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INCOME DYNAMICS IN ARGENTINA DURING THE 1990's: 'MOBILES' DID CHANGE OVER TIME[1,2]

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1. Introduction

In this paper we seek to determine the principal observed socioeconomic factors correlated with household income dynamics in Argentina during the nineties. In other words, we want to identify who got ahead, who fell behind and who kept up economic position in Argentina, in order to determine if they were always the same type of individuals/households or if, on the contrary, their characteristics changed during the distressing 1990's. Such analysis is relevant since the rises and falls in income -or consumption- experienced by households are the most direct indicators available of who benefits how much from economic development.

Although there is a vast literature on income distribution analysis from a cross-sectional perspective, studies offering insights into the dynamics of income - or more generally, of economic well-being - and the factors associated with it, are still on the research agenda for many countries. Such work has been particularly delayed in developing countries, chiefly because of a lack of panel data surveys, which have only recently begun to be carried out in a more systematic way.[4]

Moreover, and again due to data restraints, even less is known about the possible *changes* in the dynamics of income over time. If mobility analysis requires at least two observations over time from the same household or

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[4] Among the studies that analyze the dynamics of economic well-being in developing countries see, for instance, Grootaert et al. (1997), Glewwe and Hall (1998) and Baulch and Hoddinot (2000).

individual to construct a panel, the study of changes of mobility over time is even more constraining, since it requires either consecutive simple panels (with two observations) or, more advantageously, a panel with more than two observations for every unit of analysis (household or individual).

Data constraints make the understanding of structural patterns of income dynamics a task as difficult to carry out as it is pressing, and this debate is as yet inconclusive. Some attempts based on cross-country studies have recently shed light on the topic (see in particular Fields et al., 2003a and 2003b). These studies seek regularities on the socioeconomic factors that drive income dynamics, looking at different countries at a point in time. Nevertheless, any "general" intuition we might be tempted to derive from cross-country studies would be partial and, in some cases, even misleading, since these are still one-shot pictures within each country's dynamics. In fact, income dynamics and its determinants may be volatile within each country– at least as volatile as the macroeconomic dynamics.

In view of this, we have tried to derive some structural patterns from the dynamics of household income using data from a single country, Argentina, at different time periods during the 1990's. Our aim is to investigate whether or not, within one country, structural patterns for the determinants of income dynamics exist over time. Cross-sectional income distributional issues for Argentina are already well-known for this time span (see inter alia, Gasparini, Marchionni and Sosa, 2002; Altimir and Beccaria, 2000 and 2001). A few papers have recently used similar data to analyze related questions, such as poverty transitions (see Cruces and Wodon, 2003a, 2003b), and earnings dynamics and employment transitions (see Cerimedo, 2003; Fields and Sanchez, 2004; Galiani and Hopenhayn, 2003; Gutierrez, 2004), but there is still a need to understand the behaviour of household income mobility and its correlates.

The approach taken in the present paper has been to analyze the relationship between income dynamics and its determinants over time, first in a univariate framework, to get an initial insight into the relevant variables, and then in a regression framework over the whole sample (using least squares) as well as by subgroups of population, according to their mobility experience (through logistic regressions). In this sense a distinction has been made between: the 'upwardly mobile', the 'immobile' and the 'downwardly mobile',

according to two possible definitions of mobility.[5] Special focus has been given to how initial economic status and subsequent income change are related, in an effort to understand if the individuals enjoying the most favourable household income changes are those with worse initial economic positions or those with better initial economic positions, and if the observed relationship has or has not been structural over the decade.

From our analysis of the dynamics of income mobility we find the following structural patterns. When we look at the whole sample and all mobility experiences are pooled together, only gender and certain age ranges of the highest earner, together with the fact of being unemployed in the initial period seem to have a stable pattern over time. The initial number of income earners is also (negatively) associated with income mobility. When the population is regrouped according to the type of mobility experienced, we also observe that university education protects against income losses, though is not necessarily linked to upward movements. Our results show that, contrary to what happens to income levels, very few time-invariant household characteristics seem to explain income mobility in the case of Argentina.

Finally, we find no stable pattern for the relationship between initial economic status (measured by predicted income) and subsequent income mobility, once we control for other variables. This evidence suggests that neither the regression towards the mean hypothesis (pro poor income mobility) nor the cumulative advantage (pro richer income mobility) should be taken for granted.

