Analyzing Income Mobility and Inequality: The Case of Argentina during the 1990's

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Abstract.

The aim of this work is to analyze income mobility and inequality during different economic shocks in Argentina in the 1990's, using five one-year panels: 1991/1992, 1993/1994, 1994/1995, 1998/1999, and 1999/2000. In particular, we address two questions. First, what can we say about the relationship between income mobility and the inequality cross-sectional analysis? Second, who got ahead, who fell behind and who kept up economic position during the different economic cycle facts that occurred in the 1990 decade? In other words, were the 'upwardly mobile', 'immobile' and 'downwardly mobile' always the same kind of individuals, or can we establish different group characteristics depending on the type of economic shock?

1. Introduction.

Although there is a vast amount of literature dealing with income distribution analysis from a cross-sectional perspective, studies about the dynamics of inequality - or more generally, about changes in economic well-being and the factors associated with it – have only recently been elaborated in developing countries (see for instance, Grootaert et al., 1997; Glewwe and Hall, 1998; Baulch and Hoddinot, 2000; Fields et al., 2001). This delay was basically due to the lack of the required panel data surveys until recent years in many developing countries. To our knowledge, not many detailed studies on income mobility clarifying its link with inequality and identifying the characteristics of economic 'winners' and 'losers' in different periods of the economic cycle have been yet done. For sure, the case of Argentina has not yet been analyzed even though the unstable macroeconomic environment in the past decade makes this question about income mobility, in a context of increasing inequality, particularly interesting.

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Even if the existence of a link between income mobility and inequality is evident, it is less clear the way in which the relationship works. The study of this particular relationship, that indeed is country-specific, lacks from most previous works on the dynamics of income distribution. Research on income mobility offers a dynamic dimension to the understanding of income distribution, which is missing in the cross sectional approach. Nonetheless these studies depend on the availability of panel data. The problem with panel data is that only very few allow for the analysis of mobility over the life cycle, and these usually present problems due to attrition bias (see, inter alia, Fitzgerald et al. 1998 ; Lillard et al., 1998). Panel data that allow for the analysis of short-term mobility are more common, but do not give a very informative and conclusive picture of the real dynamics of income distribution. For instance, the possibility that a progressively mobile society in the short-run, may come together with increasing inequality in the medium-run, cannot be excluded. In this paper we show how the Argentinean experience during the nineties provides a good example of such possibility in which apparently progressive income mobility coincided with increasingly regressive income distribution. Thus, we consider that the study of both dimensions of the income distribution is relevant since each one gives a different snapshot of income distribution.

The first part of the paper looks at the evolution of income inequality and mobility over time, for the total population in our samples. Usual inequality measures such as the Gini coefficient, percentages and ratios of income owned by each income decile are provided for the macro cross-sectional picture. The income mobility measure used in this descriptive overlook at the 1990 decade is the directional income movement measure "changes in log family income", following Fields et al. (2001).[1] By putting inequality and income mobility trends into the same track we observe that a one-year "pro-poor" mobility has not assured a more equal income distribution. We have also shed light on the relationship between mobility and the trends in cross-sectional inequality using Galton's (1889) statistical model relating final year income to base year income. By so doing we observe that in some periods it is possible to find a significant regression to the mean (indicating a progressive income mobility) and an increasing income variance (indicating a regressing income distribution). Special attention has been paid to our empirical work to avoid the possibility of measurement error driving our results, by not only using reported base year income in the analysis, but also predicted base year income, in an effort to estimate a 'permanent' household income level. In order to advance a possible explanation on this counterintuitive finding we look at the mean mobility by income quintiles distinguishing between the quintile immobile individuals, the new comers and those that departed. This additional statistical analysis shows that, in spite of the fact that most of the upwardly mobile individuals belong to the

[1] Robustness test have been done using "changes in family income in currency units" as income mobility measure, and main conclusions are not altered.

lowest quintiles (at a decreasing rate over time), the new lowest quintile comers (people leapfrogged by the first quintile upwardly mobile) suffered negative mobility throughout the whole period. And the immobile individuals of the lowest quintile have not only suffered negative income mobility but also at an increasing rate during the whole nineties' decade. So the lowest quintile is becoming poorer over time. The inverse is observed for the richest quintile: its 'immobile' individuals have benefited from positive income mobility during the economic booms and most of the recession years, while its 'downwardly mobile' have been replaced by new entrants that experience increasingly positive income mobility over time. Therefore our candidate explanation is linked to the impoverishment of the immobile poor, and the new poor, and with the enrichment of the very rich and the new entrants in this category, at higher rates during the decade.

The second question discussed in this paper has to do with the identification of the characteristics that determine income changes as well as the analysis and portrait of different subgroups of population according to their mobility performance. Probably the most intuitive way of thinking about mobility is through the traditional concept of transition matrices. For this reason, we have divided the sample population into three groups: the 'upwardly mobile', the 'immobile' and the 'downwardly mobile' individuals, according to the movements observed between initial income levels to final income levels. We have adopted three possible definitions for these population groups, based on different weights given to relative versus absolute mobility, in an effort to do a robustness test on the group definitions, as well as to satisfy different views of how mobility is to be measured.

The paper is organized as follows. Section 2 describes the data used as well as some important variable definitions and concepts. Section 3 deals with our first question about the evolution of income inequality (subsection 3.1) and income mobility (subsection 3.2) over time, and the possible relationship between both concepts (subsection 3.3). Section 4 spots the characteristics that determine income changes in a univariate and regression framework (subsections 4.1 and 4.2), and identifies the different group characteristics of income 'upwardly mobile', 'immobile' and 'downwardly mobile' individuals over time, depending on the type of economic shock (subsection 4.3). Section 5 concludes.

2. Methodology and description of the data.

The study of income mobility requires the use of longitudinal data. The data used for Argentina come from EPH (Encuesta Permanente de Hogares) the Argentinean Household Rotating Panel Survey elaborated by INDEC (Instituto Nacional de Estadísticas y Censos). It is a national semestral-rotating panel, where households are followed during a maximum of one year and a half. Five year panels for Gran Buenos Aires (for the years 1991/1992,

1993/1994, 1994/1995, 1998/1999 and 1999/2000) have been constructed to study the dynamics of income movements during very different economic pictures: two panels of economic boom years (the first one capturing a hyperinflationary episode in the Argentinean economy), a year-panel during an transitory recession (due to the so-called Tequila crisis), and the two last panels that coincide with the starting years of a deep recession from which Argentina is still suffering. Changes in the coding of the questionnaires (in particular, methodological changes in the household identifying variable) make matching impossible for the rest of years that would be needed to get a complete one-year panel series for the 1990's, as it was initially contemplated.

The initial sample surveys have around 6000 individuals (the 1991 sample is significantly smaller though, having only around 4500 observations). Due to the rotating nature of the EPH survey (25% of the sample is renewed in each wave), around 50% of the original sample is dropped the second year. Indeed, this proportion is usually slightly higher, since households that move and are not found at the moment of the re-interview are not traced but replaced. We excluded those individuals misreporting birth date or sex in one of the two years of the panel, since these were the variables used to match individuals within households. We additionally dropped those individuals who had missing information about basic household characteristics used in the regression framework[2]. The final panel samples represent around 30-35% of the initial surveys. The question now is by how much the observed attrition biases the representativeness of our panels. Table 1 presents a set of basic descriptive statistics, both for the panels and initial sample surveys. In general, and since the time span is only one year, the panel data present small non-systematic differences with the initial surveys, suggesting that attrition bias is not such that invalidates the analysis of the panel data. Furthermore, we have estimated our results correcting for attrition, where the longitudinal weights have been calculated from a probit model estimating the probability of staying in the panels[3]. These results, where attrition has been taken into account, do not differ in any significant manner

[2] Attrition due to missing information on initial household characteristics represents less than 2% of the panel drops, with the only exception of the initial 1991/1992 panel, where it reaches the high level of 20%. This problem, together with the fact that this panel is capturing a hyperinflationary period, has prevented us from driving overall conclusions only from this period.

[3] In particular, the weights were constructed by predicting the inverse of the probability of "staying" in the panel, using a probit regression on household characteristics (gender, age, schooling and occupation of the highest earner, together with the number of income earners, children and elderly in the household).

from the also estimated, though not shown, unweighted results (available from the authors upon request).

<Table 1 around here>

The income variable used is adult-equivalent family income measured in logarithms, using the INDEC adult equivalence scale, raised to the power of 0.8, a theta parameter corresponding to low levels of economies of scale. The unit of analysis is the adult individual aged from 18 up to 70 years old with non-negative family income in both years of the panel. Consumption is considered a better measure of economic well-being than income (see Deaton, 1997). However, and for availability reasons, this paper analyses inequality and mobility using income and not consumption (consumption is not present in the Argentinean EPH).

To analyze inequality we use common inequality measures (Gini coefficient, decile shares of income, …). On the other hand, though many economists are attracted by the problem of measuring income mobility, there is not a unified and widely accepted method of measuring it. In this paper we use a directional income-movement measure: change in log adult-equivalent family income, as the variable to be explained in the univariate and regression framework[4]. However, and as already exposed, in defining our different population groups according to their mobility performance, into 'upwardly mobile', 'immobile' and 'downwardly mobile', we have considered three different intuitive definitions that intend to be a hybrid of absolute and relative mobility conceptions. The idea is to go from a relative mobility definition based on decile movements, to a progressive reduction of the relative mobility element within the definition. The underlying rationale of this decision is to do a robustness test on the group definitions, as well as to satisfy different views of how mobility is to be measured.

Formally, let $Y_{it+1} = Y_{it} + \Delta Y_i$, where Y represents reported adult-equivalent family income measured in logarithms. Let also D_{it} represent the income decile of individual i at time t, calculated over Y, and mean(ΔY) represent the overall population mean change in log-family income. Then:

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[4] A similar analysis has been done measuring mobility in currency units, and main conclusions rest unaltered. Results are available from the authors upon request.

- Definition 1: "Most Relative" income mobility group definition.

- An individual i will be considered an '*Upwardly Mobile*' *(UM)* if $\Delta Y_i>0$, $\Delta Y_i>\text{mean}(\Delta Y)$ and $D_{it+1}>D_{it}$.
- An individual i will be considered a '*Downwardly Mobile*' *(DM)* if $\Delta Y_i<0$, $\Delta Y_i<\text{mean}(\Delta Y)$ and $D_{it+1}<D_{it}$.
- An individual i will be considered an '*Immobile*' *(IM)*, otherwise.

- Definition 2: "Intermediate" income mobility group definition.

- An individual i will be considered an *UM* if $\Delta Y_i>0$, $\Delta Y_i>\text{mean}(\Delta Y)$ and $\text{rank}_{it+1}>\text{rank}_{it}$.
- An individual i will be considered a *DM* if $\Delta Y_i<0$, $\Delta Y_i<\text{mean}(\Delta Y)$ and $\text{rank}_{it+1}<\text{rank}_{it}$.
- An individual i will be considered an *IM*, otherwise.

- Definition 3: "Least Relative" income mobility group definition.

- An individual i will be considered a *UM* if $\Delta Y_i>0$ and $\Delta Y_i>\text{mean}(\Delta Y)$.
- An individual i will be considered a *DM* if $\Delta Y_i<0$ and $\Delta Y_i<\text{mean}(\Delta Y)$.
- An individual i will be considered an *IM*, otherwise.

