia is only valid if it has been renewed (on a yearly basis), the adopted definition considers a firm to be formal if it is
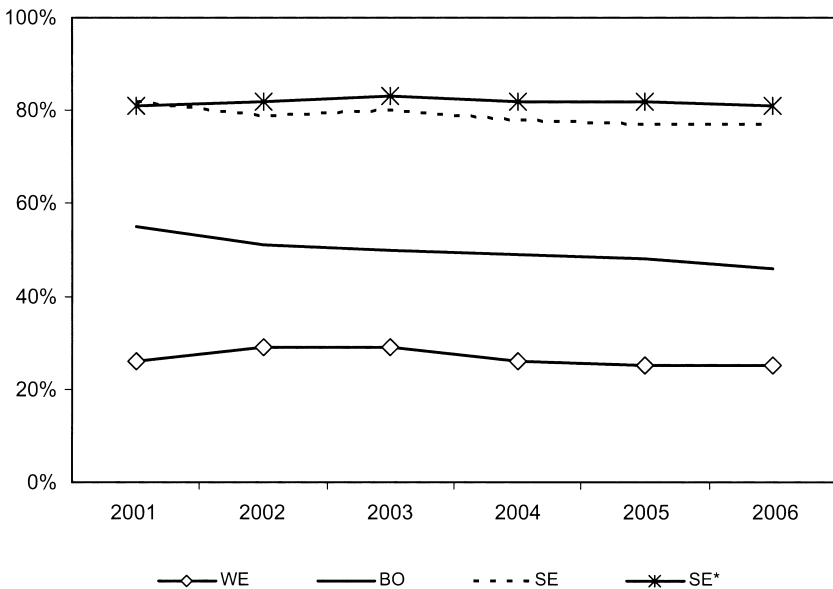
Fig. 3.6   Informality by occupation (percent who do not pay for health insurance)
Note: See note 9.

registered and has renewed its registry within the last year.[18] There is a stark difference in registration levels for business owners and the self-employed. The fraction of registered self-employed individuals is less than 5 percent, whereas 38 percent and 47 percent of business owners were registered in 2002 and 2006, respectively. However, even for business owners, registration levels are low.

3.3   The Transition into and out of Self-Employment and Business Ownership

In this section, we study the flows of agents within the labor force across different states and occupations.[19] We start by measuring these flows through the construction of transition matrices for each of the available cross-sections during the period from 1988 to 2006. Next, we characterize each of the flows involving entry or exit to either self-employment or business ownership. This is done through the estimation of transition probabilities as functions of demographics, occupation-specific characteristics, and other idiosyncratic labor history characteristics. As an example, figure 3.7 describes the average flows (within twelve-month periods) into and out of business ownership and self-employment, as well as the relative size of each group within the labor force for the period from 2003 to 2006. While 12 percent of individuals in our sample were unemployed and about two-third of the employed were paid workers, the self-employed and business owners represented 25 percent and 5 percent of the sample, respectively.[20] The fraction of new business owners and the self-employed coming from unemployment (rather than from paid work) increased continuously during the period from 1988 to 2006. Given the relative sizes of each of these groups, about half of the *new* business owners and the self-employed came from paid work, with 35 percent to 45 percent (respectively) coming from unemployment. The cross-flows between self-employment and business ownership are small: 98 percent of the new self-employed and 85 percent of the new business owners come from either paid work or unemployment. In the rest of the section, we describe these dynamics relative to the macroeconomic conditions in the past twenty years and then characterize in detail each of these transitions.

3.3.1   Measuring the Flows: Transition Matrices

To construct transition matrices, we compare the state/occupation of each individual within our sample at time t with that at time $t - \tau$.[21] This

18. Information about firm registration is only available for the years 2002 and 2006.
19. Housekeepers, maids, cooks, and other servants are excluded, regardless of their occupation group, for comparability purposes.
20. The fraction of the unemployed within the labor force reported in figure 3.7 is consistent with the official unemployment rate, though not identical due to sample selection.
21. The information is available for all individuals within each cross-section through retrospective questions included in the informality module of the household survey, which ask about
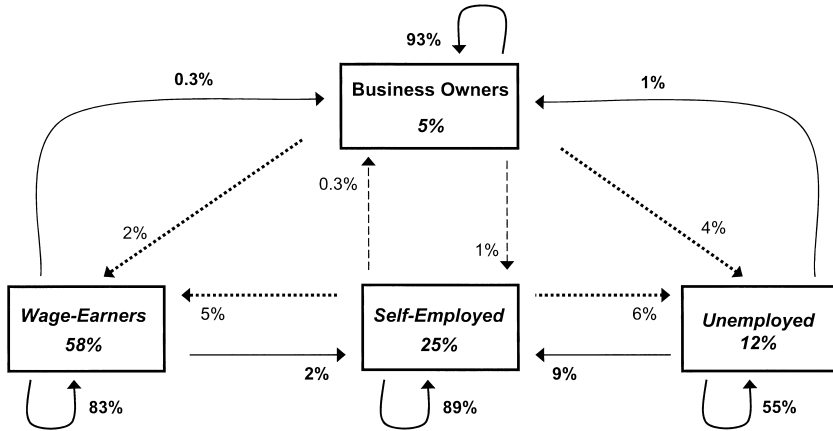
Fig. 3.7   Occupation groups within the labor force and transition flows into and out of self-employment and business ownership (2003 to 2006)

estimation only includes agents who were part of the labor force at both t and $t − \tau$.[22] At each point in time, agents are defined as either wage earners (WE), self-employed (SE), business owners (BO), or unemployed (UN). The inclusion of the unemployed is of particular importance to understand the motivations and drivers of the transition into and out of self-employment and business ownership. For example, by including unemployment, we aim at determining whether self-employment is an intermediate state toward business ownership or an alternative to unemployment toward a future paid job. We discuss results for twelve-month transitions, which can be directly related to macroeconomic conditions of the time period in question.[23] We divide the period of study into three subperiods that characterize different moments of the economy's business cycle in the past twenty years. The first period (1988 to 1994) is characterized by a stable economic performance above the past twenty-year average (with growth rates above 4.5 percent for all years included in the sample); the subsequent period (1996 to 2002) is one of declining growth and recession years (growth rates of 2.5 percent, 1.2 percent, 3.7 percent, 1.2 percent, and 2.4 percent for years 1996, 1998, 2000, 2001, and 2002, respectively); and finally, the period from 2003 to 2006 is a

previous occupations, unemployment spells between jobs, and occupation change motives, as well as previous job and firm characteristics.

22. As was already mentioned, maids, household workers/servants, and all others in the SE* category described before are excluded. This is due to the fact that there is not enough information to determine if they were wage earners or self-employed in $t − \tau$.

23. Furthermore, due to the structure of the data and the way the responses to some of the retrospective questions regarding unemployment spells are truncated, complete matrices including the unemployment state can only be produced up to a twenty-four-month transition period. Although average transition matrices for more than twelve-month periods are not reported, they can be provided upon request.

Table 3.2   **Average transition matrices and total flows (twelve months)**

	Transition matrices				Transition flows			
	WE	BO	SE	UN	WE	BO	SE	UN
1988 to 1994								
WE	89.0	0.4	1.6	9.0	61.4	0.3	1.1	6.2
BO	1.1	90.7	0.5	7.7	0.07	5.8	0.03	0.5
SE	3.0	0.3	94.0	2.6	0.6	0.06	17.6	0.5
UN	40.2	1.3	7.1	51.4	2.4	0.08	0.4	3.1
1996 to 2002								
WE	82.5	0.3	2.2	15.0	50.6	0.2	1.3	9.1
BO	1.5	89.5	0.4	8.6	0.07	4.4	0.02	0.5
SE	3.0	0.3	90.8	5.9	0.7	0.06	20.4	1.4
UN	29.2	0.8	7.5	62.5	3.1	0.08	0.9	7.2
2003 to 2006								
WE	83.3	0.3	2.4	13.9	48.7	0.2	1.4	8.1
BO	2.1	92.5	1.1	4.3	0.10	4.3	0.05	0.2
SE	4.9	0.3	88.9	5.9	1.2	0.07	22.4	1.5
UN	34.6	1.1	9.4	54.9	3.9	0.13	1.1	6.6

recovering phase with an increasing growth trend toward a twenty-year high performance in 2006 (from 3.4 percent in 2003 up to 6.8 percent in 2006). There is little variation of the estimates across different years within each of these subperiods.