The paper is organized as follows. Section 2 describes the data used as well as variable definitions and methodological choices. Section 3 spots the household characteristics that determine income changes in a univariate framework. Section 4 analyses income mobility in a regression framework, describing the regression model and discussing the estimated results. Section 5 focuses on different subgroups of population, and identifies, through a nominal outcome models, if the group characteristics of those income 'upwardly mobile', 'immobile' and 'downwardly mobile' individuals have, or have not changed over time. Section 6 concludes.

[5] Note that there is not a unified and widely accepted method of measuring income mobility, since there does not even exist a partial ordering which unambiguously ranks transformations of income distributions on the basis of their mobility content. See Fields, 2001.

2. Description of the Data and Methodological Choices

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 semester-rotating panel, where approximately 25% of households are renewed in each wave (October and May); implying that around 50% of the original sample should be kept after a completed year. However, this proportion is usually lower, since households that move and are not found at the moment of the re-interview are not traced but replaced. In our case, we also 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), and we dropped those individuals who had missing information about basic household characteristics used in the study.[6] Our final panel samples have been constructed using the October waves and represent around 32-38% 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 it invalidates the analysis of the panel data. Though we estimated longitudinal weights using a probit model for the probability of staying in the panels, available instruments that could be considered truly exogenous from the subsequent mobility regression analysis were scarce. Therefore, reported results do not include this additional correction for attrition, in an effort to reduce possible further multicollinearity in the mobility regression analysis.[7]

Since changes in the coding of the questionnaires (in particular, methodological changes in the household identifying variable in the early nineties) make it impossible to provide a complete one-year panel series for all the 1990's, as was initially contemplated, only five year-panels are being analysed, allowing us to study the dynamics of income movements during very

[6] Attrition due to such missing information on initial household characteristics represents less than 2% of the panel drops.

[7] In any case, results using longitudinal weights - estimated using individual characteristics such as gender, age, schooling and occupation and available from the authors upon request -, do not alter significantly the general conclusions of this paper.

different economic pictures. These panels correspond to the years 1991/1992, 1993/1994, 1994/1995, 1998/1999 and 1999/2000. In chronological order, the first two panels correspond to economic boom years (the first one, 1991/1992, captures the end of a hyperinflationary episode in the Argentinean economy).[8] The 1994/1995 year-panel captures the transitory recession due to the so-called Tequila crisis. The two last panels coincide with the starting years of a deep recession that lead to the crisis of early 2002.[9]

Though consumption is usually considered a better measure of economic well-being than income (see Deaton, 1997), the Argentinean EPH does not provide it, nor was it possible to distinguish between different types of income sources for all the years in which the survey was collected. Thus, for availability reasons, the welfare variable used in this work is total family income from all household members. Concerning the methodological choice on how to adjust for household size, for simplicity, we have chosen to report the per capita income adjustment.[10] Also, since the analysis of welfare basically concerns the well-being of individuals, the unit of analysis is the individual with non-negative family income in both years of the panel.

The mobility index used is the change in per capita family income, measured in logs, from one year to the next - a measure of directional income movement and one of the mobility indicators proposed by Fields (2001).[11] This measure captures only absolute one-year income movements. In section 5, we extend the analysis of the determinants of income mobility to a proposed

[8] The 1991/1992 year-panel presents a few problems that make us be more cautious when driving overall conclusions only from this period. Apart from the fact that it is capturing a hyperinflationary year, sample size is smaller than for subsequent panels, and percentages of non-response are higher.

[9] It is clear that labelling our panels as boom and recession years does not mean that the phase of the business cycle is the only relevant difference between those years.

[10] Robustness of our results to changes in the equivalence scales has been checked. In particular, with the commonly used INDEC adult equivalence scale, raised to the power of 0.8 (a theta parameter corresponding to low levels of economies of scale), conclusions are not altered.

