Getting ahead, falling behind and standing still. Income mobility in Chile*

El ascensor social. Movilidad de ingresos en Chile

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Abstract

This paper analyses household income mobility in Chile between 1996 and 2001. Compared to industrialized and most developing countries, mobility has been quite high. The purpose of this paper is to apply a binomial probit model and split analysis into assessment of individuals and households on the relative income distribution. Main results are that moving from unemployment to employment significantly increases probability of moving up and decreases probability of moving down. Technical-professional education is promoting move up on the relative income scale and it is protecting movement down. An important result is that high-school education decreases probability of degradation.

Key words: *Mobility, Poverty, Household structure, Chile.*

Resumen

Este artículo analiza la movilidad de ingresos de los hogares en Chile entre los años 1996 y 2001. En comparación con los países desarrollados e industrializados, la movilidad ha sido bastante alta. El propósito de este artículo es aplicar un modelo probit binomial y dividir el análisis de la distribución de ingresos relativa entre los individuos y los hogares. Los principales resultados son que el movimiento del desempleo al empleo aumenta significativamente la probabilidad de movilidad ascendente y disminuye la probabilidad de movilidad descendente. La educación técnico-profesional promueve la movilidad ascendente en la escala de ingresos relativos y protege el movimiento descendente. Un importante resultado es que la escolaridad secundaria disminuye la probabilidad de descenso.

Palabras clave: *Movilidad, Pobreza, Estructura de hogares, Chile.*

JEL Classification: *D63, J12, J15, J6.*

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1. Introduction

As an upper middle income country with a per capita GDP of $10,874 in 2004 PPP, Chile scores well on international comparisons of social indicators and remains one of the outstanding countries in Latin America in terms of its record in reducing poverty. The human development index is 0.859, which gives it a rank of 38th out of 177 countries. A combination of strong growth, sound macroeconomic policies and well directed social programs have combined to reduce headcount index in more than half during sixtheen years. Despite large advances in poverty reduction, and significant increases in social expenditure, income inequality remains stubbornly stagnant. Furthermore, cross country comparisons place Chile amongst those countries with the highest gini coefficient.

Even though poverty and income distribution are key to economic development, an issue that is discussed less, is intertemporal income mobility. This is of particular relevance in the Chilean context.

Just comparing income distribution across time cannot answer questions like are the poor getting poorer and the rich richer? or is economic growth benefiting individuals that were initially poor? In order to answer such questions, it is necessary to perform income mobility analyses, tracking the evolution of individual incomes over time and seeing who are the winners and losers during the growth process (Fields *et al*., 2006).

Since according to generally accepted methodology developed by Atkinson (1970) higher levels of inequality decrease welfare, this trend is still a concern for policy makers. This tendency might not be as harmful if we take into account income mobility, which has slightly different impact on welfare. One of the interesting features of mobility is that, long run inequality can be only lower than short run inequality and also when it is assumed usual social welfare function, then higher mobility increases welfare (Shorrocks, 1978). This has implications on international comparisons of income inequality since even though one country might have higher cross section inequality, it can be offset by higher income mobility and exhibit lower long run inequality (Grodner, 2000). Another issue of income distribution dynamics is related to the fact that society might prefer higher probabilities of transitions out from poverty.

Also, income mobility is related to the government's policies to reduce poverty and inequality gaps. The importance of demographic and economic events on mobility should be carefully examined.

The structure of this paper is the following. Section 2 describes the data and methodology. Section 3 presents the results regarding income mobility in the short run. Section 4 assess the determinants of short run income mobility. Section 5 concludes.

2. Data and Methodology

In contrast to the vast theoretical and applied income inequality literature, the literature on the measurement and interpretation of mobility is more limited and generally more ad hoc (Fields and Ok, 1999) Important distinctions are made between relative and absolute mobility. The former examines changes in rank of households between two periods and is thus mainly concerned with the

ability of individuals to move up (and down) in the rankings of incomes while the latter examines absolute changes in income between two periods and thus is additionally concerned with changes in absolute well-being (and poverty).