The left panel of table 3.2 portrays transition probability matrices that describe the twelve-month transition period average matrices. Each element in the matrix represents the fraction of agents that were in the state described by row i at time $t - \tau$ who are in the state described by column j at time t; each row adds up to 100 percent. For example, the first row of the twelve-month transition matrix for the 1988 to 1994 period is interpreted as follows: of all the individuals whose occupation was wage earner, 89 percent remained as wage earners (either in the same job or at another wage-earning position) one year later, 9 percent become unemployed, and 0.4 percent and 1.6 percent transitioned into business ownership and self-employment, respectively. First, note the high persistence for the employed. At least 80 percent of wage earners, business owners, and the self-employed stayed within the same occupation each year.[24]

Also, note the differences in the fractions of wage earners and the unemployed who stayed in the same state across the three "business-cycle" periods. While 89 percent of wage earners stayed as paid workers in the high growth period (1988 to 1994), the figure drops to 83 percent for the recession (1996

24. The portrayed matrices are a good estimate of the stationary matrix, given the magnitude of the differences along the economic cycle.

to 2002) and recovery (2003 to 2006) periods; accordingly, while 51 percent of the unemployed did not get jobs within twelve months during the high growth period, the figure jumps to 63 percent during the recession, dropping again to 55 percent in the recovery phase. In contrast, the fractions of the self-employed and business owners keeping the same occupations are less sensitive to changes in macroeconomic performance. While the fraction of BOs staying in business varies only from 90 percent to 92.5 percent, that of SEs drops from 94 percent in the high growth period to 91 percent and 89 percent in the recession and recovery periods, respectively.

Entry flows to business ownership (on an annual basis) from other states/occupations are generally low and not sensitive to macroeconomic conditions. While 0.3 percent of wage earners and the self-employed become BOs each year, only 1 percent of the unemployed start a business within a year. However, taking into account the size of each of these groups within the labor force, 4 percent to 5 percent of observed business owners were wage earners who started their business in less than one year (1 percent to 2 percent being either SE or UN). On the hand, while 83 percent of those exiting business ownership become unemployed during the high growth and recession periods (58 percent in the recovery period), around 13 percent return to paid work (28 percent in the recovery period). In all three periods, the flow from business ownership to self-employment tends to be very small. In regard to self-employment, entry flows are both higher and more sensitive to macroeconomic performance than those observed for business ownership. In this case, while only 0.5 percent to 1.1 percent of business owners transit to self-employment, that fraction ranges from 1.6 percent to 2.4 percent for wage earners and from 7 percent to 9 percent for the unemployed. Furthermore, 5.5 percent to 6.0 percent of the observed self-employed each year were wage earners one year before, while 2 percent to 4 percent transited from unemployment. In addition, the fractions of those exiting self-employment to paid work and unemployment are 51 percent and 44 percent for the high growth period. During the recession period, these fractions become 33 percent and 64 percent, moving back to 44 percent and 53 percent in the recovery period.

To put previous probabilities in perspective, the right panel of table 3.2 displays the actual size of the transition flows as a percentage of the sample—that is, the size of the actual flow over the size of the sample. In this case, the sum of all the flows adds up to 100 percent. Again, despite some variation along the cycle, the main tendencies remain. Quantitatively, the most important flows are those along the main diagonal, plus those between paid work and unemployment. This emphasizes the persistence of occupations and the importance of unemployment in the Colombian labor market. New business owners are least likely to come from self-employment and most likely to come from paid work. On the other hand, those exiting business ownership are most likely to become unemployed, suggesting that

the transition out of the occupation has to do with business failure. On the other hand, the new self-employed come mainly from paid work, with a steady flow as a percentage of the total flows during the period of study, and are less likely to come from unemployment (though the flow is five to ten times higher than that from unemployment to business ownership), with an increasing share over time. In terms of percentages of the total flows, the cross-flows between BO and SE are surprisingly small.

In sum, this analysis shows that there is generally high persistence for the employed, that this persistence is less sensitive to macroeconomic performance for business owners when compared to wage earners, that the flows between paid work and unemployment are much higher than those between each of these groups to either self-employment or business ownership, and that while the majority of new business owners and the self-employed come from the pool of wage earners (5 percent on average), the flows from unemployment to self-employment are much higher than those to business ownership.[25]

3.3.2   Characterizing the Flows: Transition Probability Estimations

This section is a deeper exploration of the entry and exit flows between self-employment or business ownership and all other states and occupations (wage earner, self-employed, business owner, and unemployed). The main objective is to determine how individual characteristics and specific labor market "circumstances" drive the flows to/from self-employment and business ownership. This is done through the estimation of binomial probit regressions on demographics and other labor market characteristics reported by individuals.[26] The estimation of interest is of the form $E[y_i, j|x]$ $= F[h(x; \beta)]$, where $y_{i,j} \equiv P\{$being in occupation j at time $t|$occupation i in $t - \tau\} \in \{0, 1\}$, with $i \in \{$WE, BO, SE, UN$\}$, $j \in \{$BO, SE$\}$, and $j \neq i$; x is the vector of covariates; and β is a vector of parameters. The probit model assumes F to be the normal distribution function and h to be linear. Thus, the regression we run in each case is $E[y|x] = F(x\beta) + \varepsilon$.

The vector of covariates x includes age and age squared (as a proxy for experience); gender, marital status, and education-level dummies; the duration of the unemployment spell associated with the transition from occupation i to occupation j; and the local (regional) unemployment rate faced

25. Comparing our results to those of Bosch and Maloney (2007) for Argentina, Brazil, and Mexico, we find that Colombia exhibits much lower mobility across occupations than Argentina and Brazil, while the order of magnitude is closer to that in Mexico. However, the relative sizes of the flows in our case are not consistent with the ones they report for these countries.

26. Estimations were also performed using multinomial probit. However, since the flows between business ownership and self-employment are very low, the estimations of this channel fail for most years. Since the results are qualitatively the same, we present the results from the binomial probit estimations.

by agents in $t - \tau$.[27] In the cases where $i \in$ WE, BO, SE, we also include a dummy to characterize if the exit from occupation i was involuntary, as well as a dummy that describes the firm size associated to that previous occupation.[28] Given the structure of the data (a set of cross-sections that includes some retrospective questions about the previous occupation), we estimate the transition probability functions for each of the cross-sections available and document the consistency of the estimated coefficients in terms of sign, level, and significance across time. Tables 3.3 through 3.10 show the results in detail. We now summarize and analyze our findings in regard to each one of these flows.

Entry Flows

Wage Earner to Self-Employed   Married men at the lowest levels of education show a higher probability of switching from paid jobs to self-employment. The transition probability is higher for small firm workers who were "involuntarily separated" from their jobs. Thus, this flow is associated with low-skill workers who have unstable jobs in smaller firms. In addition, the probability increases with the unemployment spell between occupations. These findings are consistent with the idea of self-employment as a last-resource alternative for low-skill workers with dependent families who were not able to find a new paid job within the period. In order to further explore the "survival motive," we created an interaction term that equals the number of family members for individuals who report to be the household head and that equals zero for all other individuals. We included this variable either as an additional covariate or as a substitute for the marital status dummy and estimated these specifications for all the available cross-sections in our sample. The results show that in general, the interaction variable captures the effect of marital status. That is, whenever the marital status dummy is significant in the original specification, the interaction term is significant, has the same sign as the marital status it substituted, and delivers very similar results for all other covariates, as well as for the overall regression. When both variables are included as covariates, only one of them is significant when the marital status dummy is significant in the original specification; none of them are significant if the marital status dummy was not significant in the original specification. Therefore, positive effects of the marital status dummy can be associated not only with positive effects of household heads

27. We include four education levels (less than primary, completed primary but less than high school, completed high school but less than college, and college or more). In each regression, the comparison group is excluded. In the case of transitions to or from self-employment, the comparison group is completed high school but less than college, while in the case of transitions to or from business ownership, the comparison group is less than primary.

28. The reasons listed for involuntary exits from previous jobs include firm closure, firing, and the end of a temporary job.

