DYNAMICS OF SELF-EMPLOYMENT ACTIVITIES[1]

Marcelo Neri

1. Introduction

The operation of public employment policies in Brazil can be divided in two broad groups. The first group consists of policies designed to assist the unemployed through unemployment insurance, intermediation schemes, training programs and direct employment programs (e.g.; frentes de trabalho da seca) . The second and more embrionary group of policies is aimed at fostering micro and small enterprises employment generation potential through a series of initiatives: productive credit, technical assistance, marketing support and cooperatives building.

According to the May 98 national Ibope-CNI survey, the biggest concern of Brazilians is unemployment indeed. When individuals were asked what are the main policies to fight unemployment the main answers were: 'support micro and small enterprises' (44%), 'training programs' (16%) and 'interest rate reduction' (14%). Despite of the importance attributed by the population to interventions designed to assist micro-entrepreneurs, little is known about how micro-entrepreneurial activities operate in Brazil and consequently how to design efficient policies to enhance this segment.

Complementarily, standard poverty profiles shows that no other head of household working class (including inactive states) has a bigger contribution to poverty in Brazil than self-employment. However, once again little is known about how poor self-employed behave and what are their main productive needs.

This paper attempts to generate and organize stylized facts of self-employment and employer activities in Brazil. The final purpose is to help the design of policies to assist micro-entrepreneurial activities in Brazil. The main questions pursued are: i) who are the Brazilian self-employed? ii) in particular: what is relative importance among the self-employed of subsistence activities versus those activities with growth and capital accumulation potential? iii) what are the main determinants of micro-entrepreneurial success? iv) what is the degree of risk associated with micro-entrepreneurial activities in Brazil?

Our main tool of analysis are transitional data constructed from household surveys. The longitudinal information covers three transition horizons: 1 month, 12 months and 5-year periods. This data will be used quantitatively and qualitatively. On the quantitative side, our strategy is to study movements into and out of self-employment and employer status as qualitative evidence on the nature of these activities. The idea can be putted as *tell me where will you go (and where did you come from) and I tell you **who** you are*. In particular, we will use the transitions from self-employment to employer occupations as a proxy for the degree of entrepreneurial success. The main point here is to distinguish self-employment activities turned to subsistence from those with a growth potential. The transition between self-employment to employer can also be seen as a measure of employment creation intensity in the self-employed sector.

Another quantitative goal is to assess the degree of risk implicit in micro-entrepreneurial activities. This analysis is relevant to identify the welfare effects of entrepreneurs vulnerability as well as their ability to honor previously contracted credit arrangements. We use the exiting probability of different working classes as *ex-post* measures of occupational risk. We use three windows of measurement: 1 month, 1 year and five-year periods. We also assess other possible determinants of entrepreneurial risk: i) the relation between

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tenure and occupational risk (duration dependence); ii) the probability of exiting unemployment of individuals that exerted different working classes previously; iii) the relation between age and occupational risk and; iv) the income risk of individuals that did not exit entrepreneurial activities.

The qualitative analysis will describe the socio-economic profile of individuals going in, going out or staying in self-employed and employer activities. We start tracing simple tabulations of the main characteristics of individuals exiting and entering micro-entrepreneurial activities from/to different origins/destinies. The main characteristics analyzed are sex, household status, age, schooling, initial and final sectors of activity, initial and final earnings and initial and final hours worked.

The next step is to run logistic regressions of micro-entrepreneurial transitions on a broad range of explanatory variables. We attempt to assess the role played on entrepreneurial success by various personal characteristics (sex, household status, race, religion) and by various types of assets such as: Human Capital (experience, formal education, educational background, professional training), Physical capital (access to new technologies) and Social Capital (membership in cooperatives and community associations). The main purpose of this exercise is to guide the implementation of capital enhancing policies aimed at increasing micro-entrepreneurs success rates.

2. Dynamics of Micro-entrepreneurial activities in Brazil

The literature on Brazilian labor markets often groups together self-employed units and illegal employees and label them as the informal sector. The unifying feature according to this classification would be the precariousness level of these occupations. Another key characteristic of the informal sector would be high degree of tax fiscal evasion. Both of these ways of splitting formal and informal sectors are not in line with questions on working class implicit in labor market and household surveys questionnaires which constitute the main source of information used here. According to the typical survey questionnaire self-employed would be much closer to employers in terms of contractual labor relations. The basic distinction between self-employed and employers is the fact that the former does not hire labor. There is an extensive empirical literature for the US and the UK that uses the movements towards self-employed as a proxy for the creation of enterpreneurship in the economy.

We use here movements into and out of self-employment and employer occupations as qualitative evidence on the nature of micro-entrepreneurial activities in Brazil. The idea can be putted as *tell me where will you go (and where did you come from) and I tell you* ***who*** *you are*. In particular, we will use the transitions from self-employment to employer occupations as a proxy for the intensity of entrepreneurial success. The main point here is to distinguish self-employment activities turned to subsistence from those with a growth potential.

2.1 Quantitative transitional analysis

The dynamic objective of this section requires the use of longitudinal statistic at an individual level. Each month a large number of micro-enterprises go out of business while others start their activities. In this setting, the evolution of the number of micro-enterprises hides the existing mobility in this sector.

This paper benefits extensively from the possibility offered by PME of following the same dwellings - and thus the same individuals - for short periods of time. Appendix A describes the construction of longitudinal samples from PME and their main limitations (e.g., non-response rates, attrition rates and selectivity biases). Our purpose here is to gauge the flows of individuals entering and exiting self-employment and employers status departing from different origins and leaving to different destines. These flows will provide intensity measures of micro-enterprises creation, expansion, decaying and destruction. The tool used to organize this data are probability transition matrices.

2.2. Probability Transition Matrices between Working Classes

A transition matrix presents the probability that each individual observed at different working class conditioned on being on a given working class in the previous period.

The sample of individuals successfully observed during four consecutive periods is our basic unit of analysis. At this point we will restrict the analysis to the transition between the second and the third observation of the group of four consecutive observations. Given the sensitivity of mobility measures to reporting errors in the classification variables we will impose further restrictions on the sample analyzed. In order to reduce the effects of reporting errors: we will limit our analysis to the sample of individuals that did not report working class changes in the first two and in the last two observations of the group of four. That is, we will calculate the transition probabilities between the second and the third observation conditioned that there was no other transition in the group of four consecutive observations. Later, we relax this restriction to study how these transitions operate in different horizons, we will also study non-Markovian properties of the micro-entrepreneurs occupational switching processes (i.e., duration dependence).