According to the 'Most Relative' income mobility group definition, an 'upwardly mobile' would be an individual experiencing not only a positive income shock, moving upwards more than the mean population income movement, but also jumping to a higher income decile. This is the strictest definition of the 'upwardly mobile' group, since we force the individual to jump up the decile ladder to belong to this population group. Individuals from the highest decile that stay in the same decile in the next period will be considered as belonging to an immobile population. A 'downwardly mobile' would then be an individual experiencing negative income shocks, worse than the mean population shocks, moving downwards in the decile transition matrix. Therefore, nobody belonging to the first decile that stays in the first decile will be considered a downwardly mobile, but an immobile. The idea is that if you are already at the bottom of the distribution you cannot 'become' a downwardly mobile, you are already in the most vulnerable position of the distribution. The immobile individuals will be those not included in the previous two categories.

The 'Intermediate' income mobility group definition relaxes the previous definition, requiring only a change in the rank of the individual in the income distribution instead of a decile change, either upwards or downwards, to become an upwardly mobile or a downwardly mobile.

The 'Least Relative' income mobility group definition only requires a positive income mobility shock, better than the mean population mobility shock, to be considered an upwardly mobile individual, and a negative income mobility shock, worse than the mean population mobility shock, to be considered a downwardly mobile individual. The immobile group category is here practically insignificant.

This is how income inequality and mobility will be measured. The rest of the variables that will be used in our analysis to try and characterize the dynamics of inequality are gender, age and education of the highest earner, number of children under 14 years old in the household, number of elderly (over 60) in the household, number of income earners in the household, and occupational status for the highest earner. As occupational status, we have constructed a seven-category variable: employer, "satisfied" self-employed, "unsatisfied" self-employed, "satisfied" employee, "unsatisfied" employee, unemployed and discouraged/inactive.[5] We focus on the highest earner instead of the head of household since, for a non-negligible number of households, the head was not interviewed.

Concerned about measurement error as we are, we will check our results, considering in our econometric sections, not only reported income levels but also predicted income levels. In particular, individual's base year family income level will be predicted using a set of household characteristics and a series of variables indicating the household's level of comfort (in particular, if it has current water, electricity and stone walls, if it is owned or rented, if there is domestic service or not).

3. Income Inequality and Mobility in Argentina during the nineties: description and relationship.

[5] We consider as satisfied those that declare themselves as not willing to work more hours, and unsatisfied, those that are willing to work more hours.

3.1. Description of general inequality trends.

The most recent and comprehensive survey about income distributional analysis in Argentina is due to Gasparini, Marchionni and Sosa Escudero (2002). Using various usual measures of income distribution they supply a clear picture about the evolution of income distribution in Argentina: inequality has been monotonically increasing in Argentina during the 1990's, a period of high macroeconomic instability. In particular, and according to their calculations, Gini and Theil indicators rose by around 13%, Atkinson measures by around 25 % and the difference between the top and bottom decile has also notoriously increased. These results are corroborated by other research work (see inter alia, Altimir and Beccaria, 2000; 2001) as well as official sources (Informe Economico, MECON).

There are, however, well-known problems associated with the use of household sample surveys (see inter alia, Deaton 1997, Ravallion, 2001). Among others, underestimation seems to be the highest disadvantage. Concerned by this point Székely and Hilgert (1999) have concluded that, "as in the rest of Latin-American countries, Argentinean data are informative about a certain spectrum of society that excludes the richest households"[6]. Such an underestimation at the top of the distribution logically implies that inequality is also underestimated.

Having mentioned the underestimation problem in the Argentinean household surveys, we now analyze the general trend of income distribution in Argentina during the nineties using the cross-sectional EPH surveys. Using customary measures of inequality we find similar results to the studies mentioned in the income distribution literature review for Argentina. Tables 2a and 2b present our calculations using the original surveys and the year-panels, respectively.

In table 2a we use the cross-sectional surveys to see that inequality has increased during the nineties. In particular, the Gini coefficient over the adult-equivalent family income has

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[6] They estimated that the 10 richest households in Argentina surveys earn on average 22.232 pesos while the related income for typical manager arise to 32.212 according to Price Waterhouse Income data. This would indicate a serious underestimation of survey data.

increased from 0.45 in 1991 to 0.49 in 2000 (using per capita family income the Gini goes from 0.48 in 1991 to 0.51 in 2000). Such inequality growth has not followed a linear trend. From 1991 to 1993, inequality decreased and then grew more or less sustainable. Looking at the evolution of the income shares by initial quintile it is clear that the benefited quintiles of the period are the two highest ones which have increased their income shares between 1991 and 2000 by around 3-4% (in particular, if we look at the shares by income decile, the 8^{th} and 9^{th} decile are the ones that have a better performance, while the 1^{st} decile is the one that loses more during this period). In table 2.b. similar statistics are presented for the year-panel subsamples. Results obtained are similar: the Gini coefficient over the adult-equivalent family income went from 0.42 in 1991 to 0.47 in 2000 (and from 0.45 to 0.49 using per capita family income). And again, the highest quintiles are the ones that accumulate more income share, while the lowest quintile has the largest decrease.

<Tables 2a and 2b around here>

3.2. Description of general mobility trends.

Turning to income mobility, table 3 gives the mean change in log family income by initial income quintile and decile, for all year-panels. It appears as a structural fact that those belonging to the first quintile are the more positively mobile, and those belonging to the highest quintile are the less mobile (they suffer negative changes on average). Nevertheless when looking at the mean change in log family income by initial income decile, we observe that the relationship between income change and base year income is non-monotonous, suggesting that the relation between these two variables is slightly more complex than simply saying there is regression towards the mean. A multivariate analysis is needed to better clarify this question.

< Table 3 around here>

To give a better picture of mobility patterns, quintile transition matrices have been computed and are shown in Tables 4a-4e. In general, comparing the first (1991/1992) and last (1999/2000) panel, we observe that the proportion of individuals in the diagonal, i.e., individuals that stay in the same income quintile, has increased during the nineties. In

particular the percentage of individuals in the [1,1] cell goes from 49 to 57% while in the [5,5] cell the percentage goes from 67 to 79%. From the diagonal elements, only the percentage of individuals in the [2,2] cell has diminished during the nineties. In general, the proportion of individuals from this cell that jump to the first quintile has increased, and that jump up to the fourth has decreased (other movements remaining more or less stable over time). There are also interesting changes over time in the quintile transitions of those starting in the fourth quintile. The proportion of these people that jumped to the fifth quintile decreased from 21-23% in out first panels to 15% in the last panel. There is evidence of an enlargement of the gap, in terms of relative mobility performance, between those initially in the fourth and fifth quintile, which links to the increasing detachment of the richest, in line with the evidence provided in the inequality trends.

<Tables 4a-4e around here>

We now turn to the analysis of mobility by population groups, using the definitions stated above. Table 5.a provides the percentage of individuals in each mobility category for all years and all three definitions. We observe that the percentage of the 'upwardly mobile' (UM) diminishes when comparing the first and last panels, no matter which definition of population groups is used. Results concerning monotonicity and the size of the drop are, though, definition-dependent. The drop is continuous until 1994/95 with all definitions, and it increases for the last two panels, though not attaining 1991/92 levels, with the last two definitions ('Intermediate' and 'Least Relative'). On the other side, the proportion of 'downwardly mobile' (DM) in the population has increased dramatically (even close to doubled with the last two definitions). Note that, by definition, the 'Most Relative' formulation of population groups is the most static one over time, since it is the strictest definition of a mobility status (either upwards or downwards). For this reason, the proportion of Immobile individuals (IM) is always significantly larger than with the other two definitions.

Table 5.b now gives the percentages of UM, DM and IM for all panels, by initial income quintile. We observe that the lower the quintile, the higher is the proportion of UM, no matter which definition used. Concerning the evolution over time, results are again, definition-dependent. Looking at the 'Most Relative' definition --that is, the definition that adds a decile movement condition—we see that the proportion of UM belonging to the first quintile

experiences a large drop (from 62% to 55%), while with the other two definitions, the drop is practically insignificant (from 71% to around 69%). In other words, it becomes harder over time to jump high enough so as to change decile, for the poorest individuals. Equivalently, it becomes slightly easier to jump to lower deciles, since the proportion of DM slightly increases or stays more or less constant over time for all quintiles with the 'Most Relative' definition, while increases (nearly doubles) with the other two definitions, again for all quintiles. The distribution of IM is more or less stable across quintiles for all years with each definition. However, as already shown in table 5.a, this category practically disappears as population group with the 'Intermediate' and 'Least Relative' definitions. These last two definitions are, as a matter of fact, much more volatile, or in other words, more dependent on the economic cycle.

<Tables 5a and 5b around here>

Up to here we have provided simple descriptive statistics concerning inequality and mobility trends in Argentina during the nineties. From these results we observe that, while inequality has been increasing, the most 'upwardly mobile' individuals seem to have been those belonging to low-income deciles. These indicators manifest an apparent puzzle: the 'upwardly mobile' during the nineties have been the poor, but it is the poor who have lost the most in terms of income share. How can we link these two apparently contradictory results? In order to enlighten this question, we now turn to the analysis of the links between inequality and mobility trends.

3.3. The relationship between micro convergence analysis and the cross-sectional inequality analysis.

To tackle our first question about the relationship between mobility and cross-sectional inequality, we depart from the simple Galton (1889) model of regression towards the mean:

$$\log(y_{it+1}) = \quad + \quad \log(y_{it}) + u_{it} \qquad (1)$$

where the stochastic term u_{it} is assumed to be independent of y_{it} and be i.i.d. across individuals and periods. Taking the variance of logarithm (V) as inequality measure, one then gets:

$$V_{t+1} = \quad ^2 \cdot V_t + \quad ^2_u \qquad (2)$$

where the last term is the variance of the residual. In this model, if $\beta \in (0,1)$, equation (1) says that final income is positively correlated with initial income but, on average, it moves closer to the population mean. In other words, we would have regression towards the mean, or micro convergence: individuals with incomes above the mean can expect to keep their advantage, though to a reduced extent, while those with low incomes can expect to jump closer to the mean. Two other possibilities can arise: if β is equal to one, we would have immobility, and if it is greater than one, we would have micro divergence.

Can we have micro convergence, or equivalently, pro-poor income mobility, in a context of increasing macro inequality? We can see, from equation (2), that this is possible, if the variance of the residual is large enough, or equivalently if the variance of initial income (V_t) is initially low. To see what has happened in Argentina we have estimated this model for the five one-year panels, for the total sample population, as well as by age groups and by income quintiles. We have done it, both using reported income and predicted income as independent variable. Results are shown in tables 6.a and 6.b.

<Tables 6.a and 6.b around here>

When looking at the Galton's regression model over total population, both using reported and predicted income, we observe three structural facts about the beta coefficients. First the beta coefficients are always less than unity, implying regression towards the mean. Second, they are always slightly higher when using predicted income instead of reported income as a measure of initial economic position, suggesting that mobility (and therefore, in this case, regression to the mean) is overestimated when using reported income instead of predicted income, which is a better measure of long-term economic position. Third, excluding the less reliable 1991/92 panel (see footnote 2), the betas are higher at the end of the nineties than at the beginning. This implies that there is regression to the mean, but the "progressive" mobility is decreasing with time: initial income is more important in determining final income at the end of the nineties than at the beginning, implying that society is becoming less mobile. On the other hand, inequality, as measured by the variance of log income, is always increasing

within panels except for 1999/2000, where we observe a slight decrease (from 2,13 to 2,08). This is in general consistent with other inequality measures previously discussed. Sigma-squared seems to be therefore high enough so as to combine the increasing inequality with betas less than unity.