Table 3.3   Entry regressions: Wage earner to self-employed

	1988	1992	1994	1996	1998	2000	2001	2002	2003	2004	2005	2006
Age	0.018	0.033*	0.021	0.02	0.039***	0.024*	0.013	0.012	0.004	0.01	−0.013	−0.01
	(0.014)	(0.017)	(0.017)	(0.016)	(0.015)	(0.014)	(0.013)	(0.014)	(0.013)	(0.013)	(0.013)	(0.012)
Age^2	0.000	0.000**	0.000	0.000	0.000**	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.184***	0.181**	0.204***	0.23***	0.349***	0.209***	0.168***	0.167***	0.077	0.11**	0.081*	0.08*
	(0.062)	(0.072)	(0.066)	(0.068)	(0.063)	(0.055)	(0.051)	(0.052)	(0.052)	(0.048)	(0.047)	(0.045)
Married	0.053	0.124*	0.134**	0.167**	0.05	0.111**	0.167***	0.107**	0.064	0.044	0.116**	0.134***
	(0.061)	(0.069)	(0.066)	(0.067)	(0.059)	(0.056)	(0.052)	(0.052)	(0.051)	(0.049)	(0.048)	(0.047)
< Primary	0.198**	0.382***	0.341***	0.27***	0.276***	0.367***	0.276***	0.22***	0.229***	0.157**	0.178**	0.078
	(0.085)	(0.096)	(0.089)	(0.094)	(0.085)	(0.086)	(0.08)	(0.09)	(0.086)	(0.083)	(0.084)	(0.09)
Primary$^+$	0.213***	0.187**	0.086	0.062	0.104*	0.138**	0.103*	0.114**	0.165***	0.095*	0.118**	0.006
	(0.068)	(0.074)	(0.068)	(0.068)	(0.06)	(0.058)	(0.053)	(0.054)	(0.055)	(0.052)	(0.052)	(0.051)
College$^+$	−0.006	−0.254	−0.069	−0.016	−0.249**	−0.034	−0.003	0.045	0.025	0.017	0.182***	0.106*
	(0.118)	(0.157)	(0.112)	(0.113)	(0.102)	(0.085)	(0.074)	(0.072)	(0.073)	(0.066)	(0.063)	(0.059)
Large firm	−0.174***	−0.251***	−0.186***	−0.231***	−0.219***	−0.21***	−0.131***	−0.094*	−0.154***	−0.212***	−0.246***	−0.209***
	(0.053)	(0.06)	(0.058)	(0.059)	(0.053)	(0.053)	(0.048)	(0.051)	(0.05)	(0.047)	(0.046)	(0.045)
Involuntary	0.681***	0.774***	0.776***	0.608***	0.963***	0.585***	1.015***	0.923***	0.93***	0.981***	0.874***	0.914***
	(0.066)	(0.072)	(0.071)	(0.079)	(0.07)	(0.085)	(0.064)	(0.065)	(0.066)	(0.06)	(0.059)	(0.058)
Unemployment spell	0.115***	0.128***	0.123***	0.162***	0.134***	0.221***	0.118***	0.123***	0.112***	0.099***	0.113***	0.098***
	(0.015)	(0.016)	(0.017)	(0.017)	(0.015)	(0.011)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)
Regional unemployment	−2.609	−0.846	−1.021	6.931***	−0.741	−2.111*	−1.068	−1.974*	−1.005	−0.287	2.271**	−0.671
	(2.495)	(1.116)	(1.401)	(1.766)	(1.065)	(1.14)	(1.604)	(1.084)	(1.187)	(0.945)	(0.9)	(1.034)
Constant term	−2.582***	−3.074***	−2.87***	−3.618***	−3.166***	−2.325***	−2.379***	−2.197***	−2.163***	−2.278***	−2.283***	−1.86***
	(0.381)	(0.323)	(0.322)	(0.334)	(0.307)	(0.348)	(0.393)	(0.31)	(0.332)	(0.288)	(0.271)	(0.258)
R^2	0.131	0.186	0.154	0.17	0.23	0.197	0.21	0.195	0.191	0.188	0.184	0.16

***Significant at the 1 percent level.

** Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 3.4   Entry regressions: Wage earner to business owner

	1988	1992	1994	1996	1998	2000	2001	2002	2003	2004	2005	2006
Age	0.032	0.072***	0.094***	0.042	0.068**	0.074**	0.054**	0.123**	0.027	0.075**	0.065**	0.042**
	(0.03)	(0.028)	(0.033)	(0.028)	(0.034)	(0.035)	(0.025)	(0.054)	(0.034)	(0.031)	(0.029)	(0.021)
Age^2	0.000	-0.001**	-0.001***	0.000	-0.001*	-0.001**	-0.001*	-0.002**	0.000	-0.001**	-0.001**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.299**	0.294***	0.27**	0.316***	-0.02	0.233**	0.326***	0.151	0.266**	0.163	0.277***	0.147
	(0.12)	(0.103)	(0.112)	(0.12)	(0.102)	(0.117)	(0.114)	(0.1)	(0.108)	(0.101)	(0.093)	(0.101)
Married	0.442***	0.204**	0.365***	0.373***	0.214*	0.025	0.16	0.056	0.059	0.171	0.145	0.173*
	(0.12)	(0.102)	(0.116)	(0.12)	(0.111)	(0.118)	(0.109)	(0.101)	(0.105)	(0.104)	(0.096)	(0.098)
Primary+	-0.123	-0.151	0.308*	-0.175	-0.009	-0.02	0.103	-0.006	0.123	0.043	0.057	0.093
	(0.121)	(0.116)	(0.172)	(0.147)	(0.209)	(0.23)	(0.189)	(0.197)	(0.199)	(0.17)	(0.197)	(0.138)
High school+	0.093	-0.235*	0.174	0.104	0.155	0.26	0.088	0.078	0.165	0.000	0.14	-0.159
	(0.141)	(0.139)	(0.192)	(0.143)	(0.223)	(0.224)	(0.209)	(0.198)	(0.211)	(0.18)	(0.195)	(0.153)
College+	0.235	0.025	0.346*	0.248	0.271	0.495**	0.385*	0.533**	0.631***	0.291	0.443**	0.132
	(0.162)	(0.153)	(0.21)	(0.173)	(0.233)	(0.247)	(0.224)	(0.209)	(0.221)	(0.193)	(0.206)	(0.168)
Large firm	-0.078	-0.149*	-0.316***	-0.291***	-0.059	-0.289**	-0.338***	-0.236**	-0.337***	-0.251**	-0.218**	-0.377***
	(0.099)	(0.09)	(0.093)	(0.1)	(0.106)	(0.114)	(0.11)	(0.097)	(0.11)	(0.105)	(0.099)	(0.096)
Involuntary	0.601***	0.632***	0.781***	0.499***	0.718***	0.256	0.221	0.469***	0.601***	0.464***	0.203	0.641***
	(0.134)	(0.116)	(0.121)	(0.152)	(0.164)	(0.192)	(0.164)	(0.148)	(0.162)	(0.142)	(0.166)	(0.123)
Unemployment spell	0.067**	0.09***	0.08***	0.123***	0.054	0.142***	0.131***	0.11***	0.015	0.063**	0.083**	0.069**
	(0.03)	(0.025)	(0.028)	(0.031)	(0.036)	(0.024)	(0.029)	(0.029)	(0.04)	(0.03)	(0.034)	(0.027)
Regional unemployment	5.868	-1.089	5.842**	5.741**	-0.381	1.612	2.086	-3.551	-1.5	0.635	0.986	-0.156
	(4.428)	(1.562)	(2.431)	(2.763)	(1.927)	(2.328)	(3.54)	(2.302)	(2.453)	(2.09)	(1.85)	(2.163)
Constant term	-4.658***	-4.076***	-5.675***	-4.644***	-4.326***	-4.58***	-4.494***	-4.235***	-3.143***	-4.413***	-4.273***	-3.757***
	(0.719)	(0.542)	(0.704)	(0.633)	(0.674)	(0.837)	(0.853)	(0.961)	(0.725)	(0.704)	(0.591)	(0.532)
R^2	0.108	0.124	0.169	0.137	0.092	0.1	0.104	0.123	0.084	0.079	0.055	0.141

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 3.5   Entry regressions: Unemployed to self-employed

	1988	1992	1994	1996	1998	2000	2001	2002	2003	2004	2005	2006
Age	0.048*	0.000	0.132***	0.097***	0.095***	0.16***	0.121***	0.115***	0.115***	0.106***	0.139***	0.09***
	(0.028)	(0.032)	(0.034)	(0.03)	(0.025)	(0.018)	(0.015)	(0.016)	(0.015)	(0.017)	(0.017)	(0.018)
Age²	−0.001	0.000	−0.002***	−0.001***	−0.001***	−0.002***	−0.001***	−0.001***	−0.001***	−0.001***	−0.002***	−0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.414***	0.358***	0.609***	0.323**	0.618***	0.462***	0.25***	0.264***	0.225***	0.187***	0.369***	0.189***
	(0.116)	(0.139)	(0.139)	(0.138)	(0.099)	(0.073)	(0.062)	(0.064)	(0.062)	(0.068)	(0.066)	(0.071)
Married	0.686***	0.572***	0.61***	0.317**	0.432***	0.224***	0.366***	0.51***	0.338***	0.288***	0.31***	0.453***
	(0.138)	(0.166)	(0.149)	(0.146)	(0.099)	(0.083)	(0.067)	(0.07)	(0.067)	(0.073)	(0.071)	(0.075)
< Primary	0.452**	0.072	0.321	0.027	0.204	0.067	0.105	0.089	0.083	0.362***	0.062	0.314**
	(0.177)	(0.222)	(0.247)	(0.285)	(0.156)	(0.124)	(0.11)	(0.113)	(0.109)	(0.122)	(0.137)	(0.147)
Primary⁺	0.375***	0.19	0.219	0.406***	0.258**	0.068	0.189***	−0.043	0.126*	0.101	0.174**	0.201**
	(0.13)	(0.15)	(0.146)	(0.144)	(0.105)	(0.081)	(0.067)	(0.072)	(0.068)	(0.076)	(0.074)	(0.08)
College⁺	0.064	0.191	0.191	0.494	0.22	−0.197	−0.185	0.038	−0.26**	0.206**	0.037	−0.028
	(0.326)	(0.293)	(0.27)	(0.315)	(0.191)	(0.145)	(0.118)	(0.113)	(0.115)	(0.105)	(0.102)	(0.111)
Unemployment spell	0.032***	0.036***	0.028***	0.031***	0.034***	−0.041***	−0.009***	−0.003	−0.002	−0.008***	0.001	−0.001
	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.007)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Regional unemployment	−13.462**	−3.518	−2.256	13.15***	−4.853**	−2.223	3.708*	−5.516***	−0.202	−1.859	−2.461**	−5.757***
	(5.67)	(2.322)	(3.439)	(3.757)	(1.995)	(1.749)	(2.119)	(1.43)	(1.322)	(1.286)	(1.222)	(1.587)
Constant term	−2.034**	−2.401***	−4.729***	−5.735***	−3.572***	−3.349***	−4.291***	−2.605***	−3.504***	−3.012***	−3.574***	−2.162***
	(0.796)	(0.588)	(0.762)	(0.717)	(0.546)	(0.454)	(0.496)	(0.371)	(0.358)	(0.38)	(0.364)	(0.381)
R^2	0.237	0.22	0.248	0.22	0.191	0.124	0.1	0.108	0.084	0.088	0.109	0.089