TABLE 1

PROBABILITY TRANSITION MATRIX BETWEEN WORKING CLASSES
PROB WITH REFINEMENT (2 BY 2)
Metropolitan Brazil - PERIOD 82-97

			Formal Emp.	Informal Emp.	Self-Emp	Employer	Unpaid	Public Servant	Inactive	Unemployed	Total
		Formal Emp.	97.3%	0.7%	0.3%	0.1%	0.0%	0.3%	0.7%	0.5%	100.0%
P	I	Informal Emp.	8.7%	79.9%	4.1%	0.2%	0.2%	0.8%	4.9%	1.3%	100.0%
o	n	Self-Emp	1.1%	2.6%	90.0%	1.5%	0.1%	0.1%	4.3%	0.3%	100.0%
s	i	Employer	0.9%	0.5%	5.5%	92.1%	0.2%	0.1%	0.7%	0.0%	100.0%
i	t	Unpaid	0.7%	5.4%	4.2%	1.6%	76.3%	0.4%	11.1%	0.2%	100.0%
ç	i	Public Servant	1.2%	0.2%	0.1%	0.0%	0.0%	97.7%	0.6%	0.1%	100.0%
ã	a	Inactive	0.4%	0.7%	0.9%	0.0%	0.1%	0.1%	97.3%	0.5%	100.0%
o	l	Unemployed	13.6%	12.5%	5.6%	0.1%	0.2%	0.7%	18.9%	48.2%	100.0%

We will focus the analysis of the transition matrix in three dimensions:

(I) Row analysis (where will the self-employed go to?) - Table 2 and Graph 1 assess the probability of change from self-employment to other working classes in Brazil metropolitan areas and in the metropolitan region of Rio. We divide these patterns in two types:

(i) Individuals that stay in the same working class. This group will be analyzed latter. (ii) Individuals that move to other working classes. This group amounts to 24.52 % and can be divided into three further groups:

(ii.1) Self-employed units that moved toward larger scale entrepreneurial activities, that is, to an employer status. The idea here is that the act of hiring at least one employer is indicative of business growth. The expanding number of self-employed in Rio was 2.63 %. The same statistic raises to 3.5% in the case of metropolitan Brazil. This result indicates that Rio's self-employed were less prosperous than their Brazilian counterparts.

(ii.2) Around 17.92 % of the initial self-employed Cariocas migrate to more precarious working classes, such as informal employees, unemployed, inactive and unpaid workers. This statistic rises to 22.02% in the case of the average of metropolitan regions indicating that Rio's self-employed move less often as well to more precarious states.

(ii.3) Finally, 3.97 % of Rio's self-employed move to other working classes such as formal employees, public employees, and non defined types. These transitions characterize changes in contractual working relations which may signal instability of these relations. On the other hand, it is not possible to make any reasonable comparison of precariousness between initial and final working status at this level of aggregation.

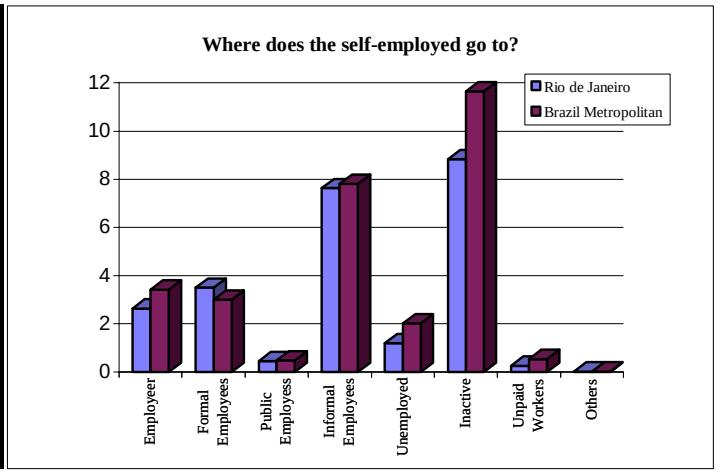
TABLE 2

Probability Transition Matrices (%)
Between Working Classes
(Probability of Change from a Self-Employed to)
1982/96

	Rio de Janeiro	Brazil Metropolitan
Self-Employed	75,58	71,09
Employeer	2,63	3,42
Formal Employees	3,5	3
Public Employess	0,45	0,47
Informal Employees	7,63	7,81
Unemployed	1,19	2,02
Inactive	8,84	11,65
Unpaid Workers	0,26	0,54
Others	0,02	0,02

Source: PME

GRAPH 1



In sum, the self-employed from the metropolitan region of Rio presents at the same time smaller transition probabilities towards more prosperous states and smaller transition probabilities towards more precarious states than the ones from metropolitan Brazil. The sum of these three types of probabilities remain approximately constant, so does the residual of these probabilities. That is, the probability to remain self-employed.

(II) Column analysis (where did employers come from?)

Table 3 and Graph 2 presents an employers column analysis of the transition matrix. That is, the analysis indicates the initial status of individuals identified as employers in the final period of analysis.

Graph 2 indicates that the main origin of employers are self-employed units. In this sense at least a group of self-employed does not constitute subsistence activities but activities with a growth potential where the precariousness adjective does not always apply.

We can identify three main origin groups for employers according to the magnitude of their transition probabilities:

(i) The positions belonging to the formal sector (formal employees and public services), inactive and the unemployed present smaller probabilities of becoming unemployed.

(ii) The self-employed present the highest probabilities of becoming employers, 2.63 %, what gives an idea of the realized expansion potential of the self-employed.

(iii) The third group is made of unpaid workers and informal employees which have the highest probabilities of becoming employers, after the self-employed. These working classes are fairly unstable.

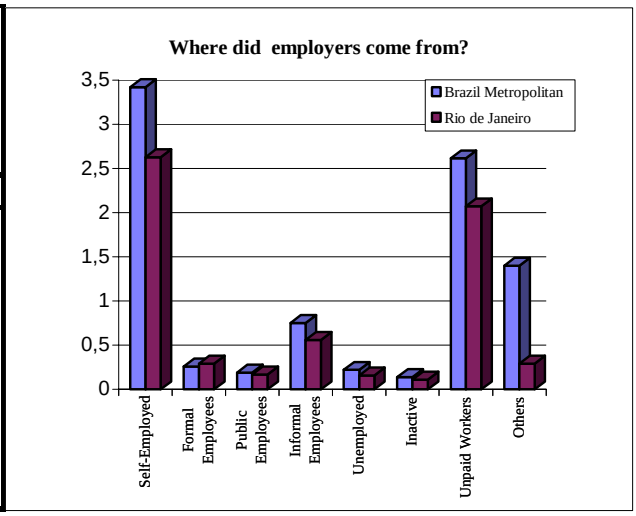
TABLE 3

Probability Transition Matrices (%)
Between Working Classes
(Probability of Change from the inicial status of individuals identified as employers in the final period of analysis)
1982/96

Initial Status	Rio de Janeiro	Brazil Metropolitan
Self-Employed	2,63	3,42
Employeer	77,28	71,38
Formal Employees	0,29	0,26
Public Employees	0,17	0,19
Informal Employees	0,56	0,75
Unemployed	0,16	0,22
Inative	0,11	0,14
Unpaid Workers	2,07	2,615
Others	0,29	1,4

Source: PME

GRAPH 2



(III) Diagonal analysis (occupational risk comparisons)

Table 4 below presents the transition probabilities of individuals that keep their initial occupation during two consecutive months. This statistic is the complement of ex-post occupational risk measures.

TABLE 4

Probability Transition Matrices (%)
Between Working Classes
Transition Probabilities of Individuals that keep their initial occupation during two consecutive months
1982/96

Working classes	Brazil Metropolitan	Rio de Janeiro
Self-Employed	71.05	75.58
Employeer	71,38	77,28
Formal Employees	89.51	89.12
Public Employees	89.54	90.6
Informal Employees	59.75	63.14
Unemployed	38.42	42.06
Inactive	89.01	91.26
Unpaid Workers	49.52	57.91
Others	1.65	3.94

Fonte: PME

GRAPH3

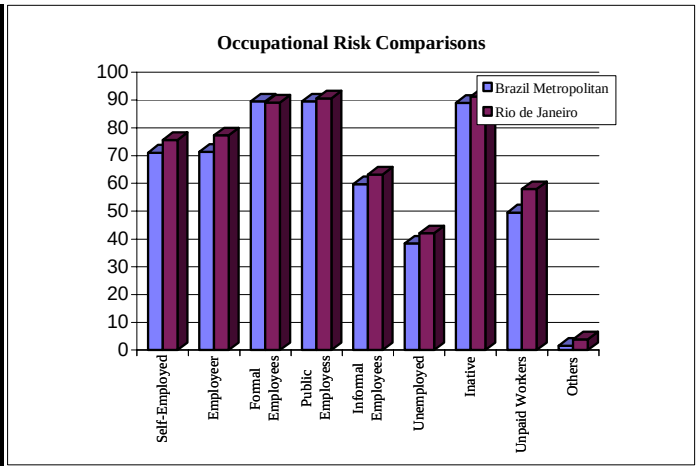


Table 4 allow us to identify ex-post the risk of changing working class. For instance, the occupational risk of self-employed. Graph 3 allow us to visualize differences of staying probabilities between different occupational groups. Once again, these probabilities can be divided into three groups according to their magnitude.