As far as measures of mobility are concerned, one first needs to distinguish between what Cowell and Schluter (1998) call single-stage and two-stage indices. Single-stage indices consider the entire distribution in both years and examine mobility using that entire distribution, while two-stage indices first allocate individuals to income groups and then examines mobility between these groups. Examples of single-stage indices are the correlation coefficient of incomes between two periods, Shorrock's rigidity index, Fields and Ok's measures and King's measure (Fields, 2001; Cowell and Schluter, 1998 and Woolard and Klasen, 2004) They have the advantage of using all available information inherent in the actual distributions and thus give the most comprehensive assessment of mobility. However, they have the disadvantage of being particularly sensitive to measurement error which is a particular problem when data from only two waves are available[1].

In simulation studies, Shorrock's rigidity index was least sensitive to measurement error (Cowell and Schluter, 1998). This index compares the Gini of the average income between the periods with the weighted average of the Gini in each period. A value of one would mean no mobility at all, while 0 would indicate perfect mobility.

Regarding two-stage indices, the most commonly used measure is the transition matrix and indices derived from it. For a transition matrix, the data are divided into n equally sized income classes (e.g. quintiles or deciles) which are endogenously determined for each year.

While sometimes the brackets of a transition matrix are exogenously fixed income classes, the more common method are endogenously determined income groups based on quantiles of the distribution in a given year (such as quintiles, deciles or poverty transitions). The advantage of the transition matrix is that it can summarize mobility at various points in the distribution which is harder to gauge from a single index. It also turns out to be more robust to measurement error (Cowell and Schluter, 1998). There are serious costs as well, including the disregard of important information, such as income changes within a bracket and the different absolute income changes that underly a change in income bracket (Fields and Ok, 1999). This issue can be important in international comparisons of mobility. In a country with low inequality, the same transition matrix may mean much smaller changes in absolute income levels compared to a country with very high inequality. To the extent one wants to capture these absolute changes as well, a transition matrix may not be the right tool. Despite these problems, the advantages of transition matrices are considerable. The choice of income groups in these transition matrices is largely arbitrary and, in general, tends to take the form prevalent in the literature to allow for the comparison of results. The most popular choices seem to be quintiles and deciles. Nevertheless, the choice of groups influences the results. The smaller (in terms of income range) the brackets, the more likely that people will move between brackets and thus

[1] As happens to be the case in the Casen Panel Survey 1996-2001.

mobility will appear larger. Thus using deciles usually will generate higher perceived mobility than quintiles.

There are relatively few studies on income mobility in developing countries and even fewer that are roughly comparable. The reason why this issue had not been widely studied in developing countries and particular in Chile until recently was the lack of suitable data. In order to study mobility, it is necessary to have longitudinal data tracking individuals or households over time. Collecting this type of data is expensive and for many years it was not generally done in most Latin American countries. Yacub (2000) stated that only 5 of the 44 low human development countries, and 7 of the 66 countries with intermediate human development, according to the UNDP classification, had available panel data. Baulch and Hoddinot (2000) confirmed this panel data shortage. However, the extreme diversity of the panels used (in terms of geographic extension, reference timeframe, type of sampling, welfare indicators, poverty line, etc.) considerably limits the analytical scope of these different case studies, particularly with respect to their comparison dimension. It is difficult to draw general conclusions from prior research, due to the heterogeneity of the samples, data and methodological choices, which restricts the sphere of comparison among countries.

Most analyses focus particularly on poverty dynamics rather than on household income mobility more generally (e.g. Jalan and Ravallion 2000; Dercon and Krishnan, 2000; Scott, 2000; Justino and Lichfield, 2002, McCulloch and Calandrino, 2002; Woolard and Klasen, 2004; Fields *et al*., 2006). This paper will address household income mobility.

These studies generally suggest that income mobility in developing countries is higher than in industrialized countries, particularly at the botton end of the distribution (e.g. Dercon and Krishnan, 2000; Fields, 2001; Contreras *et al*., 2004; Paredes and Zubizarreta, 2005). They also seem to suggest increasing mobility over time in most places. Panel data from Peru based on expenditures points to increased mobility in the 1990s (Fields, 2001). Data from rural China point towards rapidly increasing mobility from very low levels in the 1980s (Nee, 1994) and generally very high mobility at the low end of the distribution (McCulloch and Calandrino, 2002). These studies as well as studies from Malaysia suggest that education, changes in employment and demographic composition of the household play a key role in explaining existing mobility and in distinguising between the transient and the chronic poor (Fields, 2001).