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 3.6   Entry regressions: Unemployed to business owner

	1988	1992	1994	1996	1998	2000	2001	2002	2003	2004	2005	2006
Age	0.093**	0.109	0.272***	-0.136**	0.103**	0.128***	0.107***	0.161***	0.122***	0.094**	0.102**	0.18***
	(0.043)	(0.067)	(0.087)	(0.057)	(0.044)	(0.047)	(0.041)	(0.036)	(0.038)	(0.038)	(0.042)	(0.043)
Age^2	-0.001**	-0.001	-0.004***	0.001	-0.001**	-0.001**	-0.001**	-0.002***	-0.001***	-0.001*	-0.001*	-0.002***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)
Male	0.734***	0.662***	0.293	1.514***	0.477***	0.243	0.227	0.289**	0.468***	0.391**	0.168	0.467***
	(0.242)	(0.224)	(0.233)	(0.499)	(0.181)	(0.187)	(0.177)	(0.145)	(0.144)	(0.162)	(0.156)	(0.166)
Married	0.885***	0.714**	0.531*		0.091	0.383*	0.584***	0.406**	0.261	0.257	0.55***	0.465**
	(0.282)	(0.301)	(0.277)		(0.173)	(0.233)	(0.197)	(0.162)	(0.16)	(0.159)	(0.186)	(0.2)
< Primary	0.092	0.214	0.197	1.152**	-0.419	0.045	0.247	-0.28	-0.206	0.044	-0.069	-0.168
	(0.336)	(0.38)	(0.47)	(0.552)	(0.38)	(0.282)	(0.27)	(0.284)	(0.305)	(0.238)	(0.278)	(0.391)
Primary$^+$	0.189	0.369	0.155	0.212	-0.094	0.217	-0.001	-0.191	0.088	-0.168	-0.119	-0.028
	(0.233)	(0.271)	(0.231)	(0.576)	(0.183)	(0.191)	(0.2)	(0.18)	(0.163)	(0.172)	(0.189)	(0.207)
College$^+$	0.481	-0.19		2.115***	0.699***	0.127	0.273	0.441**	0.502***	0.087	-0.012	0.201
	(0.367)	(0.502)		(0.696)	(0.256)	(0.347)	(0.249)	(0.195)	(0.178)	(0.222)	(0.24)	(0.215)
Unemployment spell	-0.011	0.03*	0.012	0.037***	0.044***	-0.059**	-0.011	-0.025***	-0.008	-0.008	-0.017**	-0.034**
	(0.019)	(0.017)	(0.031)	(0.012)	(0.01)	(0.015)	(0.009)	(0.008)	(0.006)	(0.008)	(0.009)	(0.015)
Regional unemployment	6.661	-0.277	-5.579	15.639*	-6.692**	-4.24	0.117	2.594	2.406	0.007	1.018	-10.324***
	(10.032)	(3.849)	(5.34)	(8.571)	(3.334)	(4.101)	(5.656)	(3.181)	(2.904)	(2.859)	(2.494)	(3.859)
Constant term	-5.428***	-5.689***	-6.458***	-2.493	-4.312***	-3.353***	-4.738***	-5.584***	-5.08***	-4.264***	-4.454***	-3.815***
	(1.37)	(1.189)	(1.439)	(1.894)	(0.737)	(1.012)	(1.394)	(0.802)	(0.719)	(0.901)	(0.913)	(0.951)
R^2	0.242	0.25	0.144	0.393	0.253	0.155	0.128	0.185	0.11	0.104	0.146	0.222

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 3.7   Exit regressions: Self-employed to wage earner

	1988	1992	1994	1996	1998	2000	2001	2002	2003	2004	2005	2006
Age	-0.023	-0.023	-0.073***	-0.059***	-0.022	-0.006	-0.007	-0.038**	-0.028*	-0.033**	-0.011	-0.018
	(0.025)	(0.025)	(0.026)	(0.023)	(0.024)	(0.022)	(0.018)	(0.017)	(0.016)	(0.014)	(0.014)	(0.013)
Age^2	0.000	0.000	0.001*	0.001**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.046	-0.009	0.488***	-0.066	0.157	0.107	0.072	-0.079	0.118*	0.135**	0.031	-0.016
	(0.111)	(0.108)	(0.149)	(0.108)	(0.1)	(0.077)	(0.072)	(0.065)	(0.065)	(0.062)	(0.056)	(0.054)
Married	0.083	-0.072	-0.247**	-0.174	-0.065	-0.072	-0.043	-0.013	0.014	-0.032	0.013	-0.057
	(0.108)	(0.108)	(0.111)	(0.11)	(0.095)	(0.076)	(0.069)	(0.065)	(0.064)	(0.059)	(0.054)	(0.052)
<Primary	-0.158	-0.094	0.297*	-0.121	-0.306**	0.049	0.115	-0.128	0.02	-0.075	-0.006	-0.166*
	(0.135)	(0.164)	(0.158)	(0.163)	(0.141)	(0.11)	(0.102)	(0.105)	(0.09)	(0.092)	(0.087)	(0.087)
Primary⁺	-0.243**	-0.076	-0.023	-0.096	-0.15	-0.052	0.153*	-0.044	-0.065	-0.121*	-0.033	-0.066
	(0.115)	(0.119)	(0.145)	(0.132)	(0.099)	(0.086)	(0.079)	(0.07)	(0.068)	(0.063)	(0.059)	(0.056)
College⁺	-0.116	-0.099	0.296	0.251	-0.424*	0.205	0.092	0.028	0.089	0.015	0.138	0.02
	(0.203)	(0.24)	(0.187)	(0.208)	(0.233)	(0.139)	(0.143)	(0.123)	(0.112)	(0.102)	(0.09)	(0.091)
Large firm			-0.155	-1.105***	0.237	0.275	-0.037	-0.505***	-0.32**	0.11	0.052	0.093
			(0.569)	(0.395)	(0.237)	(0.183)	(0.155)	(0.19)	(0.15)	(0.111)	(0.112)	(0.117)
Involuntary	2.305***	2.049***	2.061***	2.105***	1.671***	0.954***	1.528***	1.272***	1.827***	1.311***	1.342***	1.295***
	(0.118)	(0.145)	(0.16)	(0.148)	(0.141)	(0.296)	(0.126)	(0.132)	(0.118)	(0.102)	(0.095)	(0.105)
Unemployment spell	0.417***	0.428***	0.413***	0.299***	0.31***	0.417***	0.393***	0.397***	0.295***	0.269***	0.325***	0.324***
	(0.059)	(0.068)	(0.074)	(0.065)	(0.04)	(0.028)	(0.038)	(0.039)	(0.042)	(0.029)	(0.031)	(0.033)
Regional unemployment	6.307	1.538	3.857	13.793***	3.571*	3.895***	9.717***	-2.55*	-0.463	3.522***	4.032***	0.28
	(4.402)	(2.172)	(2.989)	(2.671)	(1.875)	(1.48)	(2.173)	(1.314)	(1.296)	(1.147)	(1.063)	(1.281)
Constant term	-2.344***	-1.615***	-1.321**	-2.336***	-2.111***	-2.352***	-3.536***	-0.198	-0.948**	-1.562***	-1.973***	-1.184***
	(0.689)	(0.495)	(0.603)	(0.519)	(0.507)	(0.477)	(0.524)	(0.393)	(0.372)	(0.336)	(0.318)	(0.324)
R^2	0.502	0.482	0.485	0.474	0.423	0.314	0.362	0.326	0.348	0.293	0.297	0.257