If we repeat the estimation by age groups, results are quite similar (see table 6.b). There is regression to the mean for all age groups, except in two cases when we are considering predicted income as the measure for initial economic position: those households with a highest earner between 30 and 40 years old in year 1991/92 and those with a highest earner of less than 30 years old in year 1993/94. In these two cases we observe positive correlation between initial and final income, regression to the mean when using reported income but micro divergence when using predicted income. We also observe that the age group experiencing larger mobility is not always the same, suggesting that age does not play a structural role for mobility patterns. Finally, when we run the same Galton model across initial economic position quintiles results are quite heterogeneous. The first quintile has the lowest betas for all the panels. In addition, we observe that the fifth quintile's beta coefficient increases from 0,75 in 1991/92 to 0,90 in 1999/2000. For the episodic-crisis (1994/95 panel), we see that the richest quintile was almost immobile (beta reaches 0,99). This result may suggest that richer deciles are better protected against economic crises.

We have seen from the analysis of simple inequality and mobility trends that a more unequal income distribution occurs simultaneously with pro-poor (lowest deciles) income mobility. Galton's statistical model shows that this is generally true (excluding the two particular age ranges in two of the panels that have already been pointed out), and the observed pro-poor mobility is decreasing since 1993/94. The model shows that the combination of these two effects is possible, from the moment that the variance of the residual is large enough or the variance of initial income is low enough. Beyond the normative analysis we can derive from this situation, it is important to clarify how both observed trends might be put onto the same track. That is, once we know that the co-existence of both trends is possible, and that there are different possible explanations to the facts, we want to know, in the case of Argentina, what is driving the facts.

First of all, one of our measures of inequality consisted in the income share appropriated by each income decile or quintile. The evolution of the shares, as exposed, has benefited the

richest. Income mobility informs us about how the composition of these deciles or quintiles is changing. For instance, if we take the 1st quintile we can observe that some individuals have left this quintile after enjoying positive income mobility from a year to another. Obviously, other individuals coming from higher quintiles have replaced them, after suffering negative income mobility. So what determines the final share of this quintile, and thus, to some extent, the final income distribution observed, is given by the income mobility of the immobile individuals and the new comers.

In order to understand the two apparently contradictory observed trends we look now at the relative income mobility as the transition matrix reflects it. This gives us an idea of the probabilities of being upwardly or downwardly mobile in the income ladder. Given the fact that we are constrained to observe only panels of one-year time span, we also consider the n power of these matrixes. The idea is that if the transition matrices reflect the observed relative movements from one year to the next, the n power transition matrix gives us an idea of the conditional movements after n years, assuming that the initial matrix applies for all subsequent years. Therefore, under this hypothesis, we can ask for the probabilities of relative mobility in n years conditional on the starting decile or quintile of the individual. Calculating the n power transition matrix for n=2 and n=5 for all panels we dispose, we intend to supply an estimate of the evolution of short and medium-run income mobility during the nineties, or at least of the 'subjective' appreciation of future mobility by individuals, based on the observed transition matrix at each moment in time.

Table 7.a summarizes the 'subjective' conditional probabilities of immobile and new entrants at the 1st and 5th quintiles, from these n power transition matrices (n=2 and n=5). The idea is to set off in contrast the two extremes of the income distribution. We observe two interesting facts. First, the conditional (subjective) probability of remaining in the first quintile after two years, for individuals initially belonging to this lowest quintile, increases over the 1991-2000 period, or in other words, the conditional (subjective) probability of leapfrogging from the lowest quintile decreases. This is also true when we look at a medium-run power transition matrices (n=5). Second, the conditional (subjective) probability of remaining in the richest quintile, when initially belonging to this quintile, has notoriously increased during the nineties (from 0.49 in 1991 to 0.64 in 2000, when looking at two-year transition matrices, and a similar evolution with the five-year transition matrices). This implies that the probability of

falling to a lower quintile for the "richest" individuals (either in the short-run or in the medium-run) has decreased during the nineties.

Table 7.b gives the observed mean changes in log family income of the immobile and leapfrogging individuals, again for the lowest and highest quintiles, for all one-year panels. We observe that the income mobility of the first-quintile immobile individuals (individuals from the [1,1] cell of the transition matrices) is always negative. On the contrary, the fifth quintile immobile individuals ([5,5] cell) enjoy either slightly positive mobility or close to zero mean income changes (this result being more contingent on the macroeconomic performance of the country). If we look at new entrants, while the income loses of those entering the first quintile stay at more or less similar rates over the period (given by the fact that individuals cannot declare negative incomes, so the losses are obviously bounded at zero), we do see that the income gains of new comers to the fifth-quintile ([<5,5] individuals) dramatically increased --close to doubled-- over the period (from 0.69 in the 1991/1992 panel to 1.11 in the 1999/2000 panel).

<Tables 7.a and 7.b around here>

The features from tables 7.a and 7.b fit into a picture that allows both for increasing inequality and “pro-poor” income mobility. In spite of the fact that most of the upwardly mobile individuals belong to the lowest quintiles (at a decreasing rate over time), the new lowest quintile comers suffered negative mobility, and the immobile individuals of the lowest quintile have not only suffered negative income mobility but indeed, at an increasing rate during the nineties’ decade. Consequently, the lowest quintile is becoming poorer over time. On the other hand, individuals belonging to the richest quintile are less vulnerable (i.e. their probability of staying in the highest quintile increases) and the income gains of new comers increases over time. Therefore, after ten years of “pro-poor” income mobility in Argentina, we would observe an impoverishment of the poor and an enrichment of the rich.

4. Explaining Income mobility in Argentina during the 1990’s.

In previous sections we have addressed the first of our two questions, concerning the existence and analysis of the relationship between income mobility and cross-sectional

inequality in Argentina during the nineties. We now turn to our second question, that tries to identify if there is a structural pattern on the characteristics of different subgroups of population that determine their mobility performance, or if belonging to one group or another is more cycle-dependent. As already exposed, we have divided the sample population into three groups: the 'upwardly mobile', the 'immobile' and the 'downwardly mobile' individuals, according to three different definitions of income movements, and we now want to know if we can establish different group characteristics depending on the type of economic shock that took place during the decade.

To tackle this question we first of all provide simple mobility profiles by relevant household variables and characteristics. Since this is only a univariate analysis, we then turn to a multivariate framework and regress our mobility variable on the set of explanatory variables. This would give us the relevant variables determining mobility as a whole. We then turn to the analysis of each of our different subgroups of population, that is, the 'upwardly mobile', the 'immobile' and the 'downwardly mobile', and run three sets of probits, corresponding to the three possible definitions of mobility groups used --the 'Most Relative' definition, the 'Intermediate' definition and the 'Least Relative' definition. The idea is to see which variables are important in determining each of the three possible mobility statuses, and we use the three definitions as a robustness test on the relevant variables.

4.1. Mobility profiles.

Table 8 captures the possible unconditional relationship between our income mobility variable, change in log adult-equivalent family income, and a set of household characteristics. Household structure presents few interesting facts on all analyzed panels. When a man is the highest earner in the initial year, incomes are negatively mobile (except for the 1991/92 panel). There is no clear pattern when the initial highest earner is a woman. However, until we turn to a multivariate framework, we cannot say if it is due to the gender characteristic or to changes in the household structure. Another structural fact is that households with a highest earner belonging to the 30-40 age segment always experience negative mobility, except in the initial panel, and those belonging to the 60 or more age range experience either negative or close to zero income mobility. Concerning schooling of the highest earner, no clear pattern comes out from the mobility profile. If anything, we can say that in the last two panels (1998/1999 and 1999/2000), corresponding to the starting years of the economic recession

from which Argentina is still suffering, the individuals with university education (either complete or incomplete) are the ones with a better performance in terms of mobility. Same unclear results about mobility appear when we look at the number of children or elderly in the household.

Concerning the occupational status of the highest earner, we see that those households with initially satisfied employees or self-employed suffer negative mobility, except in the 1991/1992 panel. Unsatisfied employees have no structural pattern and unsatisfied self-employed usually suffer negative mobility (only in one panel do they suffer positive, though close to zero mobility). Households with an employer as highest earner experience negative income shocks in all panels. Finally, households with an initially unemployed or inactive/discouraged highest earner experience positive mobility in all years except during the 1994-1995 episodic recession due to the Tequila crisis.

No clear conclusions can be extracted from these results before turning to a multivariate framework. Next subsection describes the econometric model used, and describes the results obtained.

<Table 8 around here>

4.2. Regression model and results.

To capture the causal underlying relationships between our variables, we estimate the following econometric model. Our dependent variable is the change in log adult-equivalent family income (ΔY). The explanatory variables are time-invariant characteristics, time-varying base year characteristics and predicted true base year log family income. We have excluded variables of changes in these time-varying characteristics, though they are usually largely explicative, to avoid endogeneity problems.

$$\Delta Y_i = \quad + \quad \hat{w}_{it} + \quad _t X + \quad _t Z_{it} + \quad _i \qquad (3)$$

Note that we do not observe 'true' initial income, but reported income. To avoid spurious correlation and measurement error bias, we run an IV estimation using a new set of variables for predicting 'true' initial income:

$$\ln(y_t) = \ _t X + \ _t Z_t + \ _t W_t + \ _{it}, \qquad (4)$$

where W_t is a set of identifying variables. The model used to obtain the individual's predicted base year log family income level includes as instrumental variables a series of household characteristics, such as household's educational intensity (defined as the mean years of schooling of all household adult individuals), a dummy for household's level of comfort (considering a comfortable household that one having current water, electricity and stone walls), a dummy for house owned or not, and a dummy capturing if the household has domestic service or not. The regressions to obtain predicted base year log family income are here omitted due to space limitations, though available from the authors upon request. However, in order to give a perception of the prediction capacity of our instrumental variables, it is important to note that R-squares of these regressions lie around 0.40/0.50. Results from equation (3) for change in log family income are presented in table 9[7].

When using predicted initial log family income as indicator of base year economic position, we see that this variable is only significant in the 1993/1994 panel. In this year-panel, this variable has a strong negative effect on change in log family income, suggesting that for this second year economic boom panel there is evidence of regression to the mean hypothesis. But for the rest of our panels, this variable is not significant.

If we turn to household structure variables, we see that having initially a woman as the household highest earner has a positive and significant effect for all years, except the first panel[8]. Concerning age of the highest earner, being between 30 and 40 years old, as well as being 60 or more years old imply having a significant negative effect on change in log family

[7] Similar results were found when using changes in family income in currency units as dependent variable (available from the authors upon request).

[8] As already mentioned, 1991 was a highly inflationary year. This, together with the attrition problem (see footnote 2) make our prediction capacity for the 1991/1992 mobility experience be very small, compared to the

income in two recession panels. Other age ranges have less significant and structural effects. Concerning the education level of the highest earner, except in the initial panel, where our explanatory power is small, and in the 1994/1995 panel, which corresponds to the Tequila crisis, in general, it appears as a structural effect that higher education levels (incomplete and complete university) are always significant and positive in determining mobility. Indeed, the higher is the education level, the larger is the positive effect.

Surprisingly, the number of children in the household nearly plays no role in determining income mobility. Accordingly, the number of elderly in the household also has few significant effects. If anything, we can say that having two or more adults of 60 or more years old in the household has a negative effect, that is strongly significant in the 1994/1995 and the 1998/1999 panels.

The way through which occupational status of the highest earner plays on income mobility appears to be quite dependent on the economic cycle too. In general, for the three recession panels (1994/1995, 1998/1999, 1999/2000), having a household highest earner that is initially unemployed or inactive/discouraged implies a significant positive effect on the change in log family income.