In Chile, income mobility studies have been conducted for rural sector by Scott and Litchfield (1994) and Scott (2000). Both papers are based on a small longitudinal study of rural households between 1968 and 1986. The authors analyze mobility of household per capita income, with and without government transfers. The panel consists of only two observations in time, but those capture the impact of Chile's liberalization reforms after 1974. Scott and Litchfield (1994) study income mobility and the evolution of inequality over time. The study shows that not only there were more upward than downward movers, but the extent of upward mobility (in terms of number of classes transited) was greater than the extent of downward mobility. Also, the authors model the determinants of directional income movement by using a linear regression and an ordered logit model (in which the dependent variable is whether the household moved to a higher income class, stayed in the same income class, or moved to a lower income class). The variables found to be significant determinants of

upward income movement are age and education of the household head, amount of land owned, and per capita household income in the base year (the richer the household in 1968, the smaller the growth of income from 1968 to 1986). Scott (2000) complements the previous findings by analyzing the extent of movements out of poverty for the households in the sample. The results show that, while there was upward mobility during those years, around 70% of the initially poor households were below the poverty line in 1986. Similarly, 64% of the non-poor households stayed above this line eighteen years later.

Moreover, on 2001 the Ministry of Planning conducted the first panel survey on a national basis in Chile. This survey collects follow up data on 4700 Chilean households in the III, VII, VIII and Metropolitan's regions between 1996 and 2001. The data is representative for the four regions surveyed , which accounts for 60% of the population and 64% of national GDP. This survey has been used in different studies. Aguilar (2002), uses a descriptive analysis and highlights poverty dynamics. Castro and Cheyre (2004) using a multivariate analysis find four types of poverty traps, associated with large initial household size, poor initial education, poor initial asset endowment and poor initial employment access. Contreras *et al*. (2004) analyze income mobility and assess the determinants of poverty dynamics. Their main results are that there is high mobility within all income distribution, but top decile. Finally, Paredes and Zubizarreta (2005) analyze the policy performance and determinants of mobility of the extremely poor, as compared with those poor but not extremely poor. The authors conclude that mobility of some extremely poor is higher than usually thought and determinants to leave and come into extreme poverty are different to those which determine mobility to and from non extreme poverty.

3. Income Mobility in the Short Run

I begin by reporting Shorrock's rigidity index using the Gini coefficient. The Ginis for the two years are presented as well as those for the average income and rigidity index (Table 1). The rigidity index indicates a fairly high degree of mobility, when compared to developed countries where the rigidity index is usually around 0.95 or above for countries such as the US, United Kingdom, Germany or Sweden (e.g. Jarvis and Jenkins, 1998; Eriksson and Pettersson, 2000) it is closer to countries such as Spain in the 1990s (Canto, 2000).

TABLE 1
INDICES OF RIGIDITY

	Deciles 1-10	Deciles 1-9	Deciles 1-5
Gini 1996	0.56	0.39	0.26
Gini 2001	0.53	0.38	0.25
Average Gini	0.50	0.35	0.23
Average Income 1996 ($)	93,067	55,407	27,026
Average Income 2001 ($)	143,160	112,204	80,814
Rigidity Index	0.92	0.91	0.90

While these statistics give a lot of information, is not enough. We want a more disaggregated view, using transition matrices. The quintile mobility matrix (Table 2) shows the distribution of households by quintile for 1996 and 2001. It can be seen that 49.9% of households who were in the richest quintile in 1996 remained there in 2001 and 23% moved down just one quintile. Likewise, 40.6% of those who began in the poorest quintile were still there 5 years later and another 25.8% had moved up just one quintile. It is immediately evident that there is less mobility in the top and bottom quintile than in the middle of the distribution[2]. This is, however, unsurprising given that the bottom (top) quintile can only stay in the same quintile or move up (down) also, furthermore the income range that make up the quintile is much larger for the richest quintile where the right hand tail is particularly large which is the reason why persistence in that group is particularly high.