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 3.8   Exit regressions: Self-employed to unemployed

	1988	1992	1994	1996	1998	2000	2001	2002	2003	2004	2005	2006
Age	-0.198***	-0.088***	-0.145***	-0.15***	-0.142***	-0.03**	-0.032**	-0.038***	-0.054***	-0.027*	-0.051***	0.005
	(0.026)	(0.03)	(0.035)	(0.031)	(0.022)	(0.014)	(0.016)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Age^2	0.002***	0.000	0.001**	0.001***	0.001***	0.000	0.000	0.000*	0.000***	0.000	0.000***	0.000
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	-2.747***	-2.124***	-1.974***	-3.109***	-3.052***	-0.15**	-0.108*	-0.115*	-0.164***	-0.181***	-0.107*	-0.072
	(0.483)	(0.391)	(0.313)	(0.883)	(0.51)	(0.062)	(0.066)	(0.062)	(0.059)	(0.059)	(0.059)	(0.06)
Married	-0.216	-0.645***	-0.259*	-0.087	-0.185*	-0.181***	-0.109*	-0.213***	-0.044	-0.106*	-0.136**	-0.288***
	(0.136)	(0.147)	(0.141)	(0.139)	(0.111)	(0.063)	(0.062)	(0.062)	(0.062)	(0.059)	(0.059)	(0.06)
< Primary	2.329***	1.569***	1.588***	1.873***	1.48***	0.355***	0.353***	0.262***	0.311***	0.234***	0.278***	0.028
	(0.637)	(0.389)	(0.349)	(0.241)	(0.216)	(0.094)	(0.098)	(0.098)	(0.096)	(0.092)	(0.092)	(0.094)
Primary$^+$	1.628***	0.777**	1.011***	1.039***	0.861***	0.21***	0.288***	0.157**	0.217***	0.102	0.137*	0.019
	(0.62)	(0.345)	(0.326)	(0.224)	(0.198)	(0.077)	(0.082)	(0.073)	(0.076)	(0.065)	(0.07)	(0.065)
College$^+$						0.017	-0.038	0.055	0.17	0.084	0.064	-0.059
						(0.131)	(0.145)	(0.133)	(0.11)	(0.097)	(0.11)	(0.105)
Unemployment spell	0.811***	0.782***	0.715***	0.776***	0.662***	0.584***	0.849***	0.8***	0.836***	0.715***	0.758***	0.75***
	(0.1)	(0.111)	(0.109)	(0.114)	(0.067)	(0.031)	(0.057)	(0.047)	(0.052)	(0.034)	(0.038)	(0.042)
Regional unemployment	-1.107	-1.311	1.133	-2.513	2.39	5.329***	8.826***	-3.607***	-0.718	3.662***	2.009*	2.076
	(6.205)	(2.653)	(3.573)	(3.787)	(2.247)	(1.273)	(1.934)	(1.273)	(1.399)	(0.938)	(1.205)	(1.338)
Constant term	1.093	0.457	0.743	0.903	0.504	-2.07***	-2.935***	-0.295	-0.586	-1.903***	-1.274***	-2.237***
	(0.972)	(0.596)	(0.709)	(0.699)	(0.553)	(0.371)	(0.498)	(0.358)	(0.389)	(0.312)	(0.323)	(0.354)
R^2	0.693	0.656	0.637	0.695	0.673	0.471	0.603	0.567	0.577	0.53	0.536	0.5

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 3.9   **Exit regressions: Business owner to wage earner**

	1988	1992	1994	1996	1998	2000	2001	2002	2003	2004	2005	2006
Age	0.074	0.072	0.022	−0.128	0.027	−0.145**	−0.016	−0.049	−0.074	−0.007	0.015	−0.187***
	(0.081)	(0.079)	(0.064)	(0.09)	(0.195)	(0.061)	(0.075)	(0.072)	(0.051)	(0.055)	(0.074)	(0.042)
Age²	−0.001	−0.001	−0.001	0.001	−0.001	0.001**	0.000	0.000	0.001	0.000	−0.001	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Male	−0.228	0.29	−0.576***		0.315	0.456*	−0.083	0.17	0.177	−0.359*	−0.13	−0.078
	(0.261)	(0.335)	(0.189)		(0.307)	(0.236)	(0.235)	(0.172)	(0.272)	(0.195)	(0.23)	(0.202)
Married	−0.434	−0.441	−0.139	1.998***	0.595	0.16	−0.044	−0.065	0.037	−0.049	0.128	0.308
	(0.286)	(0.324)	(0.252)	(0.428)	(0.458)	(0.363)	(0.261)	(0.244)	(0.259)	(0.235)	(0.222)	(0.232)
< Primary	−0.219	−0.228	0.221			−0.2	−0.011	−0.399	0.683*	0.543	0.075	0.085
	(0.474)	(0.307)	(0.54)			(0.396)	(0.367)	(0.47)	(0.387)	(0.409)	(0.392)	(0.366)
Primary⁺	−0.02	−0.012	−0.029	−0.237	−0.5	0.476	0.053	0.42	0.39*	0.036	−0.194	0.113
	(0.255)	(0.379)	(0.294)	(0.416)	(0.431)	(0.304)	(0.336)	(0.306)	(0.213)	(0.221)	(0.24)	(0.249)
College⁺	0.189	−0.385	−0.379	0.431	0.435*	−0.933	0.537*	0.124	0.236	0.303	0.113	0.409*
	(0.312)	(0.409)	(0.354)	(0.341)	(0.236)	(0.639)	(0.306)	(0.39)	(0.298)	(0.248)	(0.239)	(0.24)
Large firm	0.301	0.206	0.312	0.014	−2.021*	1.073***		−0.251	−0.244	−0.868*	−0.835	−0.275
	(0.309)	(0.489)	(0.453)	(0.42)	(1.153)	(0.296)		(0.32)	(0.327)	(0.502)	(0.532)	(0.248)
Involuntary	2.261***	3.117***	2.87***	1.672**	2.259***	1.359**	2.971***	3.676***	3.074***	2.26***	3.123***	2.525***
	(0.394)	(0.382)	(0.394)	(0.695)	(0.789)	(0.692)	(0.455)	(0.52)	(0.368)	(0.297)	(0.269)	(0.302)
Unemployment spell	0.175	1.464***	0.373***	1.01***	0.59***	0.481***	0.373	−0.016	0.306	0.263**	0.082	0.139
	(0.155)	(0.289)	(0.121)	(0.199)	(0.21)	(0.092)	(0.276)	(0.117)	(0.194)	(0.106)	(0.102)	(0.126)
Regional unemployment	−24.049**	−5.125	−5.85	3.405	−11.829	9.475	0.27	6.12	−4.789	12.52***	3.256	1.917
	(11.738)	(6.135)	(7.93)	(8.268)	(14.49)	(7.133)	(7.27)	(5.611)	(3.611)	(3.213)	(3.719)	(3.511)
Constant term	−0.216	−4.122**	−1.711	−2.196	−1.719	−2.213	−1.813	−2.551	0.035	−3.62***	−2.348	1.209
	(1.975)	(2.087)	(1.732)	(2.536)	(4.163)	(2.269)	(2.018)	(1.632)	(1.266)	(1.316)	(1.442)	(1.074)
R²	0.366	0.693	0.589	0.571	0.577	0.576	0.604	0.668	0.604	0.519	0.595	0.497

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 3.10   Exit regressions: Business owner to unemployed