4.3. Identification of income 'upwardly mobile', 'immobile' and 'downwardly mobile'.

In order to identify the correlates of each mobility population group, we estimated the probability of becoming an upwardly mobile, an immobile and a downwardly mobile individual, using three sets of probit models[9]. These correspond to the three different definitions of our population groups described in Section 2. The probit models, their coefficients, standard errors, and statistical significance of variable categories are presented in Tables 10a-10c.

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rest of panels. Not obtaining similar significant results for this year does not necessarily mean that the effect observed is not structural.

[9] Ordered probits were also estimated, providing similar evidence. Results are available from the authors upon request.

We find that the predicted log income decreases the probability of being an upwardly mobile and increases the probability of finishing the period as and immobile. This variable is usually insignificant in the downwardly mobile probit models, and when it is significant it follows no pattern (the effect is negative in 1991/1992 and positive in 1993/1994). The described effects of predicted initial log family income are robust, whatever the mobility population definition used, though the level of significance is definition-dependent.

The influence of the occupational status of the highest earner on the mobility status seems to be very similar with all three definitions, therefore, implying the robustness of results to different ways of defining mobility status. Nevertheless we do not find the occupational status variables to be very significant. When the variable is significant, some patterns are however observed. For example, being in a household with an inactive/discouraged highest earner in the initial period generally decreases the probability of becoming a downwardly mobile. On the contrary, having an 'unsatisfied self-employed' as highest earner generally increases the probability of becoming an income loser (the category 'satisfied self-employed' is seldom significant. Concerning the individuals with an 'unsatisfied employee' as highest household earner, this characteristic affects positively and in a significant way the possibility of becoming an upwardly mobile. For some years 1991/1992 and 1998/1999, the fact of having as highest earner an employer decreases the probability associated with the upwardly mobile condition (in 1993/1994 the sign of this relationship is reversed).

Turning to the education level of the highest earner in the household where the individual belongs to, we see that when it is significant, education has a clear and structural influence over the period. In general, it has a positive effect on the probability of being an upwardly mobile, though not always significant. And the higher the education level, the larger is this positive effect. A more significant effect is the fact that, in nearly all panels, having a highest earner with some university education (either complete or incomplete) decreases the probability of either finishing the period as a downwardly mobile. The effect of university education on the probability of remaining immobile is less clear, probably due to the heterogeneity of our immobile population.

Concerning the rest of variables related to the structure of the household, they are usually year-dependent and, sometimes, even definition-dependent. This absence of a clear pattern

applies to the following characteristics: age and gender of highest earner, and the number of children and elderly in the household.

5. – Conclusions.

The aim of this work was to analyze income mobility and inequality in Argentina during the 1990's. In particular, we were interested in two questions. First, we wanted to analyze and understand the existing relationship between income mobility and cross-sectional inequality. Second, we wanted to know who were the 'upwardly mobile', 'immobile' and 'downwardly mobile' individuals, trying to establish whether they had always been the same type of individuals, or if, on the contrary, we were able to establish different group characteristics over time.

Evidence shows that inequality has increased in Argentina during the nineties. In particular, the income share of the lowest income quintile has dramatically diminished, while that of the richest quintile has increased. Concerning the evolution of income mobility, we see that the proportion of individuals that stay in the same income quintile (in particular, in the [1,1] and [5,5] cells) has increased during the nineties. Also, when looking at mobility by population groups, using the definitions stated in section 2, we observe that the lower the quintile, the higher is the proportion of 'upwardly mobile', no matter which definition used. From the inequality and mobility analysis, an apparent puzzle seems to be in place: the 'upwardly mobile' during the nineties have been the poor, but it is the poor who have lost the most in terms of income share.

To clarify this puzzle, we first used Galton's statistical model, and observed that though increasing inequality comes together with regression to the mean (beta coefficients always less than unity), this 'pro-poor mobility' is decreasing since 1993/94. And indeed, using predicted income instead of reported income as a measure of initial economic position, we find that the micro-convergent mobility is overestimated.

We also analyzed the income dynamics of our different population groups, not only looking at the groups themselves (i.e., the 'upwardly mobile', 'immobile' and 'downwardly mobile'), but also at the mean mobility within each group by income quintiles, therefore, distinguishing

between the quintile immobile individuals, the new comers and those that departed. This additional statistical analysis shows that, in spite of the fact that most of the upwardly mobile individuals belong to the lowest quintiles (at a decreasing rate over time), the new lowest quintile comers (people leapfrogged by the first quintile upwardly mobile) suffered negative mobility throughout the whole period. And the immobile individuals of the lowest quintile have not only suffered negative income mobility but indeed, at an increasing rate during the whole nineties' decade. So the lowest quintile is becoming poorer over time. The inverse is observed for the richest quintile: its 'immobile' individuals benefit from positive income mobility during the economic booms and most of the recession years, while its 'downwardly mobile' are replaced by new entrants that experience increasingly positive income mobility over time.

Concerned by the determinants of income mobility we find that, once we control by household structure, gender, age, occupational status and educational level of the highest household earner, the "regression to the mean hypothesis" is only significant for the 1993/1994 period (a year of high GDP growth). This, when using predicted log family income, instead of reported income, as a measure of initial economic status. Besides, we find that when a woman is the highest earner in the initial year, income mobility is positive. Also, households with 2 or more adults of 60 years old or more are associated with negative income mobility. More interestingly, high education levels of the highest earner (in particular, university education, either complete or incomplete) are in general associated with positive income mobility. The only exceptions are exceptional years: the inflationary and growth-restarting period (1991/1992) on one hand and the episodic recession year (1994/1995) on the other.

The analysis from the probit models on each mobility category gives us similar conclusions and if anything, even stronger, about the effects of higher education: more years of schooling prevent from downward mobility and favor immobility in some years. How the occupational status plays on mobility seems to be a more year-dependent fact. Other variables concerning household structure, such as the number of children or elderly in the household, are generally insignificant.

Summarizing, the increasing inequality in Argentina during the nineties has been associated with higher volatility (short-term income mobility) in the poorest sector of the income

distribution, together with a decreasing vulnerability of the richest of the income distribution. In fact, it seems that the observed short-run pro-poor income mobility in Argentina during the nineties has not assured a more equitable society, at least on the medium-term. And indeed, during this period the Argentinean society has become less mobile as a whole. Our candidate explanation is linked to the impoverishment of the immobile poor, and of the new poor, and with the enrichment of the very rich and the new entrants in this category, at higher rates during the decade. Concerning the determinants, the main conclusion is that high education seems to play an important role in protecting individuals from falling down the ladder, though it is not always associated with an 'upwardly mobile' condition.

Finally, the scope of this work would suggest that the link between income mobility and inequality is not a clearly determined functional one. A more mobile society does not necessarily imply a less unequal society. When one of these two dimensions is emphasized over the other, it is revealing different "a priories" about society. This is why it is important to deeply analyze both dimensions at the same time.

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Table 1: Descriptive statistics.

	1991 survey	1991-1992 panel	1993 survey	1993-1994 panel	1994 survey	1994-1995 panel	1998 survey	1998-1999 panel	1999 survey	1999-2000 panel
Number of observations	5632	1387	6577	2161	6568	2215	7180	2552	7056	2485
Gender of highest earner										
% male	0,71	0,79	0,75	0,79	0,75	0,76	0,73	0,73	0,71	0,70
% female	0,29	0,21	0,25	0,21	0,25	0,24	0,27	0,27	0,29	0,30
Age of highest earner										
Less than 30	0,20	0,17	0,19	0,17	0,19	0,16	0,19	0,18	0,20	0,21
[30,40[	0,22	0,22	0,22	0,22	0,23	0,24	0,21	0,21	0,20	0,20
[40,50[	0,25	0,28	0,24	0,25	0,24	0,26	0,24	0,27	0,24	0,26
[50,60[	0,16	0,18	0,18	0,19	0,18	0,19	0,20	0,20	0,21	0,19
60 or more	0,17	0,16	0,17	0,17	0,16	0,15	0,16	0,15	0,15	0,14
Level of schooling of highest earner										
No schooling or Incomplete primary	0,14	0,16	0,12	0,13	0,11	0,11	0,12	0,11	0,10	0,09
Complete primary	0,35	0,36	0,33	0,33	0,35	0,38	0,30	0,30	0,31	0,31
Incomplete secondary	0,18	0,18	0,20	0,21	0,19	0,20	0,20	0,21	0,18	0,18
Complete secondary	0,15	0,15	0,16	0,15	0,18	0,16	0,17	0,19	0,18	0,19
Incomplete University	0,07	0,07	0,08	0,09	0,06	0,06	0,09	0,08	0,10	0,10
Complete University	0,09	0,08	0,10	0,09	0,10	0,09	0,12	0,12	0,13	0,12
Number of children under 14 in the household										
0	0,50	0,47	0,53	0,52	0,52	0,51	0,53	0,54	0,54	0,53
1	0,19	0,19	0,20	0,20	0,21	0,21	0,23	0,22	0,22	0,23
2	0,17	0,17	0,15	0,15	0,15	0,15	0,14	0,15	0,14	0,14
3 or more	0,14	0,17	0,12	0,12	0,11	0,12	0,10	0,09	0,10	0,10
Number of elderly over 60 in the household										
0	0,69	0,72	0,68	0,69	0,69	0,71	0,72	0,72	0,72	0,74
1	0,24	0,21	0,25	0,25	0,24	0,23	0,23	0,23	0,22	0,21
2	0,07	0,07	0,07	0,07	0,07	0,06	0,06	0,05	0,05	0,05
Number of income earners in the household										
0	0,00	0,00	0,09	0,08	0,08	0,07	0,07	0,07	0,10	0,09
1	0,33	0,39	0,34	0,36	0,36	0,39	0,36	0,37	0,34	0,35
2	0,32	0,40	0,35	0,32	0,36	0,35	0,36	0,38	0,36	0,36
3 or more	0,36	0,21	0,21	0,24	0,20	0,19	0,21	0,19	0,21	0,19
Occupational category of highest earner										
'Satisfied' employee	0,43	0,50	0,40	0,39	0,37	0,39	0,37	0,39	0,37	0,38
'Unsatisfied' employee	0,19	0,20	0,18	0,20	0,21	0,21	0,25	0,26	0,26	0,26
Employer	0,04	0,04	0,06	0,06	0,05	0,05	0,05	0,05	0,04	0,04
'Satisfied' Self-employed	0,11	0,10	0,13	0,13	0,11	0,12	0,09	0,08	0,07	0,07
'Unsatisfied' Self-employed	0,05	0,04	0,07	0,07	0,08	0,07	0,08	0,07	0,08	0,08
Unemployed	0,01	0,01	0,03	0,03	0,04	0,04	0,04	0,03	0,05	0,05
Inactive/Discouraged	0,18	0,12	0,13	0,12	0,15	0,13	0,13	0,12	0,13	0,12
Mean family income by quintiles										
1st quintile	81,12	119,04	120,00	127,43	115,46	110,56	97,06	96,68	84,17	86,19
2nd quintile	211,97	213,00	275,81	269,49	265,23	264,72	235,35	234,66	219,73	218,71
3rd quintile	317,66	324,14	414,40	411,61	397,22	396,81	371,15	374,76	350,32	345,49
4th quintile	484,96	488,86	621,42	623,88	597,83	591,75	600,72	592,77	556,18	556,75
5th quintile	1200,31	1162,45	1313,30	1302,01	1355,94	1352,40	1457,57	1486,27	1347,11	1288,58

Source: Authors' calculations from EPH data.