(i) Informal employees (63.14%), unemployed (42.06%) and unpaid workers (57.91%) are the more unstable states, that is those with smaller probability of keeping their initial state. It is interesting to notice that the fact that these high exiting probabilities of precarious states should enhance social welfare. That is, when one can not be get worst, risk should be viewed as a quality.

(ii) Formal employees, public employees, and inactive present higher staying probabilities around 90%. Inactive are difficult to be analyzed since they cover both discouraged unemployment as well as workers that are out of the labor force by choice or age (student and retirees).

(iii) Self-employed and employers are in an intermediary position with respect to

the two groups mentioned above with staying probabilities equal to 75.58% and 77.28%, respectively. This result indicates that the income risk of both of these activities tend to be higher than the one observed for formal employees but smaller those observed for informal employees and the unemployed..

3. Origins, Destinies and Risks of Micro-entrepreneurial Activities across Different Time Horizons

PME rotating panel scheme allows to capture labor market dynamics operating at different frequencies. We will work here with 1 month and 12 months intervals without any refinement in order to allow more direct comparisons. The retrospective question on working class on the special PME supplement that went to the field during 1996 allow us to study a five year transition period (i.e., between 1991 and 1996). This sub-section evaluates how changes in the period of measuring labor market flows affect the different origins, destinies and risks of micro-entrepreneurial activities analyzed before.

We start with occupational risk measures captured here by the probability that an individual change his/her working class between two time instants. The data in Table does not include any type of refinement in order to allow more direct comparisons. In general, we observe an increase in ex-post risk measures when we move from monthly to five year windows of measurement in all working classes analyzed. The self-employed is the only working class that present a risk reduction when we move from annual (43%) to the five year windows (37%) of measurement. This counter-intuitive result may be explained by differences between working class dynamics taken from retrospective questions and from direct questions asked on a panel.

TABLE 5

Occupational Risk Comparisons
Brazil 1982-98

	Monthly	Annual	Between 5 years
	Without Ref.	Without Ref.	91 and 96
Self	28.15	42.92	37.31
Employer	26.22	40.23	44.26
Legal Employee	10.29	22.52	33.04
Illegal Employee	40.29	61.49	65.64
Unpaid	47.95	67.94	75.62
Public sector	10.48	17.28	23.69
Inactive	9.98	19.66	30.37
Unemployed	60.56	85.75	91.23

Source: PME

Given the rise in the probability of exiting different working classes as we increase the period between transitions, we will analyze the composition of the flow for those that moved between working classes.

In terms of employer origins, table 6 shows that as we increase the period between transitions, we observe an increase in the proportion of previous legal employees among the new employers. This change is mostly explained by a reduction in the proportion of previous self-employed among the new employers. In other words, the self-employed are more important as a previous step towards the employer status than if we increase the period of measurement between transitions.

TABLE 6

Where did employers come from?

Brazil 1982-98

	Monthly	Annual	Between 5 years
	Without Ref.	Without Ref.	91 and 96
Self	63.5%	52.5%	43.9%
Legal Employee	11.4%	18.5%	32.4%
Illegal Employee	10.3%	10.8%	6.3%
Unpaid	2.9%	2.7%	0.3%
Public sector	2.1%	2.5%	4.4%
Inactive	8.6%	11.3%	3.6%
Unemployed	1.2%	1.6%	2.5%
Other	0.0%	0.0%	6.7%
	100.00	100.00	100.00

Source: PME

4. Analysis of Micro-Entrepreneurial Risk

This section assess various aspects of entrepreneurial risk. This analysis can be useful in the design of a series of policies designed to feed entrepreneurial activities (e.g. micro-credit arrangements, compensatory schemes for the unemployed).

4.1 Duration Dependence and Occupational Risk

We attempt now to verify if the duration of the stay in the different working classes analyzed above affect their respective exiting probabilities. The exiting probabilities calculated were given that the individual is only one month, only two months, more than three months in a given working class, as presented in Table 7.

For the self-employed we found the following exiting probabilities: 51% after one month, 34% after two months and 14% after three or more months. Employers presented similar exiting probabilities (54%, 35% and 12%, respectively).

There are two main lessons to be extracted from this exercise self-employed and employers occupational risk measures are still in the intermediary range from those observed for the unstable group of unemployed, informal employees and unpaid and the more stable group of inactive, formal employees and public servants. Second, and most important, all groups presented duration dependence in the sense that longer spells tend to present smaller exiting probabilities. In particular, in the case of self-employed units the exiting probability for those that are for more than three months in the occupation is roughly one third the probability found for those that entered self-employment in the previous month. In the case of employees this ratio falls to less than one fourth. In policy terms this result main point towards the inadequacy of providing seed money for new micro-entrepreneurs.

TABLE 7

BRAZIL

	UNCENSORED DATA		CENSORED DATA	
	1 month	2 months	(+) than 3 months	overall
Self	51.3%	33.7%	14.3%	27.7%
Employer	54.0%	35.0%	12.2%	26.1%
Unemployed	65.4%	55.4%	47.2%	59.9%
Illegal E.	56.3%	40.3%	23.8%	39.7%
Unpaid	61.0%	42.8%	25.5%	47.0%
Legal E.	41.0%	21.7%	5.5%	10.0%
Public S.	41.6%	19.8%	5.5%	10.5%
Inactive	42.8%	26.7%	4.8%	10.3%

Source:PME

4.2 Micro-entrepreneurs and the Probability of Exiting Unemployment

Table 8 attempts to answer the following question: What is the relative difficulty of individuals that were previously micro-entrepreneurs to exit unemployment. We found that the after one month unemployment exiting probability of individuals that were previously in self-employment (73%) and employer (70%) states is greater than the one observed for all other states. The same type of result holds for individuals that were in one month in either unemployed or inactive states. This result may be interpreted as an indication that previously micro-entrepreneurs do not require any type of special assistance with respect to other working classes when they get unemployed.