	1988	1992	1994	1996	1998	2000	2001	2002	2003	2004	2005	2006
Age	-0.075***	-0.089**	-0.137***	-0.079**	-0.124***	0.024	-0.059	-0.027	-0.019	0.054	-0.057	-0.003
	(0.028)	(0.04)	(0.031)	(0.039)	(0.023)	(0.084)	(0.041)	(0.036)	(0.047)	(0.071)	(0.047)	(0.045)
Age^2	0.001*	0.001**	0.001***	0.001	0.001***	0.000	0.001	0.000	0.000	-0.001	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)
Male	0.042	-0.124	-0.496***	-0.269	-0.254**	-0.41*	-0.79*	0.176	0.688**	0.418**	0.286	0.114
	(0.129)	(0.173)	(0.134)	(0.177)	(0.11)	(0.223)	(0.478)	(0.149)	(0.4)	(0.193)	(0.239)	(0.173)
Married	-0.3**	-0.266	-0.284**	-0.48***	-0.349***	0.657	-0.243	-0.178	-0.068	-0.214	0.208	-0.363**
	(0.135)	(0.168)	(0.131)	(0.168)	(0.112)	(0.545)	(0.296)	(0.124)	(0.237)	(0.199)	(0.232)	(0.149)
< Primary	0.928***	0.55**	1.382***	0.98***	1.017***	0.019	1.109*	0.325	1.317***	0.116	0.196	0.374
	(0.171)	(0.24)	(0.224)	(0.271)	(0.141)	(0.33)	(0.652)	(0.257)	(0.284)	(0.317)	(0.273)	(0.242)
Primary⁺	0.5***	0.323	0.916***	0.616***	0.453***	0.011	1.008	0.384**	1.393***	0.08	0.458***	0.265
	(0.154)	(0.208)	(0.196)	(0.22)	(0.109)	(0.33)	(0.633)	(0.171)	(0.273)	(0.183)	(0.177)	(0.177)
College⁺	-0.6*	-0.645**	-0.408	-0.239	-0.642**	-0.641	0.592	-0.129	0.507	-0.164	-0.273	-0.125
	(0.358)	(0.301)	(0.288)	(0.326)	(0.272)	(0.769)	(0.674)	(0.245)	(0.478)	(0.195)	(0.284)	(0.217)
Unemployment spell	0.971***	2.245***	1.046***	3.136***	1.342***	0.885***	2.001***	0.725***	1.446***	0.906***	0.849***	0.824***
	(0.187)	(0.373)	(0.272)	(0.267)	(0.282)	(0.126)	(0.316)	(0.16)	(0.319)	(0.135)	(0.105)	(0.167)
Regional unemployment	-3.058	4.32	-4.464	2.84	3.7*	-1.793	6.888	-3.494	-4.442	6.715***	7.864***	1.201
	(5.493)	(3.013)	(3.171)	(4.745)	(2.093)	(6.298)	(6.474)	(2.78)	(3.626)	(2.3)	(2.571)	(4.056)
Constant term	0.268	-0.578	1.359*	-0.173	1.199**	-3.408	-3.718**	-0.89	-2.472**	-4.656***	-2.686***	-2.43**
	(0.843)	(0.89)	(0.752)	(0.978)	(0.549)	(2.448)	(1.587)	(0.94)	(1.239)	(1.712)	(1.04)	(1.19)
R^2	0.492	0.664	0.541	0.711	0.614	0.689	0.803	0.475	0.731	0.527	0.567	0.46

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

with dependents but also with increasing effects in the number of dependents. However, given that there are many important features left out of the analysis due to data availability—for example, credit constraints—it is difficult to give a more solid interpretation of the results. Age variables, on the other hand, are not significant.[29]

Wage Earner to Business Owner   In this case, age and high education are generally significant. Thus, in contrast to self-employment, business ownership in this economy requires a higher level of human capital and experience.[30] While the transition from paid work to business ownership shows a stronger gender effect (with less significance across time) than that to self-employment, the effects of marital status are also higher in magnitude but only significant until the late 1990s. Thus, the "survival motive" in this case has a weaker support.[31] Business owners coming from paid work also tend to originate from an involuntary separation from jobs in small firms. However, the magnitude of the involuntary separation dummy is lower and less significant across samples in this case. Hence, the transition from paid work to business ownership seems to be driven less by involuntary decisions of high-skilled and more experienced individuals than that of their low-skilled peers moving in higher proportions to self-employment. The effect of the unemployment spell in this case is positive, though smaller in magnitude and significance when compared to the previous case.[32]

Unemployed to Self-Employed   This flow shares the characteristic of being driven by low-skilled married men relative to the transition of wage earners to self-employment. However, age effects in this case are significant. This may be indicating that older, low-skilled workers (with families to support) may be willing to transit to self-employment more easily. The effect of the unemployment spell, which in this case refers to the total spell since the last job, is mixed across time (positive and significant for the years from 1988 to 1998 and mostly negative and not significant afterward). Thus, in an effort to understand unemployment spell effects, we estimated a difference-

29. This is consistent with what Hurst and Lusardi (2004) find in their estimations for the United States, associated to the life-cycle human capital effects discussed in Mondragón-Vélez (2007, 2009).

30. The notion of self-employment and business ownership in this type of economy could be in a sense equivalent to the relationship between education level, business industry, and technological change in the US economy introduced in Mondragón-Vélez (2009).

31. Similar estimations to support the interpretations associated with the "survival motive" described previously were performed for this case, as well as for the transition flows from unemployment to self-employment and from unemployment to business ownership.

32. Given the weaker effect of involuntary separations for business owners, the effect of the unemployment spell may indicate that some of the new business owners take some time off to prepare for the start-up of their businesses rather than the additional job-seeking interpretation for those transiting to self-employment. However, we do not find conclusive evidence in this regard.

of-means test between the average unemployment spell for those transiting to self-employment and those staying in unemployment. The test results are consistent with the regression results for the years from 1988 to 1998, where those who transit to self-employment on average have had significantly higher unemployment spells than those who stayed unemployed. The same result is found for the years 2003, 2005, and 2006, but regression coefficients for these years are either contradictory or not significant. However, overall, the difference-of-means test shows higher average unemployment spells for those making the transition to self-employment in eight out of twelve cross-sections.[33]

Unemployed to Business Owner   While the unemployed who transit to business ownership tend to be experienced married men (similar to their wage-earning peers who also start businesses), the significance of high education across time is weaker in this case. Marital status coefficients are higher in magnitude and (cross-time) significance than the ones observed for the WE to BO transitions. Thus, the survival motive to start some business for those who are unemployed is stronger. The effect of the unemployment spell is mixed and relatively small in magnitude across time.[34] In sum, while entry to self-employment—either from paid work or unemployment—is generally driven by individuals at lower levels of education, consistent with a "survival motive" story (due to family support obligations, and in some cases, longer unemployment spells), entry to business ownership is generally characterized by higher human capital (defined by either education, experience, or both) requirements, and in the cases of those coming from paid work, less by involuntary decisions.

Exit Flows

Self-Employed to Wage Earner   Involuntary exit from self-employment along with the duration of unemployment are the main drivers of this transition, with demographics having very low explanatory power. Given the nature of self-employment, involuntary exit in this case is directly associated with failure of the self-employment venture. This, in addition to the effect of the unemployment spell duration between occupations, implies the transition is driven by those who fail in self-employment and then take some time to look for a paid job. However, one of the answers that characterizes voluntary exit from the previous occupation indicates that the individual

33. Therefore, we can say that at least before the year 2000, individuals who have been unemployed for longer periods of time tend to enter self-employment with a higher probability. This result, in addition to age and marital status (or the number of dependents effect), can be interpreted as additional support of the "survival motive" associated with the transition to self-employment.

34. A test of differences in unemployment spell means as the one described before was also performed in this case. Consistent with the regression results, the test results are mixed along the period of interest.

"finds a better occupation or job." Surprisingly, for the years from 2001 to 2006, around 40 percent of those that moved from self-employment to paid work did so because they found a better job before exiting. In addition, age is the only significant demographic variable (in five out of twelve years). Although relatively small in magnitude, the negative sign in all cases may be indicating that younger individuals (with no apparent strong survival motives or family support obligations) are more willing to exit self-employment to search for a paid job than older agents.

Self-Employed to Unemployed   In high contrast to the entry flows characterization, this transition is driven by low-skilled, young, single females. This result reinforces the idea that younger agents with no apparent family support obligations are more willing (or have more flexibility/can take more risk) to exit self-employment in order to look for a paid job. The fact that the coefficient of gender is negative and that of the unemployment spell duration is positive may be reflecting a tougher labor market for low-skilled, young females, who generally tend to stay unemployed after exiting self-employment (within a one-year period).

Business Owner to Wage Earner   The only variables that are consistently significant across time in this case are the involuntary separation from the previous occupation dummy and the unemployment spell duration. This suggests that the transition is driven by business owners who fail, close their businesses, and look for paid jobs. In fact, while 72 percent of those moving from business ownership to paid work report involuntary motives, only 15 percent report the motive to move to a better job. This is in high contrast with the 40 percent figure of those self-employed effectively moving to a better paid job, which reinforces the idea of self-employment as a temporary state for individuals looking forward to a paid job. Interestingly, this happens to all types of business owners, regardless of their experience and education.

Business Owner to Unemployed   The results prior to and after the year 2000 differ significantly in this case. For the period from 1988 to 1998, the transition is characterized by low-skilled, young, single individuals. Although in these cases, there is no available information about the exit motive of the previous occupation, it may be possible to argue that the exit rate of younger individuals with less experience (and education) is higher. On the other hand, the results after the year 2000 do not show strong significance consistency for any of the demographic variables.