Table 2.a: Inequality trends in Argentina, using cross-sectional survey data (period 1991-2000).

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	1991-2000 % variation
Gini coefficient (using adult-equiv. family income)	0,45	0,44	0,44	0,46	0,47	0,48	0,47	0,48	0,48	0,49	0,07
Gini coefficient (using per capita family income)	0,48	0,47	0,46	0,49	0,50	0,50	0,50	0,51	0,50	0,51	0,07
Income shares by initial income quintile											
1st quintile	0,05	0,05	0,05	0,05	0,04	0,04	0,04	0,04	0,04	0,04	-0,31
2nd	0,10	0,09	0,10	0,09	0,09	0,09	0,09	0,09	0,09	0,09	-0,11
3rd	0,13	0,14	0,14	0,14	0,13	0,14	0,14	0,13	0,13	0,13	-0,02
4th	0,21	0,22	0,22	0,21	0,21	0,21	0,21	0,21	0,22	0,22	0,04
5th	0,51	0,50	0,49	0,51	0,53	0,53	0,52	0,53	0,52	0,53	0,03
Income shares by initial income decile											
1st decile	0,02	0,02	0,02	0,01	0,01	0,01	0,01	0,01	0,01	0,01	-0,46
2nd	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	-0,21
3rd	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	-0,16
4th	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	-0,07
5th	0,06	0,06	0,07	0,06	0,06	0,06	0,06	0,06	0,06	0,06	-0,04
6th	0,07	0,08	0,08	0,08	0,07	0,07	0,07	0,07	0,07	0,07	0,00
7th	0,09	0,10	0,10	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,03
8th	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,06
9th	0,16	0,17	0,16	0,16	0,17	0,17	0,17	0,17	0,17	0,17	0,09
10th	0,35	0,33	0,33	0,35	0,36	0,36	0,36	0,36	0,35	0,36	0,01

Source: Authors' calculations from EPH data.

Table 2.b: Inequality trends in Argentina, using year-panel subsamples.

	Panel 1991/1992		Panel 1993/1994		Panel 1994/1995		Panel 1998/1999		Panel 1999/2000		1991-2000 % variation
	1991	1992	1993	1994	1994	1995	1998	1999	1999	2000	
Gini coefficient (using adult-equiv. family income)	0,42	0,44	0,43	0,44	0,45	0,47	0,48	0,49	0,47	0,47	0,12
Gini coefficient (using per capita family income)	0,45	0,47	0,45	0,46	0,47	0,48	0,50	0,51	0,49	0,49	0,08
Income shares by initial income quintile											
1st quintile	0,06	0,04	0,05	0,04	0,04	0,04	0,04	0,04	0,03	0,03	-0,43
2nd	0,10	0,10	0,10	0,10	0,10	0,09	0,09	0,08	0,09	0,09	-0,13
3rd	0,14	0,15	0,15	0,15	0,15	0,14	0,14	0,14	0,14	0,14	-0,04
4th	0,21	0,22	0,23	0,23	0,22	0,21	0,21	0,21	0,22	0,22	0,08
5th	0,48	0,49	0,47	0,49	0,49	0,52	0,52	0,53	0,52	0,51	0,06
Income shares by initial income decile											
1st decile	0,02	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	-0,67
2nd	0,04	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	-0,25
3rd	0,05	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	-0,17
4th	0,06	0,06	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	-0,10
5th	0,07	0,07	0,07	0,07	0,07	0,06	0,06	0,06	0,06	0,06	-0,04
6th	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	-0,02
7th	0,09	0,10	0,10	0,10	0,10	0,09	0,10	0,09	0,10	0,10	0,04
8th	0,12	0,12	0,13	0,13	0,12	0,12	0,12	0,12	0,13	0,13	0,10
9th	0,15	0,16	0,16	0,16	0,16	0,17	0,17	0,17	0,18	0,18	0,21
10th	0,33	0,33	0,31	0,33	0,33	0,35	0,36	0,36	0,34	0,33	0,00

Source: Authors' calculations from EPH data.

Table 3: Mean change in log family income, by initial economic position.

	1991/1992		1993/1994		1994/1995		1998/1999		1999/2000	
	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.	mean	st.dev.
By Initial Income Quintile										
1st	0,05	0,09	0,91	0,11	0,87	0,11	0,63	0,1	0,95	0,11
2nd	-0,04	0,06	-0,07	0,05	-0,28	0,06	-0,05	0,04	-0,09	0,05
3rd	-0,43	0,1	-0,22	0,05	-0,2	0,04	-0,27	0,05	-0,2	0,04
4th	-0,33	0,08	-0,35	0,06	-0,38	0,06	-0,22	0,03	-0,3	0,05
5th	-0,39	0,08	-0,43	0,06	-0,47	0,06	-0,35	0,05	-0,35	0,06
By Initial Income Decile										
1st	0,39	0,1	1,66	0,18	1,71	0,19	1,28	0,17	1,98	0,18
2nd	-0,31	0,14	0,1	0,09	0	0,06	-0,03	0,07	-0,11	0,08
3rd	0,04	0,08	-0,14	0,08	-0,3	0,08	-0,02	0,06	-0,07	0,07
4th	-0,13	0,07	0	0,06	-0,26	0,07	-0,08	0,05	-0,12	0,07
5th	-0,51	0,15	-0,08	0,04	-0,19	0,06	-0,38	0,08	-0,22	0,07
6th	-0,36	0,13	-0,35	0,1	-0,22	0,05	-0,17	0,04	-0,18	0,04
7th	-0,24	0,09	-0,41	0,08	-0,26	0,06	-0,25	0,06	-0,31	0,08
8th	-0,42	0,12	-0,3	0,08	-0,5	0,1	-0,18	0,04	-0,28	0,06
9th	-0,39	0,14	-0,39	0,08	-0,54	0,09	-0,22	0,07	-0,43	0,1
10th	-0,38	0,1	-0,46	0,08	-0,39	0,07	-0,48	0,08	-0,28	0,05

Source: Authors' calculations from EPH data.

Tables 4a-4e: Family Income Transition Matrices

Table 4.a. Percent of Sample in 1992 Log Family Income Quintile, Conditional on 1991 Log Family Income Quintile

1991 \ 1992	1	2	3	4	5
1	**49,64**	29,5	13,67	5,76	1,44
2	20,07	**40,51**	22,63	14,96	1,82
3	14,49	17,75	**34,42**	26,81	6,52
4	9,52	8,79	24,91	**35,16**	21,61
5	6,55	3,27	4	19,27	**66,91**

Table 4.b. Percent of Sample in 1994 Log Family Income Quintile, Conditional on 1993 Log Family Income Quintile

1993 \ 1994	1	2	3	4	5
1	**50,82**	21,21	13,52	9,32	5,13
2	24,24	**37,53**	25,87	9,32	3,03
3	11,71	26	**35,83**	18,97	7,49
4	8,43	11,24	18,27	**38,17**	23,89
5	4,67	4,21	6,54	24,07	**60,51**

Table 4.c. Percent of Sample in 1995 Log Family Income Quintile, Conditional on 1994 Log Family Income Quintile

1994 \ 1995	1	2	3	4	5
1	**53,51**	26,08	12,7	3,4	4,31
2	22,68	**36,73**	28,57	9,98	2,04
3	11,54	18,1	**34,84**	29,41	6,11
4	6,83	15,26	19,13	**37,13**	21,64
5	5,68	3,64	4,55	20,68	**65,45**

Table 4.d. Percent of Sample in 1999 Log Family Income Quintile, Conditional on 1998 Log Family Income Quintile

1998 \ 1999	1	2	3	4	5
1	**58,51**	24,46	11,55	2,35	3,13
2	20,55	**40,9**	27,4	8,81	2,35
3	11,76	20,98	**38,43**	26,86	1,96
4	5,48	9,98	20,94	**45,4**	18,2
5	3,73	3,54	2,36	16,11	**74,26**

Table 4.e. Percent of Sample in 2000 Log Family Income Quintile, Conditional on 1999 Log Family Income Quintile

1999 \ 2000	1	2	3	4	5
1	**56,94**	25,15	10,26	5,63	2,01
2	25,15	**35,41**	27,97	9,05	2,41
3	8,85	29,98	**36,62**	22,33	2,21
4	5	8,6	22,8	**48,8**	14,8
5	4,25	0,61	2,23	13,97	**78,95**

Table 5.a: % Share of UP, IM and DM in year panels, by mobility definitions.

	1991-1992	1993-1994	1994-1995	1998-1999	1999-2000
Most Relative' mobility definition					
Upwardly Mobile (UM)	38,93	36	35,26	33,35	34,97
Immobile (IM)	36,63	27,63	31,33	34,95	31,55
Downwardly Mobile (DM)	24,44	36,37	33,41	31,7	33,48
Intermediate' mobility definition					
Upwardly Mobile (UM)	49,96	44,75	41,53	49,18	48,69
Immobile (IM)	23,65	10,5	15,17	6,78	3,7
Downwardly Mobile (DM)	26,39	44,75	43,3	44,04	47,61
Least Relative' mobility definition					
Upwardly Mobile (UM)	51,91	45,77	42,39	50,08	50,34
Immobile (IM)	21,41	9,25	13,63	5,6	1,25
Downwardly Mobile (DM)	26,68	44,98	43,97	44,32	48,41

Table 5.b: % Share of UP, IM and DM in year panels, by initial income quintile and by mobility definitions.

	1991-1992			1992-1993			1994-1995			1998-1999			1999-2000		
	UM	**IM**	**DM**	**UM**	**IM**	**DM**	**UM**	**IM**	**DM**	**UM**	**IM**	**DM**	**UM**	**IM**	**DM**
Most Relative' mobility definition															
1st quintile	62,2	29,5	8,3	58,4	29,3	12,2	56,0	37,3	6,8	51,9	37,0	11,2	55,5	31,8	12,7
2nd quintile	49,5	28,3	22,2	45,3	25,2	29,6	43,1	24,6	32,3	42,9	26,6	30,5	48,5	20,3	31,2
3rd quintile	41,7	34,4	35,6	38,4	17,4	44,2	39,4	21,9	38,7	35,9	23,9	40,2	34,0	19,1	46,9
4th quintile	31,3	33,1	35,6	27,4	24,4	48,3	31,5	20,0	48,5	26,2	30,1	43,6	25,2	29,4	45,4
5th quintile	9,8	58,0	32,3	10,4	41,9	47,7	6,1	53,2	40,7	9,8	57,2	33,0	11,5	57,3	31,2
Intermediate' mobility definition															
1st quintile	70,5	14,8	14,8	68,1	9,9	21,9	63,7	17,4	19,0	67,3	9,2	23,5	68,8	7,7	23,5
2nd quintile	55,9	21,9	22,2	56,8	8,6	34,6	46,1	15,1	38,8	52,6	5,5	41,9	56,1	2,0	41,9
3rd quintile	49,6	26,5	23,9	40,5	11,1	48,4	39,4	14,4	46,2	44,1	4,3	51,6	44,9	0,4	54,7
4th quintile	39,9	24,5	35,6	31,3	10,4	58,2	31,9	11,0	57,1	43,3	4,3	52,5	36,0	4,6	59,4
5th quintile	33,7	30,8	35,5	26,9	12,5	60,7	26,6	18,0	55,5	38,5	10,6	50,9	37,7	3,9	58,5
Least Relative' mobility definition															
1st quintile	70,5	13,7	15,8	68,1	9,7	22,2	63,7	15,4	21,0	67,7	7,4	24,9	69,6	5,8	24,6
2nd quintile	55,9	21,9	22,2	57,5	7,9	34,6	46,1	14,7	39,3	52,6	5,5	41,9	58,0	0,0	42,1
3rd quintile	50,7	25,4	23,9	40,5	10,2	49,3	39,4	14,0	46,6	44,1	4,3	51,6	45,3	0,0	54,7
4th quintile	41,4	23,0	35,6	31,3	10,4	58,2	31,9	10,6	57,5	43,6	3,9	52,5	38,4	0,4	61,2
5th quintile	40,9	23,2	23,2	31,3	8,1	60,7	30,9	13,6	55,5	42,2	6,9	50,9	40,5	0,0	59,5