TABLE 8

	Present Working Class	
Previous Working Class	Unemployed	Unemployed or Inactive
Self	73,3%	57,9%
Employer	70,4%	54,0%
Informal E.	68,0%	48,4%
Unpaid	64,9%	37,2%
Formal E.	56,3%	40,7%
Public S.	58,2%	39,8%
Inactive	66,6%	21,2%

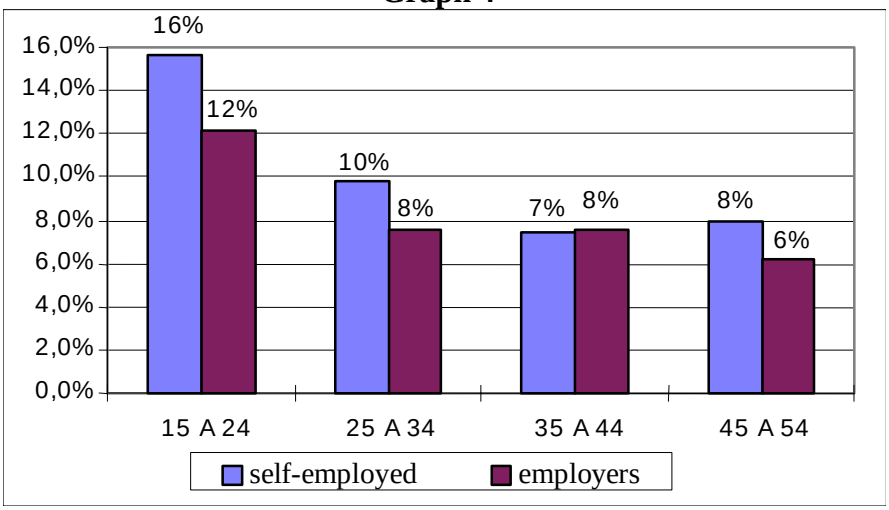
Source:PME

4.3 Occupational Risk and Age

We now describe the relationship between micro-entrepreneurs occupational risk and age. Graph 4 presents the probability of exiting self-employment and employers states according to different age groups. We observe in general an inverse relationship between these ex-post measures of micro-entrepreneurs occupational risk and age. In the 15-24 years age bracket, the exiting probability of self-employment is 15.6%, this statistic falls to 7.9% in the 45-54 years group. In the case of employers, the exiting probability

falls from 12.1% in the 15-24 years group to 6.2% in the 45-54 years group. Most of the fall of the occupational risk observed happens when we move from the 15-24 years group to the 25-34 group. It is important to note that we did not cover the period of retirement. In general, our analysis shows that the occupational risk of self-employees and employers tend to fall as people move from the begin to the middle of their life cycle.

Graph 4



Source: PME

4.4 Self-Employed Income Risk

The short-run panel characteristic of PME also allow us to evaluate the income risk of self-employed units that do not loose their jobs. In other words, we analyze the income risk of those with a null ex-post occupational risk). Taking as a reference the transition matrix (Table 1) we analyze those that are in the diagonal of the matrix.

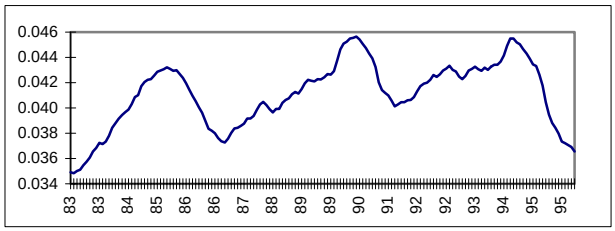
Graph 5 presents a 12 month-moving average of the temporal variance of log earnings of continuously self-employed heads during four consecutive months. Graph 6 presents the ratio between this measure and the one calculated with continuously occupied heads in all working classes (including self-employed). This latter graph reveals the existence of extra income risk in continuously self-employed units activities. The differential between income risk between self-employed and the whole sample of continuously occupied heads ranged from 54% to 26%.

Another characteristic reveal by this graph is the existence of an inverse relationship between self-employed heads risk and the risk of all occupied heads. The total elasticity between this two variables is -0.286 with a t-ratio of -15.7 . This result reveals that although self-employed present an additional risk with respect to other occupations they are relatively more able to avoid additional risk increases in times of higher aggregate instability.

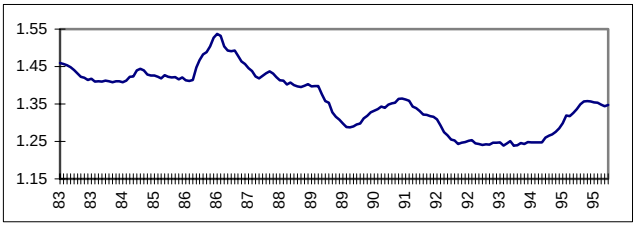
As a consequence of the self-employed ability to reduce their extra risk when their income risk is at a local maximum, the risk differential tends to be at a local minimum. These points tend to coincide with inflation peaks that were usually followed by stabilization plans, like those observed in 1986, 1990 and 1994. One interpretation for this empirical regularity is the relative ability of self-employed units to change their prices/incomes in a high inflationary environment. For example, employees have to go through a costly bargaining process with their firms to change nominal wages. In contrast, the self-employed are vertically integrated units (i.e.; are firms and workers at the same time) with a null bargaining cost. This greater degree of vertical integration makes the self-employed more able to deal with higher and more unstable inflation rates.

Temporal Variance of Log Earnings of Continuously Self-Employed Units (12-m MA)

Graph 5 - Self Employed Units



Graph 6 - Ratio between the Self- Employed and the Whole Sample



Source : PME

5. Self-employment entrepreneurial success

We will implement a casual interpretation of the role played by resources and individual characteristics on micro-entrepreneurial success. This analysis is in many aspects similar to the one presented in the previous section. There we compared the profiles of people that stayed in self-employment and in employer occupations with those that migrate between these two working classes. The difference is that we use a different data set: the supplement to PME that went to the field in 1996. This means, first using a different horizon, in the previous section we studied the transitions occurred between two consecutive months and now we examine transitions over the five year period between 1991 and 1996. The month by month window has the advantage of allowing to observe the exact moment that individuals are leaving certain working classes while using longer windows does not allow us to distinguish those that went out and in certain working class from those that stayed continuously occupied in this working class. On the other hand, the five year window seems more relevant to the analysis of individuals life-cycle occupational behavior. Another advantage of the supplement is to provide a much richer set of endogenous variables than the usual PME survey to study working classes transitions.

Table 9 presents the summary of different logistic regressions considered the effects each explanatory variable considered in isolation on the probability that a self-employed becomes an employer. This table presents a column labeled as marginal probability that refers to the differences in probability between two states of each variable taken in isolation. The states are indicated in the OBS column. For example, males self-employed probability to ascend employer status is 90% greater than the one observed for females (i.e., its complement).

TABLE 9
LOGISTIC MODEL - ANALYSIS OF PARAMETER SIMPLE ESTIMATES
VARIABLES CONSIDERED IN ISOLATION
Switch from Self-Employed to Employer Between 1991 and 1996 - Brazil