TABLE 2
TRANSITION MATRIX BY QUINTILES (%)

Quintile 1996	Quintile 2001					
	1	2	3	4	5	Total
1	7.87	5.00	3.50	1.70	1.32	19.39
2	5.41	5.50	4.72	2.02	2.54	20.20
3	2.92	5.09	4.88	4.83	2.28	20.01
4	1.40	3.12	4.13	7.30	4.29	20.24
5	0.94	1.37	3.15	4.64	10.07	20.17
Total	18.55	20.08	20.39	20.48	20.49	100.00

These figures also suggest quite a high degree of short term income mobility among Chileans households which is certainly higher than that observed in most industrialized countries (e.g Jarvis and Jenkins, 1997), but also higher than in rural China between 1978 and 1983, Malaysia between 1967 and 1976, South Africa between 1993 and 1998 and Peru in the 1980s (Fields, 2001; Woolard and Klasen, 2004) It is quite similar, however, to rural China between 1983 and 1989 although the structure of mobility appears to be somewhat different. In rural China, (downward) mobility from the top quintile is higher than in Chile. This may partly be due to the fact that overall income inequality in rural areas was much lower to begin with so that the income change required to change income bracket is smaller than in Chile.

[2] Even though some individuals are be dropped in matching the files, we decided to use "full" files in order to be able use proper weights - in this way assignment to quintiles is correct relative to other demographic groups. Thus, because of this attrition our transition matrix does not necessarily show that there are 20% in each group.

TABLE 3
DIFFERENCES IN QUINTILE BETWEEN SECOND AND FIRST YEAR (%)

Differences in quintiles	Chile 1996-2001	Germany 1985-1987	US 1985-1987
–4	0.69	0.22	0.22
–3	2.31	0.83	0.57
–2	5.29	1.78	2.16
–1	21.83	11.99	12.13
0	41.09	68.86	68.03
1	19.45	13.21	14.39
2	7.64	2.18	2.04
3	1.37	0.72	0.4
4	0.33	0.21	0.06

Table 3 compares relative income mobility between Chile, Germany and US. We use a simple measure of immobility which is just a proportion of individuals on the diagonal. For Chile it is 41%, while Germany and US are 68.8% and 68.0% respectively. Also, we can compute share of individuals moving by one quintile and by more than two (any direction) – this might indicate patterns of dynamics. For Chile move by one (up or down) is 41.2%, while for Germany and US are 25.2% and 26.5% respectively. For moves higher than two quintiles, Chile it is 17.6%, Germany 5.9% and for US 5.4%. Thus, from those robust numbers we can conclude that unconditional relative mobility was higher in Chile (between 1996 and 2001) than Germany and US (between 1985 and 1987).

Table 4 shows a transition matrix by income deciles. It evidences a high mobility in all income distribution, but the highest and the lowest decile. Only 20.7% of the households remained in its original income decile after five years. This matrix shows that Chilean income distribution in the short run is very mobile. A key issue is that this income mobility does not include the highest decile. Becker (1980) found that being rich is sticky, even though being poor is not. A poor face higher probability to leave his economic condition, but a rich has a higher probability to keep his economic condition. Only 27.3% of who were in lowest decile in 1996 were in the same decile in 2001. That means that the remaining households were richer in 2001. In fact, 22% of them moved up to the upper half of the distribution (from deciles six to ten). The richest (highest decile) had a higher probability to keep in that decile (42.5%). However, 15.9% of them move down to the lower half of the distribution (deciles one to five). This shows that a rich household could become poor between five years. In Germany and US between 1990 and 1995 it was found that 23% of the population remained in the diagonal. Therefore, the above confirms that Chile has higher income mobility, even more than developed countries.

TABLE 4
TRANSITION MATRIX BY DECILES (%)

Decile 1996	Decile 2001										
	1	2	3	4	5	6	7	8	9	10	Total
1	2.73	1.73	1.38	0.81	1.16	0.78	0.45	0.40	0.41	0.16	10.00
2	1.96	2.04	1.27	1.54	0.83	0.72	0.59	0.28	0.41	0.35	10.01
3	0.95	2.14	0.95	1.95	0.84	1.35	0.71	0.33	0.45	0.31	10.00
4	1.11	1.51	0.98	1.46	1.48	0.92	0.53	0.40	1.33	0.38	10.10
5	0.80	0.96	2.26	1.15	1.05	0.84	1.22	0.73	0.53	0.35	9.90
6	0.76	0.78	0.81	0.73	1.19	1.67	1.49	1.26	0.81	0.52	10.02
7	0.53	0.55	0.68	1.09	1.38	1.13	2.07	0.93	1.08	0.54	9.98
8	0.34	0.29	0.81	0.45	0.54	0.97	1.43	2.66	1.41	1.15	10.06
9	0.36	0.20	0.20	0.64	1.01	0.63	0.85	2.25	1.85	1.97	9.97
10	0.48	0.19	0.25	0.24	0.43	1.00	0.77	0.63	1.74	4.24	9.97
Total	10.02	10.39	9.59	10.08	9.92	10.01	10.11	9.88	10.02	9.98	100.00