Cross-Flows

In general, the estimations for the *self-employed to business owner* and *business owner to self-employed* transitions fail. This is mainly due to small sample sizes, consistent with the size of flows reported in the transition

matrices. The only consistent result in both regressions is that those who fail in their self-employment or business-ownership ventures are the ones who switch to business ownership and self-employment. The very limited size of the flows first suggests that the transition between self-employment and business ownership is difficult, and thus self-employment may not be an initial phase toward business ownership. Second, it implies that the fraction of failing business owners who choose self-employment as an alternative over paid work or unemployment is very small. Results do not provide strong evidence in regard to individual characteristics.

Finally, the regional unemployment variable was not consistently significant (nor did it show consistent signs) across time in any of the regressions previously described.[35] This may be related to the lack of sensitivity to the business cycle of the flows involving business ownership and self-employment, documented in the analysis of the average transition matrices.

3.4   Financial Motivations

Another important dimension in which self-employment and business ownership differ is the earnings level associated with these occupations. A central issue in the analysis of the transition to entrepreneurship is the potential earnings premium over paid work. Several studies using data for developed countries and based on the usual cross-sectional motivating facts suggest that entrepreneurs enjoy higher average income levels compared to those of workers. In addition, there are increasing shares of entrepreneurs and entrepreneurial capital in the top deciles of the income and wealth distributions, as well as the higher savings rates and upward social mobility trends.[36] To better understand the earnings differences between wage earners and nonwage earners, we analyze different measures. We first compare means and medians. These are informative measures but hide interesting facts about the underlying distributions. Thus, we then compare earnings densities. Finally, we calculate earnings gaps for the self-employed and business owners relative to wage earners along the (earnings) distribution. Alternative measures of entrepreneurial income are used in the literature to compare their earnings against paid work. These include net profit, a *draw*—or periodic transfer from the firm to the entrepreneur, similar to a regular wage—and the draw plus changes in the firm's equity value.[37] Given limitations in our data set, we cannot distinguish between returns to capital and the entrepreneur's *draw*. Therefore, we'll compare the reported hourly earnings for both wage earners and nonwage-earner categories.

35. We tried an alternative specification using regional dummies with no success.
36. See, for example, Quadrini (1999) and Moskowitz and Vissing-Jørgensen (2002).
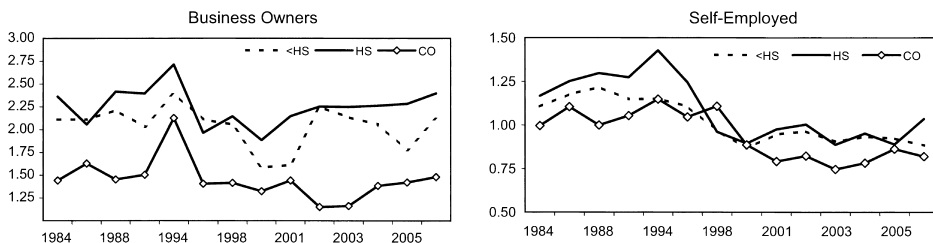37. See, for example, Hamilton (2000) and Moskowitz and Vissing-Jørgensen (2002).

Fig. 3.8   Mean earnings ratio relative to wage earners

Following the literature, we compare earnings between occupations by comparing means. For example, according to Mondragón-Vélez (2007, 2009), the most successful entrepreneurs in the United States earn much more than the most successful workers, and this difference in mean earnings increases at higher education levels. Figure 3.8 shows the mean income of business owners and the self-employed relative to that of workers in time. While the mean earnings of the business owners are more than twice those of wage earners without a college education in the year 2006, the ratio is around 1.4 for college graduates. This is in contrast to findings for the United States, where the ratio is higher for the college-educated category. Similarly, the mean earnings of the self-employed relative to wage earners are smaller for the highly educated. Hence, in Colombia, there is a very high opportunity cost for those with higher education in the salaried sector, which decreases the incentives to become a business owner. We also find a deterioration of the earnings of the self-employed relative to wage earners over the period of study at all education levels.[38]

The comparisons of mean earnings are informative but hide interesting features regarding the occupation-specific earnings densities. Thus, we follow a distributional approach. Figure 3.9 shows that there are big differences between the kernel densities of hourly earnings for occupations in 2006. The earnings distribution of the self-employed* is the most skewed to the left, with the bulk of the group showing earnings below the minimum wage (represented by the vertical line). The self-employed have a similar behavior with slightly higher earnings but still peak below the minimum wage level. The wage-earners density peaks just above the minimum wage level and has the lowest standard deviation. Finally, business owners show the highest right skewness, as well as the highest spread. Interestingly, there is no clear effect of the minimum wage on any of the nonwage-earning categories.[39]

38. The analysis performed with medians shows similar results.
39. Maloney and Nuñez (2001), who use a similar approach to reveal how the distribution is distorted by the minimum wage, state that Colombia provides an extreme example, *given the dramatic cliffs in the figures, the low standard deviation, and the high skewness.* However, the differences they find between informal- and formal-sector workers are less stark than what we find between wage earners and entrepreneurs: the minimum seems to have a strong effect on wage earners but not on other occupations.
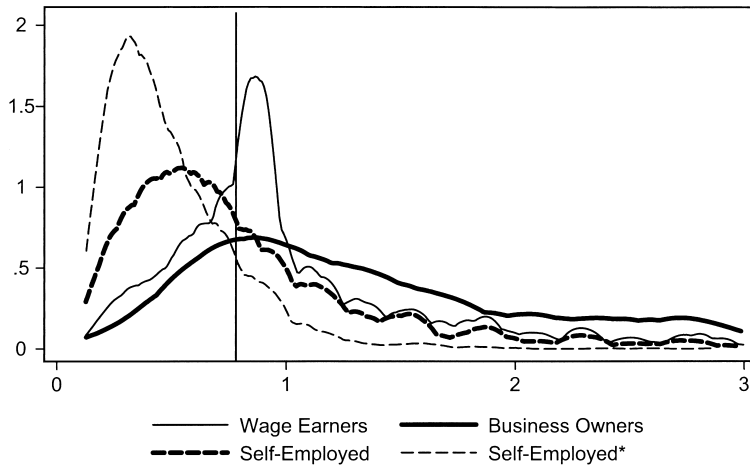
Fig. 3.9   Earnings distribution by occupation ($US per hour)
Note: See note 9.

There is a remarkable stability in the densities of the occupation types across time: the ordering is maintained throughout the period of study and across education levels, except for the college educated (see figure 3.10). Note that for this group, a sizeable fraction of business owners (more than half) show earnings below their wage-earning peers and relatively small differences in the mass of business owners with higher earnings (at the highest earnings levels) than wage earners. In other words, the financial motivations to become an entrepreneur are smaller for the highly educated agents. As other studies find (see, for example, Perry et al. [2005]), the differences in earnings distributions across occupations are smaller for college-educated agents. In our case, the densities of wage earners and the self-employed move closely together, while that of business owners is more skewed to the right with a higher variance.

We now look at the earnings gap between nonwage earners and wage earners along the earnings distribution. This is relevant, since it has been documented that entrepreneurs are overrepresented in the top deciles of the income and wealth distributions. Are there strong financial incentives to become an entrepreneur in Colombia? The *unconditional earnings gap* is calculated as the difference in log earnings at different points in the distribution. As before, there are big differences between business ownership and self-employment. Figure 3.11 shows the earnings gap between business owners and wage earners, as well as between the self-employed and wage earners. For business owners, in the bottom third of the distribution, the earnings premium is around 40 percent, while in the top third, it doubles to 80 percent of the hourly wage.

For the case of self-employment, there is a negative gap of around 50 percent in the bottom half and of nearly 30 percent in the top half. There-

Fig. 3.10   Earnings distribution for the college educated by occupation ($US per hour)
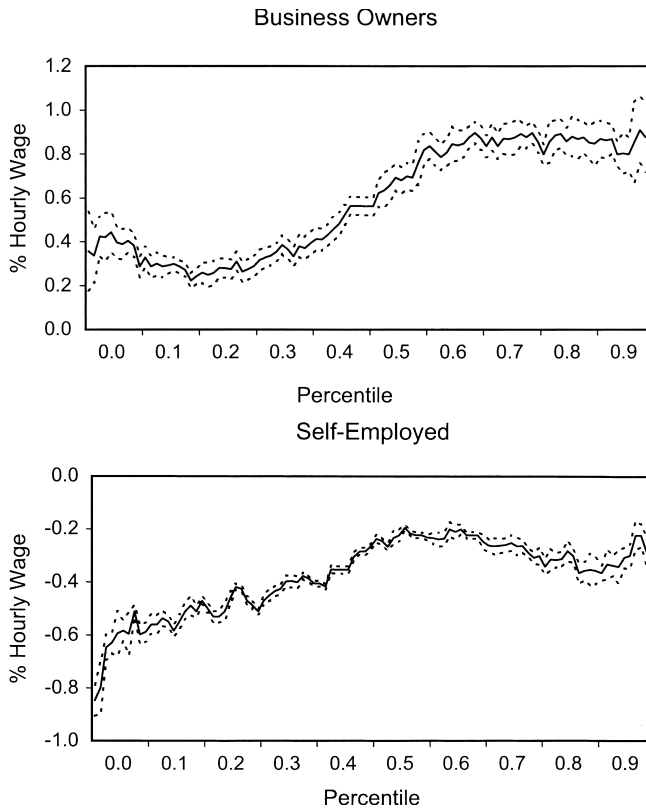