[11] Fields (2001) classifies mobility indicators into six categories: (1) Time-(in)dependence, measuring the degree of (in)dependence of current income on past income; (2) Positional movement, asking how many quintiles, deciles, ranks, …, an individual moves; (3) Share movement, measuring changes in individuals' shares of total income; (4) Non-directional income movement, measuring income changes in absolute value; (5) Directional income movement, measuring changes in algebraic value; and (6) Mobility as an equalizer of longer term income, comparing income inequality over two or more periods with the initial period inequality level.

couple of "hybrid" mobility measures that will require the combination of both absolute and relative income changes, for individuals to be considered as mobile.[12]

In our analysis of the correlates of income mobility we will consider as potential explanatory variables the predicted level of initial income, available socio-economic characteristics of the highest earner in the household and some additional demographic characteristics of the household. In an effort to maximize the panels' sample size, we have focused on the highest earner within the household instead of the household head, since for a non-negligible number of families the reported head was not interviewed.[13] The included socio-economic characteristics of the highest earner are: gender (a binary variable taking on the value one for women and zero for men), age (grouped into five categories); education (grouped into six categories corresponding to primary, secondary and university education levels, whether completed or incomplete) and occupational status (either employee, employer, self-employed, unemployed or inactive/discouraged). The additional demographic characteristics of the household are the number of children under 14 years old living in the household, the number of individuals over 60 and the number of household income earners.

The focus on predicted income instead of reported income as an explanatory variable has to do with the effort to provide a measure of longer-term initial economic position. The common way to obtain the variable predicted base year log family income is by running a regression on consumption or expenditure data and, when not available (as in our case), by using information on household assets and characteristics. In order to maximize the number of observations and of available long-term income proxies, the regressions used to obtain the individual's predicted base year log family income level are run on the total survey samples corresponding to each initial year of our panels. These regressions add the following dwelling characteristics to the socio-economic and demographic characteristics of the household: a categorical variable reporting dwelling ownership (owned, rented or other); a binary variable capturing the household's level of comfort (taking

[12] According to the Fields (2001) classification presented above, the idea here is to require a combination of directional income movements and positional movements.

[13] Note that the reported head and the highest earner are the same individual in between 60 to 70% of the households, depending on the year-panel used.

value one if having current water, electricity and stone walls and value zero otherwise), a variable capturing the number of household members relative to the number of rooms, a binary variable capturing if the household has domestic service or not, and a dummy capturing the existence of child labour within the household (taking value one for those households with children from 8 to 15 earning positive income, and zero otherwise). The prediction equations are reported in Appendix (Table A1). Let us now turn to the empirical analysis.

3. Univariate Income Dynamics

The first step is to identify which are the household variables that are unconditionally related to income movements. In order to do so, we have generated mobility profiles that give the mean change in log per capita family income by household characteristics (that is, gender, age, schooling and occupation of the highest earner, number of children, elderly and income earners in the household and reported and predicted initial income quintiles). All variables proved to be highly statistically significant in univariate regressions (here omitted to conserve space), in at least four out of the five year-panels. Table 2 presents the results of the mobility profiles for our five one-year panels.

The initial period characteristics that present an unconditional mobility experience of consistent sign (either always positive or always negative) across the different one-year panels are: gender of the highest earner, occupational status of the highest earner, number of income earners in the household and both reported and predicted household initial income quintiles. More precisely, those individuals living in households where in the initial period the highest earner is a man, and either an employee, employer or self-employed, are on average experiencing negative income mobility. A similar negative unconditional mobility change is observed for those individuals living in households with at least one income earner, or situated in any initial income quintile (predicted or reported) above the first and lowest. Conversely, when the highest earner is initially a woman, an unemployed or an inactive individual, and when the household belongs to the poorest income quintile in the initial period, the observed mean log income change is consistently positive. Surprisingly, no consistent income change is found for age and schooling levels of the highest earner, or for the initial demographic

composition of the household (there is only a consistent univariate positive income change for those initially belonging to the category of less than 30 years old and a univariate negative income change for households with initially two or more elderly individuals).

In an effort to supplement the findings from the mobility profiles, figures 1a-1d present the density estimates of changes in log family income for the following representative subset of household characteristics: gender, education and occupation of the highest earner, as well as for initial income quintile.[14] We see that when we look at the whole distribution of income changes both by gender and education of the highest earner, they differ very little across population subgroups. If anything, when the highest earner in the household has received university education, density functions are generally less dispersed. It would seem as if university education could act as a shield against short term income movements.