4. Determinants of Income Mobility in the Short Run

In this section I apply a methodology developed by Finnie and Gray (1998) who used binomial probit model and split analysis into assessment of individuals and households on the relative income distribution (quintiles). This framework is applied to equivalised household income to measure the degree of mobility observed between 1996 and 2001 for Chilean households in four different regions. Given that we have only two observations per household, measurement error might well influence the results. Consequently, we use a variety of procedures to test and, to the extent possible, correct for measurement error and examine the robustness of these results. Our controls for measurement error do not necessarily provide unbiased estimates but will help us get a sense of the magnitude of possible biases and thus the robustness of results, a strategy suggested among others by Bound *et al*. (2001)

Almost 70% of the sample reported that household income had increased over the period. Real median adult equivalent income increased by 41% over the five year period. While some of this discrepancy can be real and relates to the timing of the survey (seasonality and business cycle) changes in perceptions of permanent incomes and the large role of transitory incomes, this large discrepancy in levels and trends raises some questions about the reliability of the data.

These discrepancies could also indicate that measurement error is significant. Therefore, I purge the 1996 and 2001 labor income data by specifying an income regressions of hourly income on gender, location, industry, age, age square, education and throwing out all observations that are outside two standard deviations from the point estimate of this income regression. The income regressions have a good fit (adjusted R^2 around 0.42) and confirm the usual findings from the human capital literature. Using this procedure, I end up eliminating about 3% of observations.

Also, I use an instrumental variable approach to measurement error. Using a regression of household adult equivalent income on household size, demographic structure, average education, age of household head, female headship, location, and other asset ownership, and the employment and unemployment situation of adults, I predict household incomes in 1996 and 2001 and assess mobility using these predicted income. Therefore, I throw away quite a lot of true mobility that would not be captured by these regressions but this approach should give me sense of the maximum extent to which measurement error affects incomes. Carter and May (2001) interpreted these differences between predicted and actual incomes as stochastic features of income that can make households stochastically poor or non-poor.

After the above procedure, I use probit model for studying influence on probability of movements up and down. For movement up we have individuals who either stayed in quintile or moved up, and the same for movers down (stayers are a comparison group in both cases). Thus, I will estimate two models for moving up and down using standard probit specification:

$$Pr(m) = \Phi(\alpha + \beta Xi + \gamma \Delta Zij)$$

where Φ is a standard normal cumulative distribution function, i indexes first period and j second period; m denotes indicator of whether individual moved

up or stayed, or whether moved down or stayed; *Xi* represents characteristics of an individual/household which do not change over time and are taken at first period; ΔZij represent characteristics of an individual/household which do change over time.

For continous variables marginal effects are computed at mean values of all variables with:

$$\partial\, \Phi\,(a + bXi + c\Delta Zij) / \partial\, xk = \varphi\,(a + bXi + c\Delta Zij)\, bk$$

where φ is standard normal density function; *k* indexes independent variable; *a,b,c* are estimates of α, β, γ, and *Xi, Zij* are sample means of *Xi, Zij*. For discrete variables I compute difference in probability (those are indicated with stars in output tables) with all other variables being evaluated at mean values:

$$\Phi\,[(a + bXi + c\Delta Zij)] \mid x(k) = 1 - \Phi\,[(a + bXi + c\Delta Zij)] \mid x\,(k) = 0$$

where *xk* is being set to 0 and 1 respectively.

I select the same individuals and there is clear correlation between individuals since these are the same individuals whenever they are in the consecutive year. Since in this case standard errors are incorrect, I computed robust standard errors[3].

The main dependent variable is difference in quintiles between 1996 and 2001. In order to construct it, I first compute quintiles for each year using all individuals who had positive total income in each single year.