		Obs *	Marginal Probabil.	Estimate	Std Error
Gender	**Male**	**1**	**90.4%**	0.644	0.118
Race	**White and Yellow**	**1**	**113.3%**	0.758	0.114
Household Status	**Head**	**1**	**104.0%**	0.713	0.117
Household Status	**Spouse**	**1**	**-37.3%**	-0.466	0.137
Household Status	**Son**	**1**	**-44.7%**	-0.593	0.196
Religion	**Evangelical**	**1**	**-30.4%**	-0.363	0.167
Experience	**Age**	**40/30**	**129.0%**	0.019	0.004
Education	**Completed Years of Schooling**	**8/4**	**18.2%**	0.119	0.011
Mother Education	**Completed Years of Schooling**	**10/4**	**78.5%**	0.104	0.015
Father Education	**Completed Years of Schooling**	**10/4**	**51.7%**	0.092	0.013
Technical Course	**Equivalent to High School**	**1**	**77.9%**	0.576	0.124
Knows the Correct Name	**President, Governor and Mayor**	**1**	**171.9%**	1.000	0.133
Trade Unions and Associations	**Member in 1996**	**1**	**108.6%**	0.735	0.113
Trade Unions and Associations	**Attends at Least one Meeting per Year**	**1**	**126.2%**	0.816	0.205
Communitarian Associations	**Member in 1996**	**1**	**43.6%**	0.362	0.129
Communitarian Associations	**Attends at Least one Meeting per Year**	**1**	**50.7%**	0.410	0.140
Incorporation of New Equipament	**Perceived at Least as Regular in 1991**	**1**	**92.6%**	0.656	0.115
Importance of new Knowledge	**Big Risk of Losing the Job without them**	**1**	**47.5%**	0.388	0.140
Importance of new Knowledge	**Essential to Keep Working in the Same Occupation**	**1**	**49.3%**	0.401	0.106
Situation in the Occupation	**Ranked Among the Well Paid in 1991**	**1**	**71.8%**	0.541	0.100
Construction Sector	**Occupied in 1991**	**1**	**-56.3%**	-0.827	0.208
Public Sector	**Occupied in 1991**	**1**	**64.8%**	0.500	0.234
Regional Dummies	**Minas Gerais**	**1**	**46.1%**	0.379	0.112
Regional Dummies	**Pernambuco**	**1**	**-42.1%**	-0.547	0.199
Regional Dummies	**São Paulo**	**1**	**28.6%**	0.251	0.114
Regional Dummies	**Rio de Janeiro**	**1**	**-24.2%**	-0.278	0.143

* Comparisons for the marginal probability difference calculations:
1 corresponds to a comparison taken from dummy variable, other comparisons are specified below.

The following variables did not present a statistically different from zero effect on the probability of moving from self-employment to employer occupations when they were considered in isolation: religion (atheist, catholic, kardecist, afro religion), sectors of activity (services, commerce, sector not specified) and Regional Dummies (Porto Alegre and Bahia).

We proceed now in two alternative routes: First, we developed a general to specific variable selection procedure to end up with an a posteriori set of exogenous variables which appears to exert statistically significant impacts on the status variables analyzed. In this sense the information of the variables dropped out during this selection process is a relevant part of the analysis. The main results of this procedure are reported in Appendix C. Second, we postulate and test an a priori model of the main determinants of self-employment entrepreneurial success. Table 10 presents the main results of the analysis:

TABLE 10

LOGISTIC MODEL - ANALYSIS OF PARAMETER ESTIMATES

Switch from Self-Employed to Employer Between 1991 and 1996 - Brazil

		Estimate	t-Statistic		Std Error	Deviance
Gender	**Male**	0.4477	2.6181	**	0.1710	2363.47
Race	**White and Yellow**	0.4008	2.7026	**	0.1483	2324.73
Household Status	**Head**	0.4147	2.4495	**	0.1693	2311.55
Religion	**Evangelical**	-0.1650	-0.8342		0.1978	2307.10
Education	**Completed Years of Schooling**	0.0841	5.0359	**	0.0167	2209.93
Experience	**Age**	0.1359	3.6730	**	0.0370	2200.58
Experience	**Age Square**	-0.0013	-3.2500	**	0.0004	2189.70
Knows the Correct Name	**President, Governor and Mayor**	0.4241	2.7013	**	0.1570	2179.18
Father Education	**Completed Years of Schooling**	0.0210	0.8642		0.0243	2187.68
Mother Education	**Completed Years of Schooling**	0.0065	0.2453		0.0265	2187.48
Technical Course	**Equivalent to High School**	0.1701	1.1439		0.1487	2177.75
Incorporation of New Equipament	**Perceived at Least as Regular in 1991**	0.2976	2.1227	**	0.1402	2172.58
Situation in the Occupation	**Ranked Among the Well Paid in 1991**	0.2854	2.4310	**	0.1174	2167.49
Manufacturing Sector	**Occupied in 1991**	0.5831	2.2054	**	0.2644	2156.13
Construction Sector	**Occupied in 1991**	-0.3223	-1.0751		0.2998	2154.15
Services Sector	**Occupied in 1991**	-0.0653	-0.2923		0.2234	2155.97
Commerce Sector	**Occupied in 1991**	0.0180	0.0792		0.2272	2154.11
Regional Dummies	**Rio de Janeiro**	-0.0403	-0.1961		0.2055	2149.12
Regional Dummies	**São Paulo**	0.3048	1.7318	*	0.1760	2153.81
Regional Dummies	**Minas Gerais**	0.6941	3.8285	**	0.1813	2134.88
Regional Dummies	**Pernambuco**	0.1815	0.7146		0.2540	2134.80
Regional Dummies	**Bahia**	0.3324	1.3190		0.2520	2133.11
		DF	Value		Value/DF	
Number of Observations : 3498 ; Log Likelihood : -1066.5526 ; Pearson Chi-Square :		3475	3359.584		0.967	

*statistically significant at 90% confidence level **statistically significant at 95% confidence level

The transition probabilities from self-employment to employer status between 1991 and 1996 constitute both a measure of self-employment entrepreneurial success and simultaneously a measure of employment generation in this segment of the labor market. We proceed now with a variable by variable analysis of the proposed model of entrepreneurial success presented in Table 10, we complement the analysis with references to the simple logistic regression exercise presented in Table 9.

Individual Characteristics: heads, males and whites or yellow individuals are more frequently succ essful in their respective self-employment activities even after controlling for other items such as education attainment. The coefficients of these three variables ranges between 0.40 and 0.45. The lack of entrepreneurial success among blacks and mulattos has been subject to various studies in the US. For example, this result taken at face value could in principle imply that there may be room for affirmative actions in programs that support self-employment units. Although, one would need to precise what is driving the racial bias in self-employment success rates (e.g., tighter credit constraints for blacks due to lack of collateral or consumer discrimination)FN.

The dummy for evangelical religions is not significant different from zero. This result points against the existence of Weberian Protestant ethics effect among the Brazilian self-employed in the Brazilian environment[2].

Human Capital: - Experience with diminishing returns captured by the negative coefficient on the age square variable indicates an inverted U shaped life-cycle profile of individuals moving from self-employment to employer position. As expected, the coefficient on the variable completed years of schooling is highly significative indicating the importance of formal educational policies as feeding entrepreneurial

2 Appendix D shoes that in the simple logistic analysis the evangelical religion dummy presents a negative relation with our measure of self-employment success rates. No variable related religion status, including atheist, turned out to be statistically different from zero in the final model.

success. On the other hand, fathers and mother education attainment variables and professional education variable (equivalent to a high school degree) coefficient did not turned out to be statistically significant[3].

A variable that captures the simultaneous knowledge of the name of mayor, governor and president also plays an important role explaining the likelihood of the specific transition under scrutiny. One should perhaps view this variable more as an education quality indicator than evidence of the importance assumed by other types knowledge apart from traditional education variables.

Social Capital – There are not variables for the initial period of transition, 1991, related to associativism in the survey used. There is a broad range of such type of variables for the final period of analysis, 1996, however this would introduce simultaneity bias in our estimates[4]. This is unfortunate since productive and community networks may potencialize self-employed units performance through economies of scale.

Other Variables

Self-employed individuals that perceived the regular incorporation of new equipment in 1991 presented higher transitions probabilities toward employer occupations. This effect demonstrate the importance of the updating knowledge for entrepreneurial success in the nineties. Finally, self-employed individuals that perceived to be well off in 1991 were closer to the margin of change towards employer and consequently presented higher transition probabilities between 1991 and 1996.