Table 6.a: Estimates from Galton's model of regression towards the mean (total population)

	1991/1992	1993/1994	1994/1995	1998/1999	1999/2000
a) Using log of reported income for initial economic position					
Beta	0,72	0,36	0,40	0,51	0,45
Constant	1,44	3,75	3,42	2,75	3,10
Sigma-squared	1,89	1,46	1,52	1,44	1,64
Var(logYt)	0,52	1,38	1,77	1,73	2,13
Var(logYt+1)	2,14	1,67	1,88	1,91	2,08
R-squared	0,13	0,12	0,15	0,25	0,21
b) Using log of predicted income for initial economic position					
Beta	0,86	0,40	0,52	0,69	0,61
Constant	0,61	3,49	2,68	1,73	2,18
Sigma-squared	1,96	1,55	1,58	1,56	1,74
Var(logYpredt)	0,26	0,65	0,80	0,72	0,90
Var(logYt+1)	2,14	1,67	1,88	1,91	2,08
R-squared	0,10	0,07	0,13	0,18	0,16

Table 6.b: Estimates from Galton's model, by age groups and initial income quintiles

	1991/1992	1993/1994	1994/1995	1998/1999	1999/2000
a) Using log of reported income for initial economic position by age groups					
Beta					
less than 30	0,76	0,27	0,41	0,64	0,56
30-40	0,79	0,48	0,53	0,41	0,55
40-50	0,67	0,31	0,36	0,48	0,37
50-60	0,75	0,43	0,34	0,60	0,39
60 or more	0,64	0,45	0,38	0,58	0,46
b) Using log of predicted income for initial economic position by age groups					
Beta					
less than 30	0,92	1,05	0,61	0,88	0,64
30-40	1,16	0,56	0,71	0,74	0,83
40-50	0,79	0,42	0,52	0,69	0,56
50-60	0,46	0,45	0,36	0,70	0,53
60 or more	0,75	0,23	0,40	0,35	0,54
c) Using log of reported income for initial economic position by initial quintile*					
Beta					
1st quintile	0,35	0,17	0,15	0,22	0,19
2nd quintile	0,68	0,46	0,45	0,64	0,86
3rd quintile	0,46	0,61	0,80	0,61	0,83
4th quintile	0,83	0,89	0,82	0,75	0,58
5th quintile	0,75	0,66	0,99	0,88	0,90

*Division of initial income quintiles is based on predicted income.

Table 7.a: Conditional Probabilities from n-power transition matrices (n=2 & n=5).

	1991-1992	1993-1994	1994-1995	1998-1999	1999-2000
Probability of staying in the first-quintile (2-year period)	0.33	0.34	0.36	0.40	0.40
Probability of staying in the first-quintile (5-year period)	0.23	0.21	0.23	0.25	0.25
Probability of staying in the fifth-quintile (2-year period)	0.49	0.42	0.47	0.57	0.64
Probability of staying in the fifth-quintile (5-year period)	0.28	0.24	0.27	0.33	0.40

Table 7.b: Mean change in log family income, first and fifth quintile.

	1991-1992	1993-1994	1994-1995	1998-1999	1999-2000
Mean change in log family income for 1st-quintile immobiles	-0.63	-0,15	-0.08	-0.12	-0.12
Mean change in log family income for 1st-quintile new entrants	-2.82	-2,01	-2,3	-1.97	-2.16
Mean change in log family income for 5th-quintile immobiles	0,07	0,02	-0,03	0.01	0.00
Mean change in log family income for 5th-quintile new entrants	0.69	0,93	1,26	1.24	1.11

Table 8: Mobility Profiles.

	1991-1992			1993-1994			1994-1995			1998-1999			1999-2000		
	mean	se	share	mean	se	share	mean	se	share	mean	se	share	mean	se	share
Gender of highest earner															
male	0.07	0.02	0,78	-0.05	0.02	0,81	-0.13	0.01	0,78	-0.05	0.01	0,75	-0.04	0.01	0,71
female	-0.08	0.03	0,22	0.16	0.03	0,19	-0.03	0.03	0,22	0.02	0.03	0,25	0.03	0.02	0,29
Age of highest earner															
Less than 30	0.01	0.04	0,17	0.08	0.04	0,17	-0.03	0.04	0,17	-0.04	0.03	0,18	0.06	0.03	0,22
[30,40[	0.08	0.04	0,22	-0.06	0.02	0,23	-0.17	0.03	0,25	-0.03	0.03	0,20	-0.13	0.03	0,21
[40,50[	0.11	0.03	0,27	-0.08	0.03	0,25	-0.13	0.03	0,26	0.01	0.02	0,27	-0.06	0.02	0,26
[50,60[	0.01	0.03	0,17	0.03	0.03	0,19	-0.09	0.03	0,18	-0.11	0.03	0,20	0.04	0.03	0,19
60 or more	-0.06	0.04	0,17	0.01	0.03	0,17	-0.09	0.04	0,14	0.02	0.03	0,15	-0.00	0.03	0,13
Schooling level of highest earner															
No schooling/Incomp. primary	0.06	0.04	0,16	0.01	0.04	0,12	-0.03	0.04	0,10	-0.04	0.05	0,10	-0.06	0.04	0,09
Complete primary	0.05	0.03	0,36	-0.06	0.02	0,33	-0.16	0.02	0,38	-0.03	0.02	0,29	0.00	0.02	0,30
Incomplete secondary	0.07	0.03	0,19	-0.03	0.03	0,20	-0.15	0.04	0,21	-0.04	0.03	0,21	-0.10	0.03	0,18
Complete secondary	-0.04	0.04	0,15	0.05	0.04	0,15	-0.01	0.03	0,16	-0.04	0.03	0,19	-0.05	0.02	0,19
Incomplete University	0.09	0.08	0,07	0.02	0.04	0,10	-0.13	0.05	0,07	-0.01	0.04	0,08	0.10	0.03	0,10
Complete University	-0.04	0.08	0,09	0.01	0.06	0,10	-0.05	0.04	0,09	0.01	0.04	0,12	0.00	0.04	0,13
Number of children in hh (less than 14)															
0	0.01	0.02	0,48	0.01	0.02	0,52	-0.08	0.02	0,50	-0.03	0.02	0,55	0.03	0.02	0,53
1	0.03	0.03	0,18	-0.11	0.03	0,20	0.00	0.03	0,22	-0.03	0.02	0,22	-0.03	0.02	0,23
2	0.02	0.04	0,17	0.02	0.03	0,16	-0.31	0.04	0,16	-0.07	0.03	0,15	-0.08	0.03	0,14
3 or more	0.16	0.04	0,16	0.02	0.04	0,12	-0.19	0.04	0,12	0.07	0.05	0,08	-0.18	0.05	0,10
Number of elderly in hh (more than 60)															
0	0.07	0.02	0,71	-0.01	0.02	0,68	-0.13	0.02	0,70	-0.03	0.01	0,72	0.00	0.01	0,75
1	-0.00	0.04	0,22	-0.04	0.03	0,25	-0.09	0.03	0,24	-0.05	0.03	0,23	-0.10	0.03	0,20
2 or more	-0.20	0.07	0,07	0.09	0.06	0,07	-0.03	0.05	0,06	-0.01	0.05	0,05	-0.10	0.04	0,05
Occupational status of highest earner															
'Satisfied' employee	0.06	0.02	0,50	-0.01	0.02	0,41	-0.13	0.02	0,41	-0.02	0.02	0,40	-0.06	0.02	0,40
'Unsatisfied' employee	0.05	0.03	0,20	0.06	0.03	0,20	-0.00	0.03	0,22	-0.02	0.03	0,26	0.06	0.02	0,26
Employer	-0.13	0.12	0,04	-0.16	0.08	0,06	-0.30	0.06	0,05	-0.31	0.06	0,05	-0.28	0.07	0,04
'Satisfied' Self-employed	0.06	0.05	0,10	-0.12	0.03	0,13	-0.21	0.04	0,12	-0.07	0.04	0,09	-0.09	0.05	0,08
'Unsatisfied' Self-employed	-0.07	0.08	0,04	-0.18	0.05	0,07	-0.13	0.08	0,07	0.01	0.06	0,07	-0.04	0.04	0,08
Unemployed	0.10	0.12	0,01	0.30	0.08	0,02	-0.31	0.10	0,03	0.18	0.09	0,03	0.08	0.09	0,04
Inactive/Discouraged	0.02	0.04	0,12	0.09	0.04	0,11	-0.02	0.04	0,12	0.02	0.04	0,11	0.05	0.04	0,10

Table 9: Regression of Change in Log Family Income.