The analyses focus on four classes of variables: labor market experience; changes in family composition; family characteristics; and individual characteristics. I also compute distance from quintile's boundaries –from lower and upper, as well as dummies for starting quintile and transition between self-employment and other employment.

I create a variable which indicates difference between being in quintile of first year and quintile in the second year, and compute mean of this variable for different independent variables.

The results of the marginal effects from the estimated probit models for moving up and down are presented in Tables 5 and 6 respectively (in Appendix). All estimates are computed at sample means, while for dichotomous variables I compute difference in probability between variable having value 0 or 1.

Results for changes in employment status seem to reveal some effects which were not apparent when I use means of difference in quintiles (ANOVA tests). The effect of moving from unemployment to employment, increases probability of moving up by 9.5% and decreases probability of moving down by 5.3%.

The highest effect on moving down is experienced by individuals who change from employment to unemployment, as this increases probability of degradation by 22.6%.

Regarding age effect, the group between 35 and 44 faces the higher probability of moving up.

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[3] In all estimations we use analytical weights which use original weights from first year, but preserve the same number of observations.

Higher education is promoting move up on the relative income scale by almost 8%, and it is protecting movement down by 9%. It can also be seen that high-school education does not help to promote positive mobility. On the other hand, high-school education decreases probability of degradation by 6%.

It is likely to move up if the household lives in the urban sector by 14%, while it decreases the probability to move down. On the other hand, if the head of household is married on both years, increases the probability of moving up by 10%.

If the head of the household is male in 1996 and 2001, it is less likely that the household moves up by 9%, but also decreases the probability of moving down. However, if the head of the household is female on both years, it is more likely that the household moves up by 9%. Finally, as long the share of children in household increases, it is less likely to move up and more likely to move down.

There are some challenges ahead regarding the methodology used in this section and its main findings. The results could be improved by better specification of the set of independent variables. For example, barely significant differences of impact by age and education groups might reveal more information when interacted with gender (as suggested by Finnie and Gray, 1998). However, future research should probably be continued on longer periods of time as that might reveal more stable patterns. On 2007 it will be available the third wave of the original panel dataset which will cover 1996-2001-2006.

5. Conclusions

The motivation of this paper is the evidence that despite large advances in poverty reduction and significant increases in social expenditure, income inequality remains stubbornly stable. However, this phenomena, Chile experiences high level of short run income mobility.

The purpose of this paper is twofold. First, to present evidence about the short run mobility and second analyze its determinants.

We find that the effect of moving from unemployment to employment, significantly increases probability of moving up and decreases probability of moving down. Higher education is promoting move up on the relative income scale and it is protecting movement down. An important result is that high-school education decreases probability of degradation.