Turning to occupational categories of highest earners, a higher variance is generally observed for the kernel densities of the unemployed category. There is a straightforward explanation for this effect: being ex-ante unemployed might imply being ex-post employed, and therefore, larger positive family income changes.[15]

Finally, it is by initial income quintile that we observe the largest differentiating factor: those in the poorest income quintiles are the ones experiencing higher positive income mobility. This result is usually found when looking at the relationship between initial income and short term income mobility (see Fields et al., 2003a). It is important to note that although income gains from one year to the next appear to be always higher for the poor, this is not incompatible with the fact of increasing income inequality (or poverty) from one year to the next found using the cross-sectional EPH surveys (see

[14] Kernel densities were estimated in STATA using the Epanechnikov kernel with the default data determined bandwidth. For better perceptiveness of graphs, the education variable has been grouped in primary, secondary and university education (whether complete or incomplete). Similarly, occupational categories have been regrouped in 3 categories: employed, unemployed and inactive/discouraged.

[15] The 1991/92 year-panel is the smallest in sample size (3223 observations), and only one percent of individuals live in households with an unemployed highest earner. The density estimate of income mobility for this category looks very similar to the theoretical Epanechnikov, suggesting that the number of observations might be too small to provide a good estimation for this year-panel.

Gasparini, Marchioni and Sosa Escudero, 2002; Altimir and Beccaria, 2000, 2001; Cruces and Wodon, 2003).

4. Multivariate Income Dynamics

To determine what the relevant variables are to determine income changes in a multivariate scheme, we need an econometric model. Our intention in this section is to see if there are any household characteristics that influence income dynamics structurally, independently from macroeconomic shocks. Fields et al. (2003b) analyzed the dynamics of household per capita income using data for four countries and looking for cross-country regularities. To analyze what happened in the case of Argentina during the nineties, we will build on a similar model of income dynamics.[16]

Let our dependent variable be the change in log per capita family income from time t-1 to t ($\Delta\log(y_i)$). The explanatory variables that we will include in the model are time-varying base year characteristics (X_{it-1}), time-invariant characteristics (Z_i) and predicted base year log family income, as a measure of longer-term initial economic position[17]:

$$\Delta \log(y_i) = F\left(X_{it-1}, Z_i, \log(\hat{y}_{it-1})\right) \quad (1)$$

To study the possibility of a structural relationship between income mobility and our explanatory variables, we first ran a single OLS regression pooling together all our year panels, where interactions of coefficients on X_{it-1}, Z_i and $\log(\hat{y}_{it-1})$ with time dummies were included. We then tested if the effect of our different covariates had changed over time. Results from the coefficient tests on the joint regression are summarized here[18]. Excluding three covariates

[16] Such type of model has also been used by Grootaert et al (1998) to study welfare changes in Cote d'Ivoire. See Jenkins (1999) for a review of different modeling possibilities for household income dynamics.

[17] Variables of changes in time-varying characteristics (ΔX) are usually included in this model. Though largely explicative of welfare changes, we have chosen to exclude them in order to avoid the endogeneity problems that would clearly arise. In our panels, the proportion of households that experience demographic changes lies between 17-19%, and the proportion of households that experience changes in the labor market condition of any of its members lies between 13-17%.

[18] Results from the joint regression are available from the authors upon request.

(gender of the highest earner, the 50 to 60 age range and the occupational category of 'unemployed'), the equality of coefficients over time was systematically rejected. It might well be that the coefficients of our covariates are not necessarily equal across every single year panel, but that their sign, if significant, is not altered over time. Therefore, the next step was to estimate five equations –corresponding to the different year-panels- of the form:

$$\Delta \log(y_i) = \log(y_{it}) - \log(y_{it-1}) = X_{it-1}\alpha + Z_i\beta + \tau \log(\hat{y}_{it-1}) + \mu_{it} \quad (2)$$

The intention is to analyze what the estimated coefficients α, β and τ look like at each year panel, and to see if any additional pattern arises.[19] Table 3 presents the OLS regression results for the five mobility equations (2).

Using predicted initial log family income as an indicator of base year economic position, OLS results show that this variable is significant in three out of five panels, and the sign of the effect is actually panel-dependent (negative in 1993/94 and 1998/99 but positive in 1994/95). Therefore, in the presence of other variables, initial economic position, measured by predicted income, is not always significant, and does not always affect subsequent income change in the same way.