	1991/1992	1993/1994	1994/1995	1998/1999	1999/2000
Predicted initial log family income	0,26	-0,64 ***	-0,03	-0,12	0,07
	-(1,13)	(4.20)	-(0,15)	-(0,69)	-(0,45)
Gender of highest earner	-0,07	0,24 **	0,14 *	0,21 **	0,18 **
	-(0,69)	(2.25)	(1.77)	(2.50)	(2.37)
Age of highest earner					
Less than 30 (omitted)					
[30,40[	0,06	-0,03	-0,18 *	0,04	-0,25 ***
	-(0,50)	-(0,24)	(1.87)	-(0,46)	(2.73)
[40,50[	-0,08	-0,03	-0,09	0,10	-0,18 **
	-(0,70)	-(0,22)	-(0,98)	-(1,29)	(2.10)
[50,60[	-0,35 **	-0,04	0,03	0,02	0,13
	(2.48)	-(0,30)	-(0,33)	-(0,19)	-(1,31)
60 or more	-0,32	0,02	-0,70 ***	-0,28	-0,71 ***
	-(1,55)	-(0,10)	(3.02)	-(1,46)	(3.00)
Level of schooling of highest earner					
No schooling/Incomp. Primary (omitted)					
Complete primary	-0,14	-0,18 *	-0,17	0,23 **	0,26 ***
	-(1,23)	(1.87)	-(1,52)	(2.05)	(2.32)
Incomplete secondary	-0,04	0,20 *	0,00	0,31 **	0,17
	-(0,26)	(1.79)	-(0,03)	(2.37)	-(1,32)
Complete secondary	-0,46 **	0,22 *	0,34 **	0,38 **	0,31 **
	(2.34)	(1.66)	(2.14)	(2.51)	(2.00)
Incomplete University	-0,25	0,25	0,01	0,39 *	0,36 **
	-(1,00)	-(1,35)	-(0,06)	(1.93)	(2.03)
Complete University	-0,36	0,45 **	0,05	0,46 *	0,44 *
	-(1,34)	(2.31)	-(0,18)	(1.86)*	(1.90)*
Occupational status of highest earner					
Satisfied' employee (omitted)					
'Unsatisfied' employee	-0,01	-0,26 ***	0,02	-0,13	0,04
	-(0,11)	(3.07)	-(0,21)	(1.76)*	-(0,59)
Employer	-0,49 *	0,06	-0,31 *	-0,07	-0,22 *
	(1.86)	-(0,33)	(1.91)	-(0,67)	(1.79)
'Satisfied' Self-employed	-0,37 **	-0,11	-0,24 **	-0,01	-0,11
	(2.09)	-(1,22)	(2.42)	-(0,16)	-(0,98)
'Unsatisfied' Self-employed	0,01	-0,30 ***	-0,14	-0,15	-0,22 *
	-(0,07)	(2.90)	-(1,18)	-(1,36)	(1.89)*
Unemployed	0,33	-0,03	0,66	0,55 **	0,75 **
	(1.68)*	-(0,11)	-(1,58)	(2.02)	(2.41)
Inactive/Discouraged	0,48 ***	0,09	1,15 ***	0,82 ***	1,54 ***
	(2.94)	-(0,30)	(3.45)	(3.13)	(5.15)
Number of children under 14 in hh.					
0 (omitted)					
1	-0,06	0,13	0,18 **	-0,02	0,19 **
	-(0,44)	-(1,43)	(2.02)	-(0,18)	(2.21)
2	-0,08	0,01	-0,09	0,12	0,07
	-(0,54)	-(0,14)	-(0,93)	-(1,01)	-(0,72)
3 or more	0,10	-0,41 **	-0,14	-0,06	0,05
	-(0,48)	(2.42)	-(1,01)	-(0,33)	-(0,31)
Number of elderly over 60 in hh.					
0 (omitted)					
1	0,24 *	-0,13	0,31 ***	0,09	-0,15
	(1.70)	-(1,47)	(4.09)	-(0,95)	-(1,58)
2 or more	-0,27	-0,27	-0,43 **	-0,61 ***	-0,16
	-(1,31)	-(1,47)	(2.04)	(3.36)	-(0,70)
Number of income earners in hh.	-0,11 **	-0,01	-0,27 ***	-0,24 ***	-0,37 ***
	(2.57)	-(0,08)	(3.09)	(3.17)	(4.48)
Constant	-1,30	3,76 ***	0,48	0,63	-0,12
	-(0,99)	(4.68)	-(0,51)	-(0,73)	-(0,15)
Number obs.	1387	2161	2215	2552	2485
F-test					
R-squared	0,04	0,17	0,15	0,13	0,16
Adj R-squared	0,02	0,13	0,15	0,12	0,15

Standard errors in brackets; *=significant at the 10% prob. Level; **=significant at 5% ; ***=significant at 1%.

Table 10.a: Probits using 'Most Relative' definition of population groups.

	1991/1992			1993/1994			1994/1995			1998/1999			1999/2000		
	winner	**immob**	**loser**	**winner**	**immob**	**loser**	**winner**	**immob**	**loser**	**winner**	**immob**	**loser**	**winner**	**immob**	**loser**
Predicted initial log family income	-0,37 *	0,77 ***	-0,38 *	-0,70 ***	0,19	0,58 ***	-0,03	0,02	0,10	-0,12	-0,08	0,23	-0,32 ***	0,24 **	0,09
Gender of highest earner	-0,24 ***	0,00	0,26 ***	0,08	-0,15	0,03	-0,02	-0,04	0,05	-0,05	0,18 **	-0,18 **	-0,03	-0,03	0,05
Age of highest earner															
Less than 30 (omitted)															
[30,40[	0,20 *	-0,23 **	0,03	-0,33 ***	0,26 ***	0,07	-0,24 ***	0,20 **	0,02	-0,01	0,01	0,01	-0,39 ***	0,29 ***	0,13
[40,50[	0,06	-0,08	0,06	-0,16 *	0,06	0,11	-0,17 **	0,10	0,06	0,21 ***	-0,28 ***	0,08	-0,16 **	0,22 ***	-0,01
[50,60[	0,11	-0,46 ***	0,39 ***	-0,04	0,10	-0,06	-0,27 ***	0,40 ***	-0,15	0,11	-0,21 **	0,12	-0,14	0,39 ***	-0,26 ***
60 or more	0,27	-0,85 ***	0,66 ***	0,20	-0,26	0,00	-0,59 ***	0,47 **	0,14	0,38 **	-0,05	-0,32 **	-0,35 **	0,35 **	0,01
Occupational status of highest earner															
Satisfied' employee (omitted)															
'Unsatisfied' employee	-0,12	0,25 ***	-0,11	-0,03	0,12	-0,04	0,23 ***	0,02	-0,24 ***	0,10	-0,07	-0,02	0,27 ***	-0,07	-0,20 ***
Employer	-0,27	-0,23	0,50 **	0,16	-0,17	-0,06	-0,18	-0,04	0,13	-0,40 ***	0,16	0,12	-0,26 *	0,10	0,04
'Satisfied' Self-employed	0,01	-0,09	0,10	-0,04	-0,07	0,10	0,04	-0,36 ***	0,24 ***	-0,13	0,03	0,09	0,17	-0,08	-0,09
'Unsatisfied' Self-employed	-0,13	-0,05	0,26	-0,22 **	-0,27 **	0,44 ***	-0,11	-0,02	0,16	0,03	-0,19 *	0,17	-0,22 **	0,19 *	0,04
Unemployed	-1,02 **	1,24 ***	-0,25	-0,59 **	0,26	0,37	-0,06	0,28	-0,14	0,08	-0,27	0,18	-0,09	0,27	-0,25
Inactive/Discouraged	0,11	0,68 ***	-0,89 ***	-0,70 ***	0,25	0,49 **	0,24	0,09	-0,31	-0,03	-0,17	0,19	0,17	0,23	-0,45 **
Level of schooling of highest earner															
No schooling/Incomp. Primary (omitted)															
Complete primary	0,17	-0,31 ***	0,20 *	0,09	-0,19 **	0,09	-0,16	-0,05	0,22 **	-0,13	0,34 ***	-0,19 **	0,38 ***	-0,14	-0,25 ***
Incomplete secondary	0,23 *	-0,30 **	0,10	0,36 ***	-0,44 ***	0,00	-0,01	-0,27 **	0,25 **	0,03	0,20 *	-0,21 **	0,18	0,03	-0,20 *
Complete secondary	0,19	-0,54 ***	0,39 **	0,44 ***	-0,04	-0,41 ***	-0,07	0,07	-0,03	-0,13	0,50 ***	-0,37 ***	0,31 **	0,14	-0,45 ***
Incomplete University	0,27	-0,88 ***	0,66 ***	0,36 **	0,13	-0,54 ***	-0,10	0,11	0,00	-0,19	0,67 ***	-0,52 ***	0,58 ***	0,08	-0,70 ***
Complete University	-0,03	-0,64 **	0,62 **	0,51 ***	0,15	-0,73 ***	-0,48 **	0,80 ***	-0,53 ***	-0,14	0,90 ***	-0,85 ***	0,51 ***	0,14	-0,72 ***
Number of children under 14 in hh.															
0 (omitted)															
1	0,03	-0,31 ***	0,31 ***	-0,09	-0,15 *	0,21 ***	0,28 ***	-0,19 **	-0,05	-0,14 *	-0,11	0,27 ***	-0,14 *	-0,11	0,23 ***
2	0,02	-0,12	0,15	0,08	-0,07	-0,02	-0,09	-0,17 *	0,24 ***	-0,15	-0,08	0,27 **	-0,36 ***	0,20 **	0,15 *
3 or more	-0,08	0,03	0,09	-0,23	-0,02	0,28 **	-0,05	0,09	0,03	-0,27 **	0,15	0,13	-0,40 ***	0,02	0,36 ***
Number of elderly over 60 in hh.															
0 (omitted)															
1	-0,30 **	0,37 ***	-0,10	0,04	-0,07	0,03	0,47 ***	-0,39 ***	-0,12	0,07	-0,24 ***	0,18 **	-0,23 ***	0,13	0,11
2 or more	-1,21 ***	0,74 ***	0,36	0,25	0,29 *	-0,51 ***	0,27 *	-0,14	-0,17	-0,49 ***	0,18	0,37 **	-0,46 ***	0,27 *	0,16
Number of income earners in hh.	-0,08	-0,18 ***	0,27 ***	0,10	-0,13 *	-0,01	-0,26 ***	-0,01	0,22 ***	-0,27 ***	0,06	0,19 ***	-0,10	-0,10	0,19 ***
Constant	2,00 *	-4,08 ***	0,49	3,51 ***	-1,36	-3,84 ***	0,36	-0,67	-1,44 *	0,75	-0,24	-2,03 ***	1,53 **	-2,02 ***	-0,94
Number obs.	1376	1376		2140	2140	2140	2203	2203	2203	2552	2552	2552	2485	2485	2485
Log-likelihood	-865,77	-853,3		-1313,1	-1202,2	-1302,6	-1342,4	-1281,9	-1300,8	-1528,2	-1580,5	-1494,3	-1466,8	-1476,5	-1484
LR chi2(3)	110,05	100,2		176,75	111,8	197,69	175,12	167,2	211,99	198,27	137,01	199,31	283,13	145,25	200,63
Pseudo R2	0,0598	0,0555		0,0631	0,0444	0,0705	0,0612	0,0612	0,0753	0,0609	0,0415	0,0625	0,088	0,0469	0,0633

Standard errors omitted to save space; *=significant at the 10% prob. Level; **=significant at 5% ; ***=significant at 1%.

Table 10.b: Probits using 'Intermediate' definition of population groups.