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APPENDIX

TABLE 5
MARGINAL EFFECTS IN PROBIT MODEL (MOVING UP) – MODEL 1

Up	dF/dx	Robust Std. Err.	z	P>|z|	x–bar	[95%	C.I.]
gender*	.1281465	.012025	10.11	0.000	.774092	.104578	.151715
agehh	.0049842	.0002515	19.82	0.000	470.259	.004491	.005477
urban*	.1451672	.002522	52.86	0.000	.858061	.140224	.15011
r7*	–.1093931	.0051517	–19.97	0.000	.123525	–.11949	–.099296
r8*	–.0611241	.0052056	–11.58	0.000	.313857	–.071327	–.050921
r13*	.0614676	.00519	11.80	0.000	.532448	.051295	.07164
q96_2*	.0483433	.0022603	21.55	0.000	.251007	.043913	.052773
q96_3*	.051146	.0023401	22.04	0.000	.248779	.046559	.055733
employed*	.147573	.0240673	–6.14	0.000	.603082	–.19474	4 –.100402
inact_1*	–.2856827	.0169841	–13.71	0.000	.208033	–.318971	–.252394
unemp_2*	–.2987263	.0101814	–16.85	0.000	.034428	–.318681	–.278771
emp_2*	.0948491	.0210529	–4.77	0.000	.020965	–.150312	–.067786
inact_2*	–.3298001	.0107936	–18.52	0.000	.094813	–.350955	–.308645
inact_3*	–.2265142	.015046	–11.02	0.000	.009571	–.256004	–.197025
emp_3*	.0056219	.0132359	–13.15	0.000	.026114	–.280564	–.22868
unemp_3*	–.259454	.014245	–11.61	0.000	.001518	–.287374	–.231534
agecat1*	–.0490653	.0126853	–3.76	0.000	.034108	–.073928	–.024203
agecat2*	.0605154	.0102661	–5.76	0.000	.183114	–.080637	–.040394
agecat3*	.0411241	.008699	4.76	0.000	.273002	.024074	.058174
agecat4*	.1430747	.0065978	22.01	0.000	.204321	.130143	.156006
agecat5*	.0966031	.0046262	21.25	0.000	.157258	.087536	.10567
Pssdbii	–.2202174	.0010741	–204.59	0.000	149.944	–.222323	–.218112
edss_01*	–.252692	.0052999	–46.00	0.000	.502604	–.26308	–.242304
edss_02*	–.1209015	.0052627	–22.55	0.000	.417188	–.131216	–.110587
edss_04*	.0802421	.0063843	1.26	0.207	.055981	–.004489	.020537
marriage*	.1085273	.0026003	40.81	0.000	.631676	.103431	.113624
divorce*	–.0025096	.005793	18.08	0.000	.042052	.091155	.113864
marriage_1*	.0991752	.0221943	–4.14	0.000	.003215	–.142675	–.055675
divorce_1*	–.0247503	.0094043	2.66	0.008	.010441	.006318	.043182
widow*	.1686456	.0044865	38.13	0.000	.093377	.159852	.177439
widow_1*	.1899574	.0087306	21.90	0.000	.009715	.172846	.207069
maless*	–.1901761	.0097885	–15.58	0.000	.004063	–.209361	–.170991
femass*	.0968138	.0118097	8.38	0.000	.037359	.073667	.11996
maless_1*	–.0954226	.0090566	–10.68	0.000	.756092	–.113173	–.077672
femass_1*	.111429	.010603	10.69	0.000	.178764	.090648	.13221
Chhs	–.1254869	.0007971	–158.00	0.000 –	.063228	–.127049	–.123925
howner*	.0624142	.0019466	31.87	0.000	.562219	.058599	.066229
sharech	–.4995657	.0053695	–93.20	0.000	.334232	–.51009	–.489042
obs. P	.3955202						
pred. P	.3639907	(at x–bar)					

(*) dF/dx is for discrete change of dummy variable from 0 to 1.
z and P>|z| correspond to the test of the underlying coefficient being 0.