Sectoral and Regional Dummies: Manufacturing sector, Minas Gerais and São Paulo dummy variables presents a positive effect on the probability of migrating from self-employment to employer activity[5]. The first two variables present the higher coefficients among all the dummy variables considered in the present exercise.

Appendix C presents a similar logistic regression analysis, considered in isolation and after performing the variable selection process described above, for the following samples: i) self-employed in 1996; ii) continuously self-employed between 1991 and 1996. iii) employer in 1996; iv) continuously employer between 1991 and 1996. v) migrant from employer to self-employment between 1991 and 1996. v) migrant from employee to employer between 1991 and 1996. vi) migrant from employee to self-employed between 1991 and 1996.

8. Conclusions

According to recent opinion polls, the main policy to fight unemployment in Brazil is 'support micro and small enterprises'. Complementarily, poverty profiles recently shows that no other head of household working class has a bigger contribution to poverty in Brazil than self-employment (including inactive states). However, little is known about how self-employed and employer units behave and what are their main productive needs.

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3 These set of educational background variables were statistically significant from zero in the simple logistic regression analysis: self-employed individuals who mother had ten completed years of schooling presented 79% more chances to migrate to employer occupation than those who mother had four years of completed schooling. This same statistic drops to 52% when fathers education were considered in the analysis. professional education variable The self-employed individuals that possessed such diploma presented 78% more chances to migrate to employer status than those that did not possess such diploma.

4 When we use social capital related variables for the final period of analysis in isolation we observe a positive relationship between these variables and self-employment success rates. This evidence that variables captured by *productive* associations membership (trade unions and cooperatives) have higher simple correlation coeefficients than community associations membership. A similar type of analysis indicates that both of these types of associativism presents higher coefficients when one control for participation intensity (i.e., imposing a condition that the individual attends more than one meeting per year). This result would support the use of networks, specially productive type, in micro-entrepreneurial enhancing policies (e.g. as social collateral in credit arrangements). Nevertheless, it should be viewed with cautious since it is related with the final state 1996 and thus it is subject to simultaneity bias.

5 The analysis of the regional dummies taken in isolation reveals Minas Gerais and São Paulo regions with probabilities of migrating from self-employment to employer occupations, respectively, equal to 46% and 29% above their complement while Rio de Janeiro and Pernanbuco presented respectively probabilities 24% and 42% below their respective complement. Rio Grande do Sul and Bahia dummies did not present statistically different from zero estimates.

This paper attempted to generate and organize stylized facts of self-employment and employer activities in Brazil. The final purpose was to help the design of policies to assist micro-entrepreneurial activities (productive credit, technical assistance, marketing support and cooperatives building.). These policies can be used either as means of enhancing employment generation or more specifically as a poverty alleviation device.

Our main tool of analysis were transitional data constructed from household surveys. The longitudinal information covers three transition horizons: 1 month, 12 months and 5-year periods. We used logistic regressions to study the main characteristics and resources of self-employed units. In particular, we used the movements from self-employment to employer activities as measures of entrepreneurial success and of employment creation in the self-employed segment. We also used a survey on the entrepreneurs of Rocinha favela as a laboratory to study poor entrepreneurs resources and behavior.

The main questions pursued were: i) who are the Brazilian self-employed? ii) in particular: what is relative importance among the self-employed of subsistence activities versus those activities with growth and capital accumulation potential? iii) what are the main determinants of micro-entrepreneurial success? iv) what are the main constraints on poor entrepreneurs activities? v) what is the degree of risk associated with micro-entrepreneurial activities in Brazil.

Analysis of Micro-Entrepreneurial Risk

The analysis of entrepreneurial risk can be useful in the design of a series of policies designed to assist micro-entreprenes (e.g., micro-credit arrangements, compensatory schemes for the unemployed).

Occupational Risk Differences across Working Classes

Self-employed and employers are in an intermediary position in terms of occupational risk mentioned above with staying probabilities equal to 75.58% and 77.28%, respectively. This result indicates that the occupational risk of these activities tend to be higher than the one observed for formal employees but smaller those observed for informal employees and the unemployed.

Occupational Risk across Different Horizons

We evaluate how changes in the period of measuring labor market flows affect the risks assumed by different occupational groups. PME rotating panel scheme and retrospective questions allows to capture labor market dynamics operating at three different frequencies (monthly, yearly and 5 year periods). In general, we observe an increase in ex-post risk measures when we move from monthly to five year windows of measurement in all working classes analyzed. For example, as we increase the window of measuement from 1 month to one year the risk of exiting self employed (employer) status increases from 28% (26%) to 43% (40%). The self-employed is the only working class that present a risk reduction when we move from annual (43%) to the five year windows (37%) of measurement. This counter-intuitive result may be explained by differences between working class dynamics taken from retrospective questions and from direct questions asked on a panel.

Probability of Exiting Unemployment

After one month unemployment exiting probability of individuals that were previously in self-employment (73%) and employer (70%) states is greater than the one observed for all other states. This is an an indication that previously micro-entrepreneurs do not require any type of special unemployment assistance.

Duration Dependence

Self-employed presented the following exiting probabilities: 51% after one month, 34% after two months and 14% after three or more months. Employers presented similar exiting probabilities (54%, 35% and 12%,

respectively). This fall of occupational risk with tenure may imply the inadequacy of providing seed money for new micro-entrepreneurs instead of funding already established business.

Occupational Risk and Age

In the 15-24 years age bracket, the exiting probability of self-employment is 15.6%, this statistic falls to 7.9% in the 45-54 years group. Occupational risk of employers also tend to fall as people move from the begin to the middle of their life cycle.

Self-Employed Income Risk

The income risk of self-employed units that do not loose their jobs was between 26% and 54% higher than all working class in the 1982-97 period. However, there is an inverse relationship between self-employed risk and the risk of all occupied. The total elasticity between this two variables is -0.29. In other words self-employed risk increases relatively less in times of increasing overall uncertainty.

Self-employment entrepreneurial success

The transition probabilities from self-employment to employer status between 1991 and 1996 constitute a measures of self-employment entrepreneurial success and simultaneously it constitutes a measure of employment generation in this segment of the labor market.

Individual Characteristics: as expected, heads, males, whites or yellow individuals and heads are more frequently successful in their respective self-employment activities even after controlling for other items such as education attainment. The lack of entrepreneurial success among blacks and mulattos has been subject to various studies in the US. For example, this result taken at face value may imply that there may be room for affirmative actions toward self-employment units training programs.

Family education background variables and religion related variables dropped out in the variable selection process used. This last result points against the existence of Weberian Protestant ethics effect among the Brazilian self-employed.

Human Capital: - Experience with diminishing returns captured by the negative coefficient on the age square variable indicates an inverted U shaped life-cycle profile of individuals moving from self-employment to employer position. As expected, the coefficient on the variable completed years of schooling indicates the importance of formal educational policies as feeding entrepreneurial success.

A variable that captures the simultaneous knowledge of the name of mayor, governor and president is retained. One should perhaps view this variable as indicating the importance of other types knowledge not captured by the traditional education variables.

Social Capital – There is evidence that variables captured by *productive* associations membership (trade union and non community associations), seems to explain part of the self-employment success rates. This result would support the use of productive networks in micro-entrepreneurial enhancing policies (e.g. as social collateral in credit arrangements).

Self-employed individuals that perceived to be well off in 1991 were closer to the margin of change towards employer and consequently presented higher transition probabilities between 1991 and 1996. Finally, self-employed individuals that perceived the regular incorporation of new equipment in 1991 also presented higher transitions probabilities toward employer occupations.