Fig. 3.11   Unconditional earnings gap relative to wage earners (2006)

fore, there are strong financial motivations to become a business owner but not to become self-employed. Replicating this analysis by education levels shows that the financial motivations to become business owners are higher for agents with less than a college education, reaching levels of 150 percent hourly wage at the top of the distribution. This is consistent with the kernel density analysis: highly educated workers are still relatively scarce and face a high wage profile in the salaried sector. Therefore, the opportunity cost of becoming an entrepreneur is relatively higher. This is in high contrast with findings for the United States, where the differences are monotonic in educational attainment. The earnings gap between the self-employed and wage earners, on the other hand, is very similar across education levels.[40]

Finally, we measure earnings dispersion. The mean-variance analysis by occupation suggests that business owners' earnings are always more volatile than those of the other two groups. If occupational choice was completely voluntary, this would imply that more risk-averse individuals would probably be drawn away from business ownership. Interestingly, between 1984 and 1998, the variance/mean ratio for the self-employed was consistently higher than that of wage earners, while for the remainder of the period, they move together closely, and the order is reversed gradually.

In sum, business owners enjoy a sizeable premium over their wage-earning peers. In addition, the mean income for business owners with less than a college education is twice that observed for wage earners. Thus, even though there is a positive premium to business ownership, the wage-earning sector poses a high opportunity cost for college-educated individuals. Not only does the business owners' earnings cumulative distribution function first-order stochastically dominate that of all other occupations, but there is also a positive wage gap between business owners and wage earners. On the other hand, we find no financial motivations to become self-employed. Conditional on education level, the earnings of self-employed individuals were on average 10 percent higher than wage earners until 1998 but 10 percent lower after the year 2000. Note that the latter period saw a secular increase

40. As mentioned before, we cannot distinguish entrepreneurial earnings associated with human and physical capital. Thus, it is important to note that in all the comparisons just presented, we may be overestimating entrepreneurial earnings associated with human capital, which are the ones comparable to earnings from paid work. This implies that while the positive premiums (of payments to labor or human capital) observed for business owners relative to paid work should be lower than the ones previously reported, the negative premiums observed for self-employment are in fact more negative than our figures suggest. However, given the average size of the firms run by business owners in this economy, we do not expect the payments to capital to make the premium over paid work zero or negative. (However, this effect may be higher in the case of highly educated individuals.) On the other hand, given the profile of the self-employed documented in this chapter, we can expect payments to capital in this case to be very small on average. Finally, the relative size of other sources of income not related to labor or business activities is generally very small for most of the population. Thus, if we were to compare total income from all types of assets across occupations, we expect to get similar results to the ones just documented. (We want to thank William Maloney for his comments on the comparability of earnings across occupations.)

in self-employment from 20 percent to over 30 percent of the working population. In addition, there is a negative and sizeable wage gap between the self-employed and wage earners. Therefore, this analysis suggests that self-employment is either a survival activity or that there are other nonpecuniary motivations affecting this decision.

3.5   Conclusions

Our characterization of entrepreneurship in Colombia suggests that (unlike what the literature finds for the United States) there are important differences between self-employment and business ownership. These two commonly used definitions of entrepreneurship differ in important dimensions such as education and economic sector. In addition, there is surprisingly little transition between self-employment and business ownership. Finally, there is a substantial earnings premium to become a business owner but not to become self-employed. The exploratory analysis suggests that in Colombia, not only are the self-employed very different from the business owners, but they also differ from wage earners across such observable characteristics as education and economic sector.

The analysis suggests that while business ownership shares the main characteristics of what the literature associates with entrepreneurship, self-employment in the Colombian context is more associated with a subsistence activity. In other words, self-employment in this environment does not seem to be either a form of or initial phase toward entrepreneurship. Regardless of growth opportunities, self-employment is still very important in terms of income generation for the majority of the population with no access to tertiary education. In addition, there may be important factors hindering the transition from self-employment to business ownership, such as credit constraints, that are unobservable from the available data.

When studying entrepreneurship in a developing economy, it is critical to define and determine with caution the characteristics of different types of nonwage earners. In particular, the differences we find between business owners and the self-employed call for very different courses of action when designing economic policy. In line with the differences in characteristics, the challenges faced by each group are likely to be very different, and hence there is a need for differentiated policies.

The present chapter, along with others included in this volume, suggest the importance and prevalence of different types of entrepreneurship. Further studies should explore these issues in other developing economies, develop new data sets, perform alternative estimations, and construct theoretical models that explain the behavior of these different groups of agents in such an environment.

Appendix

Data and Sample Selection

In this study, we use the Colombian Household Survey from 1984 to 2006 (*Encuesta Nacional de Hogares,* ENH), a repeated cross-section carried out by the National Statistics Department (DANE). We work with surveys starting in March 1984, because this is the period for which the survey has been most consistent in regard to coverage, frequency, and sample design. The survey collects quarterly information through four basic chapters: (a) identification variables, (b) household characteristics, (c) education, and (d) labor force information. In addition, special "modules" are run in some quarters, including migrations and informality. Some particular aspects are worth mentioning. First, there is information on basic job characteristics for all individuals, and thus we are not restricted to formal enterprises. Second, we can characterize agents across different types of occupations and identify entrepreneurs working alone from those who employ others. Net business income questions for entrepreneurs are asked separately from labor earnings for workers, and information on past occupations, including past entrepreneurial activities, is gathered on those currently unemployed or out of the labor force. Dictated by data availability, our analysis focuses on the eleven main cities between 1984 and 2000 and the thirteen main ones for the period from 2001 to 2006; Colombia's seven main cities account for 40 percent of the population and 63 percent of gross domestic product.

This Annex describes the sample of the occupied used in this chapter (except for the analysis of transitions, where we also include the unemployed). We use observations with a complete set of covariates and restrict the sample to workers between fifteen and seventy years of age (other than unpaid family aids) who report working between sixteen and eighty-four hours per week. The size of the weighted samples ranged from 3,093,445 workers in 1984 to 6,458,583 in 2006. The analysis is based on the information contained in the "informality" module, a special set of questions that has run within the second-quarter wave since 1984 and every two years up to year 2000, with the exception of 1990; it has run annually since. It includes data on firm size, tenure, work location, and access (and contribution) to social security. There are some retrospective questions about previous job characteristics including type of work, economic activity, and firm size. Particular information is available on specific waves such as whether the worker has a written job contract and whether the firm is registered and/or has formal accounting. Since (idoneous) indirect reporting is used for the period under study in the household survey, nonresponse and underreporting are important issues in this data set. In official labor market indicators and poverty calculations, the National Planning Department (DNP) applies three correction steps that involve earnings imputation and adjustment to

Table 3A.1   **Sample sizes of the occupied 1984–2006**

	1984	1986	1988	1992	1994	1996	1998
Number of observations	34,878	27,379	30,175	26,548	28,347	26,950	28,726
Sample size (weighted)	3,093,445	3,194,115	3,679,701	4,342,593	4,834,214	4,809,700	4,762,081
	2000	2001	2002	2003	2004	2005	2006
Number of observations	24,855	30,562	30,155	31,123	31,748	35,490	36,561
Sample size (weighted)	4,611,664	4,668,929	4,761,522	4,871,997	5,260,193	6,250,359	6,458,583

national accounts. However, this study uses the raw data as reported by the individuals. In 2000, DANE changed both the survey questionnaire and the collection methodology of the ENH in response to recommendations from the International Labor Organization (ILO) to allow for full comparability with other countries' indicators. To make the survey information before and after 2000 compatible, we adopt the more recent labor market definitions and perform an adjustment in the spirit of Lasso (2002) to account for seasonal effects in the pre-2000 shifts. Table 3A.1 portrays the sample sizes of the occupied (wage earners, all types of self-employed and business owners) both in terms of the total number of observations in our sample and the (weighted) number of individuals they represent.

There are other relevant changes in the ENH survey. For example, economic sector information, which used the International Standard Industrial Classification system (ISIC) second revision between 1984 and 2001, began to use the ISIC third revision in 2002. Therefore, additional work is needed to make the categories directly comparable. Additionally, starting in 2004, information about the sectors of economic activity becomes available at the four-digit ISIC and is used where relevant. Finally, data from the minimum wage is taken directly from the government resolutions establishing it for each year. The number of hours per month is take to be five days · eight hours/day · 4.285714 weeks/month; that is, 171.42856 hours per month.

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