TABLE 6
MARGINAL EFFECTS IN PROBIT MODEL (MOVING DOWN) – MODEL 2

Down	dF/dx	Robust Std. Err.	z	P>|z|	x-bar	[95%	C.I.]
agehh	–.0004914	.0000296	–15.95	0.000	47.87	–.000549	–.000433
genderhh*	.0009155	.0018307	0.51	0.612	.217839	–.002673	.004504
urban*	–.0402368	.0010561	–62.41	0.000	.876135	–.042307	–.038167
r7*	–.0030502	.0006652	–4.25	0.000	.111427	–.004354	–.001746
r8*	–.0016407	.0006617	–2.41	0.016	.290743	–.002938	–.000344
r13*	–.011125	.0006988	–15.98	0.000	.566693	–.012495	–.009755
q96_2*	.9969862	.00019	164.02	0.000	.201448	.996614	.997359
q96_3*	.9048116	.0019968	167.18	0.000	.19966	.900898	.908725
q96_4*	.3207587	.0018486	150.08	0.000	.200874	.317136	.324382
employed*	–.0239045	.0016982	–14.22	0.000	.619091	–.027233	–.020576
inact_1*	.0114906	.0009773	–8.84	0.000	.201164	–.013406	–.009575
unemp_2*	.2259877	.0033881	11.40	0.000	.032133	.019347	.032628
inact_2*	.0046477	.0018241	2.82	0.005	.099646	.001073	.008223
inact_3*	–.0138786	.0006391	–10.97	0.000	.008893	–.015131	–.012626
emp_2*	–.0534861	.0012122	–4.07	0.000	.022163	–.008425	–.003673
agecat2*	.0425395	.0018557	38.51	0.000	.165442	.038902	.046177
agecat3*	.0128664	.0011048	13.60	0.000	.270077	.010701	.015032
agecat4*	.0068475	.0012393	5.99	0.000	.212591	.004419	.009276
agecat5*	.0159513	.0018961	10.08	0.000	.161603	.012235	.019668
agecat6*	.0322018	.0030669	14.06	0.000	.161722	.026191	.038213
pssdbii	.1166214	.0017484	197.92	0.000	200.276	.113195	.120048
edss_01*	.0299293	.0010052	47.51	0.000	.450576	.027959	.031899
edss_02*	.0209256	.0008361	35.65	0.000	.421738	.019287	.022564
edss_04*	–.0911764	.0004088	–20.39	0.000	.088971	–.010978	–.009375
marriage*	–.0045985	.0003603	–13.81	0.000	.633519	–.005305	–.003892
divorce*	–.0067385	.0004743	–12.50	0.000	.045093	–.007668	–.005809
marriage_1*	.0180434	.0034053	6.89	0.000	.0038	.011369	.024718
divorce_1*	–.0187865	.0004108	–29.75	0.000	.009173	–.019592	–.017981
widow*	.0046439	.0006189	8.13	0.000	.096101	.003431	.005857
widow_1*	–.0080172	.0006894	–9.58	0.000	.010473	–.009368	–.006666
maless*	–.0162967	.0005852	–11.99	0.000	.003332	–.017444	–.01515
femass*	–.0209555	.0004863	–38.29	0.000	.032657	–.021909	–.020002
maless_1*	–.0405126	.0021169	–23.06	0.000	.767117	–.044662	–.036364
femass_1*	–.0266004	.0007413	–33.91	0.000	.177179	–.028053	–.025147
chhs	.0166087	.0003523	151.97	0.000	–.020768	.015918	.017299
howner*	–.0063652	.0002811	–25.55	0.000	.587439	–.006916	–.005814
sharech	.0441748	.0011297	69.56	0.000	.30804	.041961	.046389
obs. P	.329458						
pred. P	.019567	(at x–bar)					

(*) dF/dx is for discrete change of dummy variable from 0 to 1.
z and P>|z| correspond to the test of the underlying coefficient being.

Variables

agehh	:	head of household age
genderhh	:	dummy, head of household gender (male=1, female=0)
urban	:	dummy, zone (urban=1; rural=0)
r7	:	dummy, VII Region
r8	:	dummy, VIII Region
r13	:	dummy, RM Region
q96_2	:	dummy, beginning at quintile 1
q96_2	:	dummy, beginning at quintile 2
q96_3	:	dummy, beginning at quintile 3
q96_4	:	dummy, beginning at quintile 4
employed	:	dummy, employed in 1996 and 2001
inact_1	:	dummy, employed in 1996 and out of labor force in 2001
unemp_2	:	dummy, employed in 1996 and unemployed in 2001
inact_2	:	dummy, out of labor force in 1996 and 2001
inact_3	:	dummy, unemployed in 1996 and out of labor force in 2001
emp_3	:	dummy, out of labor force in 1996 and employed in 2001
agecat2	:	dummy, age group, 25-34
agecat3	:	dummy, age group, 35-44
agecat4	:	dummy, age group, 45-54
agecat5	:	dummy, age group, 55-64
agecat6	:	dummy, age group, +65
pssdbii	:	distance from bottom of quintile
pssdtii	:	distance from top of quintile
edss_01	:	dummy, primary education
edss_02	:	dummy, secondary education
edss_04	:	dummy, tertiary education
marriage	:	dummy, married both years
divorce	:	dummy, married in 1996, divorce in 2001
marriage_1	:	dummy, single in 1996, married in 2001
divorce_1	:	dummy, divorce in 1996, divorce in 2001
widow	:	dummy, married in 1996, widow in 2001
widow_1	:	dummy, widow in 1996, widow in 2001
maless	:	dummy, head of household male in 1996 and 2001
femass	:	dummy, head of household female in 1996 and 2001
maless_1	:	dummy, head of household male in 1996 and female in 2001
femass_1	:	dummy, head of household female in 1996 and male in 2001
chhs	:	difference number of people in household between 1996 and 2001
howner	:	dummy, owner of dwelling
sharech	:	share of children in household in 1996