Regional dummies: Minas Gerais dummy presents a positive effect on the probability of migrating from self-employment to employer activity.

Appendix: The Longitudinal Aspect of PME

The purpose of this appendix is to describe PME sampling scheme and to assess basic problems related to the longitudinal data set constructed specially for this study. These problems include non-response biases, attrition, selection biases and measurement error.

A. PME Sampling Scheme

To reduce the cost of the survey, IBGE decided not to randomly select a complete new sample of dwellings each month, instead every two years 12 sub-samples are selected, each being in size 1/4 of the actual sample for each month. Every month, 4 and only 4 of these 12 sub-samples are interviewed. Hence, to cover the entire two-years period, each sub-sample has to be interviewed 8 times (8 interviews/sub-sample x 12 sub-sample = 4 sub-samples interviewed/month x 24 months).

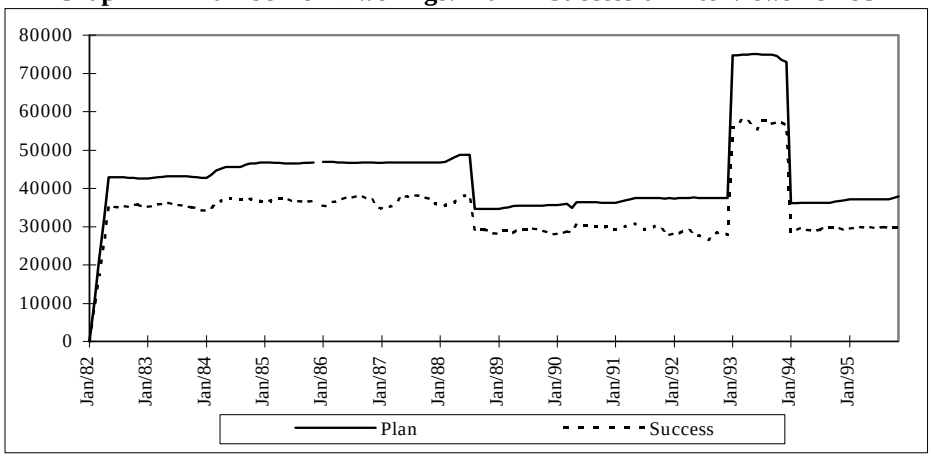
The timing of these eight interviews are as follows: if t is the time of the first interview of a given sub-sample, then this sub-sample will be in the sample in the periods t, t+1, t+2, t+3, t+12, t+13, t+14, t+15 . In other words, when a sub-sample enters the sample it is interviewed for 4 consecutive months, then it is removed from the sample for 8 months to return to be interviewed again for four additional consecutive months.

To preserve the same degree of overlaying between samples for consecutive months, each month one and only one of the 4 sub-samples interviewed is substituted. Hence, in all pair of consecutive months 3/4 of the dwellings are interviewed in both months. Of these characteristics of the PME sampling scheme, the fact that each dwelling is interviewed four consecutive times and eight times over a period of 16 months are the important characteristics to be explored in the study.

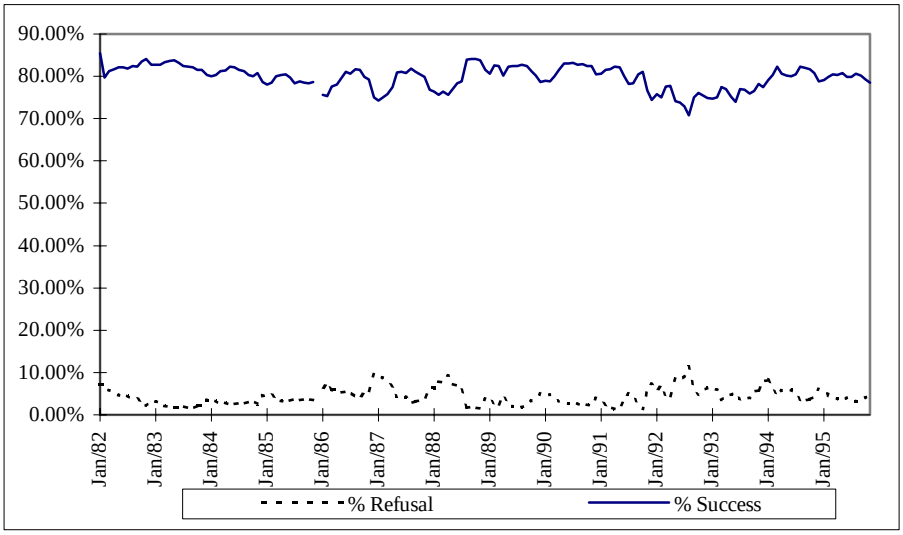
B. Non-Response Bias, Attrition and Selectivity Bias

One should account for attrition and selection biases introduced in the final longitudinal samples. These problems may be serious even if the analysis is to be restricted to the cross-sectional aspect of PME, since not all dwellings in the sample originally selected end up being interviewed. Graph A1 illustrates, the number of dwellings originally selected and those actually interviewed month by month from January 1982 to October 1995. Graphs A2 to A4 assess the size and the sources of non-response biases. Graphs A.2 and A.3 exhibit the evolution of the proportion of successful interviews, the proportion of refusals, the proportion of nonexistent dwellings, and the proportion of dwellings occupied by others. Graph A5 presents the distribution across metropolitan regions of planned and observed dwellings.

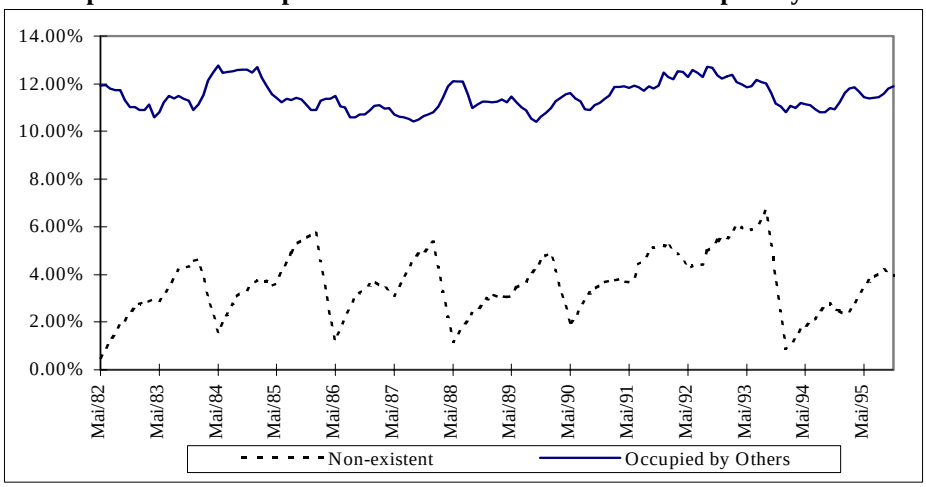
Graph A1 - Number of Dwellings: Plan X Successful Interviews - 82-95