	1991/1992			1993/1994			1994/1995			1998/1999			1999/2000		
	winner	**immob**	**loser**	**winner**	**immob**	**loser**	**winner**	**immob**	**loser**	**winner**	**immob**	**loser**	**winner**	**immob**	**loser**
Predicted initial log family income	-0,051	0,684 ***	-0,506 **	-0,869 ***	0,728 ***	0,595 ***	0,006	0,289	-0,15	0,076	-0,202	-0,006	-0,299 **	0,76 ***	0,203
Gender of highest earner	-0,3 ***	0,066	0,271 ***	-0,078	0,004	0,082	-0,057	0,173 **	-0,055	0,127 *	-0,251 **	-0,055	-0,067	0,063	0,06
Age of highest earner															
Less than 30 (omitted)															
[30,40[	0,013	-0,086	0,062	-0,185 *	-0,009	0,187 *	-0,239 ***	0,196	0,158 *	-0,063	-0,147	0,11	-0,261 ***	0,695 ***	0,172 **
[40,50[	0,021	-0,095	0,071	-0,1	-0,085	0,139	-0,067	0,329 ***	-0,098	0,139 *	-0,109	-0,108	-0,076	0,292	0,057
[50,60[	-0,038	-0,349 ***	0,338 ***	0,036	-0,05	-0,032	-0,125	0,452 ***	-0,125	0,085	-0,09	-0,056	0,007	0,484 **	-0,081
60 or more	0,077	-0,634 ***	0,475 **	0,342 *	-0,91 ***	0,031	-0,323 *	0,043	0,338 *	0,293 **	-0,318	-0,194	-0,263	0,452	0,242
Occupational status of highest earner															
Satisfied' employee (omitted)															
'Unsatisfied' employee	-0,129	0,277 ***	-0,092	0,004	0,057	-0,026	0,162 **	0,127	-0,23 ***	0,102	-0,075	-0,08	0,178 ***	0,117	-0,192 ***
Employer	-0,368 *	-0,148	0,53 **	0,259 **	-0,503 **	-0,078	-0,209	-0,207	0,289 **	-0,355 ***	0,007	0,341 ***	-0,112	-0,415	0,161
'Satisfied' Self-employed	0,036	-0,22	0,13	-0,226 ***	0,059	0,167 **	-0,022	-0,463 ***	0,238 ***	-0,056	-0,14	0,091	0,076	-0,574 *	-0,006
'Unsatisfied' Self-employed	-0,034	-0,343 *	0,319 *	-0,34 ***	0,188	0,274 **	-0,257 **	-0,283 *	0,38 ***	-0,094	-0,009	0,102	-0,161	0,331	0,12
Unemployed	-0,078	0,571	-0,393	-0,695 ***	0,811 **	0,379	0,118	0,617	-0,468	0,173	-0,006	-0,186	-0,269	1,338 ***	0,003
Inactive/Discouraged	0,134	0,6 ***	-0,72 ***	-1,039 ***	1,456 ***	0,401	0,317	0,527 *	-0,668 ***	0,18	0,234	-0,287	0,132	1,401 ***	-0,471 **
Level of schooling of highest earner															
No schooling/Incomp. Primary (omitted)															
Complete primary	0,01	-0,149	0,144	0,017	-0,051	0,005	-0,184 **	-0,035	0,211 **	-0,022	0,466 ***	-0,124	0,338 ***	-0,299	-0,311 ***
Incomplete secondary	0,118	-0,266 *	0,09	0,265 ***	-0,452 ***	-0,097	-0,002	-0,324 **	0,183	-0,008	0,229	-0,064	0,119	0,031	-0,159
Complete secondary	-0,156	-0,33 *	0,473 ***	0,507 ***	-0,258	-0,397 ***	0,01	-0,209	0,092	0,051	0,45 **	-0,193	0,286 **	-0,257	-0,279 **
Incomplete University	-0,041	-0,729 ***	0,662 ***	0,534 ***	-0,229	-0,479 ***	0,046	-0,498 **	0,234	-0,136	0,457	0,005	0,706 ***	-0,247	-0,749 ***
Complete University	0,133	-1,01 ***	0,697 **	0,938 ***	-0,345	-0,878 ***	-0,008	-0,05	0,013	-0,005	1,014 ***	-0,339	0,555 ***	-0,566	-0,537 ***
Number of children under 14 in hh.															
0 (omitted)															
1	-0,077	-0,262 **	0,301 ***	-0,187 **	-0,019	0,196 **	0,176 **	0,14	-0,236 ***	-0,117	0,102	0,091	-0,207 ***	-0,219	0,233 ***
2	-0,089	0,019	0,109	-0,055	0,157	-0,017	-0,13	-0,003	0,125	-0,028	0,1	-0,001	-0,419 ***	0,092	0,408 ***
3 or more	-0,028	0,15	-0,078	-0,304 **	0,175	0,239 *	-0,042	0,29 *	-0,101	-0,015	-0,055	0,035	-0,58 ***	0,084	0,573 ***
Number of elderly over 60 in hh.															
0 (omitted)															
1	-0,183	0,252 *	-0,006	0,038	0,041	-0,043	0,312 ***	-0,033	-0,292 ***	-0,032 ***	-0,026	0,031	-0,084	-0,191	0,094
2 or more	-0,958 ***	0,697 ***	0,38 *	0,291 *	0,022	-0,301 *	-0,086	0,372 *	-0,196	-0,549 ***	0,361	0,445 ***	-0,178	-0,553 *	0,253
Number of income earners in hh.	-0,12 **	-0,16 ***	0,268 ***	0,162 **	-0,354 ***	-0,023	-0,249 ***	-0,163 *	0,33 ***	-0,327	-0,02	0,337 ***	-0,071	-0,793 ***	0,193 ***
Constant	0,734	-4,181 ***	1,317	4,672 ***	-4,831 ***	-3,622 ***	0,269	-2,73 ***	0,16	0,044	-0,644	-0,55	1,742 ***	-5,363 ***	-1,433 **
Number obs.	1376	1376	1376	2140	2140	2140	2203	2203	2203	2552	2552	2552	2485	2485	2485
Log-likelihood	-919,54	-713,46	-755,37	-1384,5	-690,87	-1379,6	-1427,5	-877,18	-1401,9	-1680,3	-593,31	-1639,6	-1610,1	-324,97	-1576
LR chi2(3)	68,37	68	75,1	173,32	74,38	182,53	139,53	92,59	211,56	176,63	52,21	222,77	222,92	137,11	287,49
Pseudo R2	0,0358	0,0455	0,0474	0,0589	0,0511	0,062	0,0466	0,0501	0,0702	0,0499	0,0421	0,0636	0,0647	0,1742	0,0836

Standard errors omitted to save space; *=significant at the 10% prob. Level; **=significant at 5% ; ***=significant at 1%.

Table 10.c: Probits using 'Least Relative' definition of population groups.

	1991/1992			1993/1994			1994/1995			1998/1999			1999/2000		
	winner	**immob**	**loser**	**winner**	**immob**	**loser**	**winner**	**immob**	**loser**	**winner**	**immob**	**loser**	**winner**	**immob**	**loser**
Predicted initial log family income	0,09	0,50 **	-0,49 **	-0,86 ***	0,96 ***	0,56 ***	0,03	0,15	-0,10	0,13	-0,29	-0,04	-0,25 **	-0,56	0,28 **
Gender of highest earner	-0,34 ***	0,11	0,28 ***	-0,10	0,10	0,07	-0,04	0,16 *	-0,06	0,12	-0,26 **	-0,06	-0,09	0,56 *	0,08
Age of highest earner															
Less than 30 (omitted)															
[30,40[	0,05	-0,13	0,07	-0,19 *	0,09	0,15	-0,24 ***	0,21	0,15	-0,10	-0,05	0,11	-0,22 ***	2,36 ***	0,21 **
[40,50[	0,08	-0,22 *	0,10	-0,08	-0,05	0,10	-0,04	0,30 ***	-0,10	0,15 *	-0,14	-0,11	-0,08	1,68 **	0,06
[50,60[	-0,05	-0,36 ***	0,35 ***	0,05	0,01	-0,07	-0,09	0,46 ***	-0,14	0,08	-0,05	-0,07	0,02	2,42	-0,08
60 or more	0,26	-1,01 ***	0,52 ***	0,34 *	-1,00 ***	0,03	-0,36 **	0,20	0,29	0,25	-0,28	-0,18	-0,21	9,97	0,18
Occupational status of highest earner															
Satisfied' employee (omitted)															
'Unsatisfied' employee	-0,10	0,25 **	-0,09	0,00	0,12	-0,04	0,16 **	0,10	-0,21 ***	0,09	-0,03	-0,08	0,15 **		-0,14 *
Employer	-0,43 **	-0,11	0,56 ***	0,28 **	-0,68 ***	-0,07	-0,08	-0,41 **	0,27 **	-0,38 *	0,04	0,36 ***	-0,14		0,13
'Satisfied' Self-employed	-0,06	-0,07	0,11	-0,19 **	0,02	0,16 *	-0,04	-0,39 ***	0,22 **	-0,06	-0,14	0,09	0,01		-0,01
'Unsatisfied' Self-employed	-0,03	-0,40 *	0,32 *	-0,36 ***	0,19	0,30 ***	-0,26 **	-0,26	0,37 ***	-0,11	0,12	0,08	-0,19 *		0,20 *
Unemployed	-0,07	0,61	-0,39	-0,71 ***	1,22 ***	0,32	0,17	0,40	-0,40	0,24	-0,08	-0,23	-0,27	-1,08	0,16
Inactive/Discouraged	0,08	0,72 ***	-0,73 ***	-1,02 ***	1,80 ***	0,34	0,35	0,34	-0,59 **	0,24	0,20	-0,32 *	0,16	-1,19	-0,36
Level of schooling of highest earner															
No schooling/Incomp. Primary (omitted)															
Complete primary	0,04	-0,20 *	0,15	0,03	0,00	-0,02	-0,18 *	0,09	0,14	-0,01	0,55 ***	-0,14	0,26 ***	0,72	-0,32 ***
Incomplete secondary	0,09	-0,26 *	0,12	0,27 ***	-0,40 ***	-0,12	-0,02	-0,24 *	0,14	-0,03	0,44 **	-0,09	0,09	1,63 **	-0,17
Complete secondary	-0,10	-0,41 **	0,47 ***	0,55 ***	-0,45 **	-0,38 ***	0,01	-0,11	0,03	0,02	0,69 ***	-0,21	0,22 *	0,87	-0,32 ***
Incomplete University	0,02	-0,93 ***	0,69 ***	0,61 ***	-0,41 *	-0,49 ***	0,06	-0,41	0,13	-0,14	0,59 **	-0,01	0,65 ***	2,62 ***	-0,82 ***
Complete University	0,10	-1,00 ***	0,68 **	1,02 ***	-0,62 **	-0,87 ***	-0,03	0,19	-0,10	0,03	1,07 ***	-0,33	0,51 ***	1,01	-0,62 ***
Number of children under 14 in hh.															
0 (omitted)															
1	-0,08	-0,30 **	0,31 ***	-0,21 ***	0,08	0,18 **	0,16 **	0,16	-0,23 ***	-0,12	0,16	0,08	-0,23 ***	-0,82 *	0,25 ***
2	-0,13	0,05	0,13	-0,05	0,22	-0,04	-0,14	-0,02	0,14	0,02	-0,01	-0,01	-0,43 ***	-0,58	0,45 ***
3 or more	-0,02	0,08	-0,03	-0,33 **	0,26	0,24 *	-0,03	0,14	-0,03	0,02	-0,13	0,03	-0,59 ***	-0,36	0,62 ***
Number of elderly over 60 in hh.															
0 (omitted)															
1	-0,23 *	0,32 **	0,00	0,00	0,22 *	-0,07	0,33 ***	-0,07	-0,29 ***	-0,05	0,10	0,02	-0,12	-6,91	0,12
2 or more	-1,13 ***	0,99 ***	0,36 *	0,30 *	-0,01	-0,31 *	-0,06	0,34	-0,18	-0,52 ***	0,37	0,43 ***	-0,21	-7,13 ***	0,30 *
Number of income earners in hh.	-0,12 **	-0,16 ***	0,26 ***	0,16 **	-0,49 ***	0,00	-0,25 ***	-0,12	0,30 ***	-0,34 ***	-0,05	0,35 ***	-0,11 *	-2,10 ***	0,16 **
Constant	-0,05	-3,08 **	1,20	4,63 ***	-6,15 ***	-3,37 ***	0,10	-2,09	-0,01	-0,21	-0,38	-0,38	1,65 ***	-0,98	-1,81 ***
Number obs.	1376,00	1376,00	1376,00	2140,00	2140,00	2140,00	2203,00	2203,00	2203,00	2552,00	2552,00	2552,00	2485,00	1361,00	2485,00
Log-likelihood	-916,4	-666,7	-759,6	-1392,8	-628,9	-1380,4	-1436,1	-832,6	-1408,9	-1682,4	-510,4	-1640,9	-1612,7	-68.142	-1571,9
LR chi2(3)	71,78	83,83	74,83	165,21	71,07	183,91	129,26	95,63	204,19	172,80	52,76	223,41	219,36	159.49	298,43
Pseudo R2	0,04	0,06	0,05	0,06	0,05	0,06	0,04	0,05	0,07	0,05	0,05	0,06	0,06	0.5392	0,09

Standard errors omitted to save space; *=significant at the 10% prob. Level; **=significant at 5% ; ***=significant at 1%.