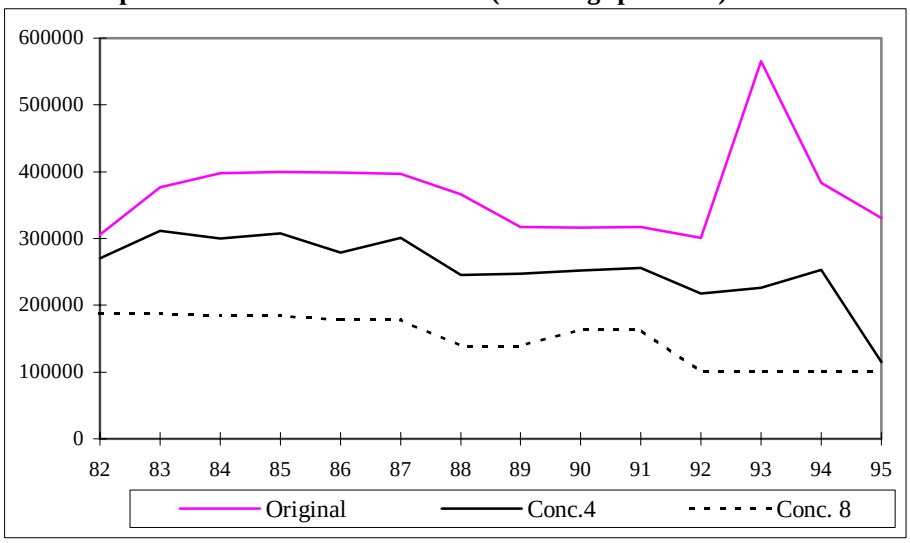
Graph A2 - Non-Response Bias: % Successful X % Refusal - 82-95



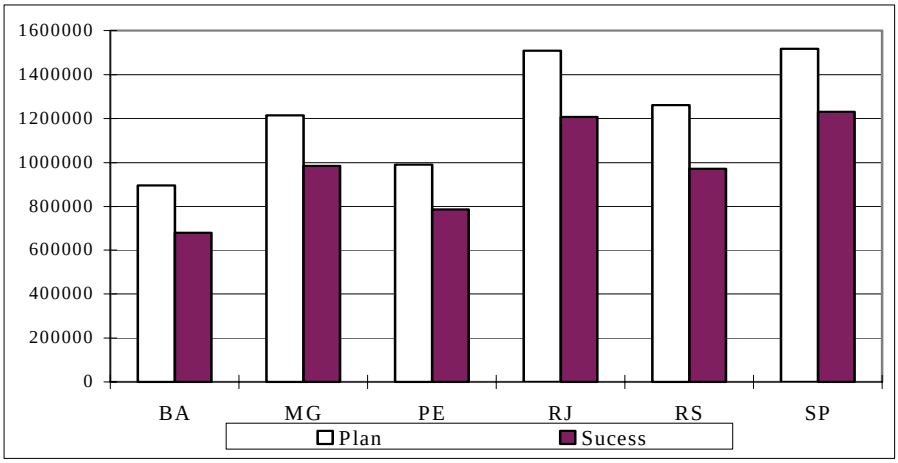
Graph A3 - Non-Response Bias: % Non-existent X % Occupied by others



Graph A4 Number of Observations (Dwellings per Year) - 1982-95

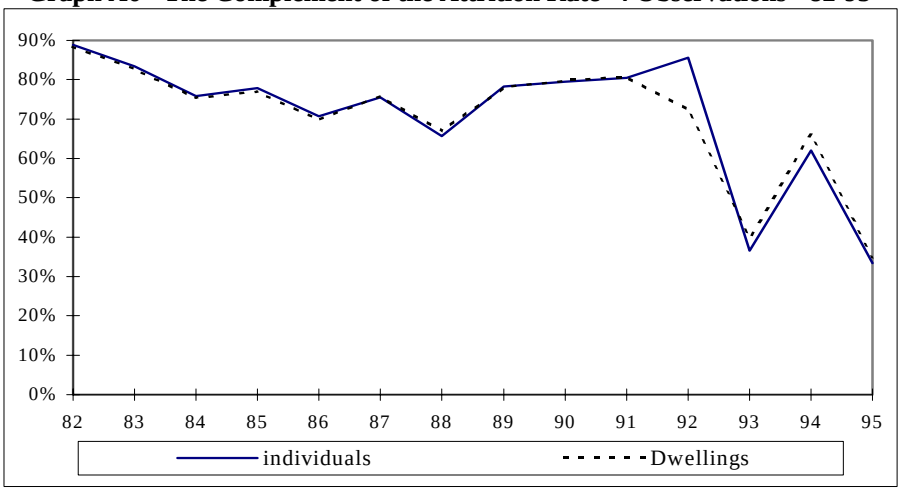


Graph A5 - Number of Dwellings : By Metropolitan Region - 82-95



Note that, despite the non-response rate being on average 79% (see, graph A2), at each point in time the proportion of dwellings which are not interviewed at least once during the eight (four consecutive) observations of PME rotating panel scheme can be much higher. Graphs A6 and A7 shows that on average 43%(73%) of the dwellings of the set of successful interviews (i.e., the >original* sample) remain in the constructed longitudinal samples of eight (four consecutive) observations, respectively.

Graph A6 - The Complement of the Attrition Rate- 4 Observations - 82-95



Graph A7 - The Complement of the Attrition Rate - 8 Observations - 82-95

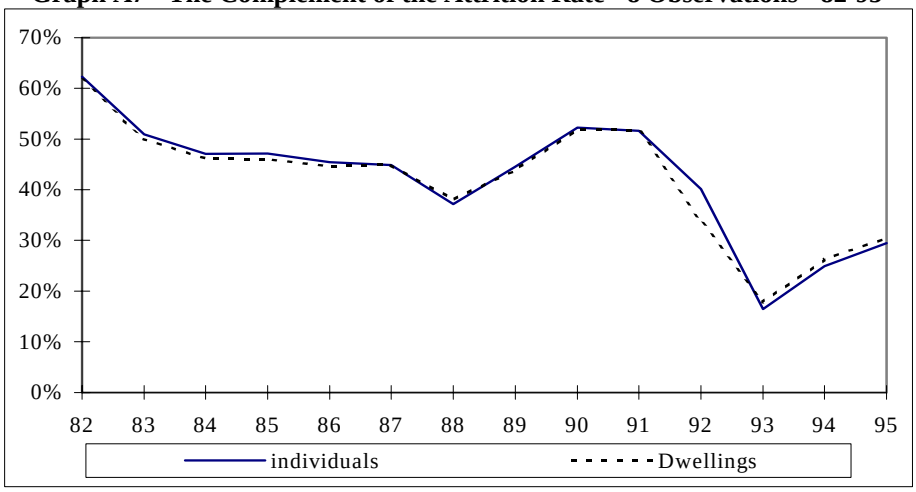


Table A.1 provides a comparison of basic demographic and economic statistics corresponding to the 1982-95 period for the group of working age individuals belonging to the following samples: a) PME original sample; b)first observation of the longitudinal samples with four observations; c)first observation of the longitudinal samples with eight observations. The analysis does not show any major differences in demographic and economic aspects of each sample.

Table A.1

	Profile of Samples 1982-95		
	Original PME Sample	**Longitudinal Sample 4 Obs**	**Longitudinal Sample 8 Obs**
Share of Males	47.47%	47.37%	47.44%
Average Age	33.78	34.16	34.54
Share of Heads	34.71%	34.99%	34.73%
Share with less than Eight Years High School Education	61.01%	60.02%	60.94%
Share in Manufacturing	12.91%	12.20%	11.90%
Participation Rates	58.04%	60.01%	59.31%
Share Searching a Job	3.18%	3.44%	3.44%
Average Unemployment Spell	40.85	41.85	44.18
Average Hours Worked Per week	43.61	41.96	41.92
Share of Employees	36.33%	37.41%	36.78%
Share of Legal Employees	75.13%	78.59%	76.58%
Number of Observations	14911309	10236752	6077712