Some other structural patterns that were already hinted at in the univariate and joint regression analyses still come up in this regression framework. For example, if the highest earner in the initial period is a woman, we always have larger positive income mobility. The size of this positive income change seems to have declined over time, though. The age dummies of the highest earner are not always significant, but when they are, their coefficients have a negative sign. This is particularly true for the age ranges '40 to 50' and '60 or more' years old, where at least three out of five panels present such significant negative signs. The reference category corresponds to individuals living in households with young highest earners (less than 30 years old). Standard Mincerian equations usually show a positive effect of age -a proxy variable for the level of experience- on wage levels. Though in this study we focus on household income and not on wages, which means that we cannot interpret our coefficients using standard labour theory, it is interesting to note that a positive

[19] Throughout this analysis we have assumed there is classical measurement error in the measures of income.

relationship between age and household income changes is not observed. In fact, the larger positive income changes would seem to take place when the highest earner is relatively young.

Turning to education level of the highest earner, we observe no clear pattern. Though education is usually observed to be an important positive determinant of income levels, it does not seem to play the same clear positive role on income changes. But of course in this section we are pooling all 'mobiles' together. In particular, a clearer pattern will arise for education in the next section, when we will separate all individuals into three categories: the 'upwardly mobile', the 'immobile' and the 'downwardly mobile'.

The effect of the occupational status of the highest earner on income mobility is not always significant, but when it is, there is sign consistency. In this sense, compared to the reference category of having a household highest earner that is an employee, the categories of initially unemployed or inactive/discouraged present a significant positive effect on the change in log family income in at least three panels. When the highest earner is self-employed, the sign of the relationship becomes negative. The category employer is only significant –with negative sign- in two out of five panels, that correspond to recession years (in 1994/95 and 1999/2000).

If we turn to other household characteristics, such as the initial number of children or elderly in the household, we see that they play no significant role in determining income changes (consistent significance levels are never observed in more than two panels). Among these, there is a consistent negative sign (significant in four out of five panels) if we look at the initial number of income earners, but this is not surprising. It is clear, for example, that the higher the number of income earners in the initial period, the higher is the probability that one member of the household can become subsequently unemployed, implying a household income loss.

Up to this point, we have analyzed income mobility within the whole sample. Though only a few structural patterns appear, it is important to note that this is partly due to the fact that our mobility index is a measure of absolute mobility, and therefore, very much affected by the economic cycle. In an effort to downplay this effect, to better capture possible structural effects, in the next section we divide our sample population into different groups, defined according to their mobility performance, but where the 'mobile' condition requires not just an absolute movement of income, but also a relative

movement. In other words, just having a positive (negative) change in per capita family income will not be enough to enter into the 'upwardly' (downwardly) mobile population group. In particular, and to check for the robustness of results, two population definitions will be envisaged: a "Mean-relative" and a "Distribution-relative" income mobility group definition.

5. Identification of 'Upwardly Mobile', 'Immobile' and 'Downwardly Mobile'

In this section, our aim is to extend the analysis of the determinants of income mobility to a proposed couple of "hybrid" mobility measures, that is, measures that will require the combination of both absolute and relative income changes, for individuals to be considered as mobile.[20] Therefore, we will classify the population into three different groups according to their mobility experience: the 'upwardly mobile', the 'downwardly mobile' and the 'immobile'. Such classification will be done according to two possible combinations of absolute and relative income movements.

5.1. Defining Population Groups

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

- "*Mean-Relative*" income mobility group definition:

- An individual i will be '*Upwardly Mobile*' *(UM)* if $\Delta Y_i>0$ and $\Delta Y_i>mean(\Delta Y)$.
- An individual i will be '*Downwardly Mobile*' *(DM)* if $\Delta Y_i<0$ and $\Delta Y_i<mean(\Delta Y)$.
- An individual i will be '*Immobile*' *(IM)*, otherwise.

[20] We thank Prof. G. Fields for suggesting us to use the term 'hybrid' for our mobility measures.

- "*Distribution-Relative*" income mobility group definition:
  - An individual *i* will be *UM* if $\Delta Y_i > 0$, $\Delta Y_i > mean(\Delta Y)$ and $D_{it+1} > D_{it}$.
  - An individual *i* will be *DM* if $\Delta Y_i < 0$, $\Delta Y_i < mean(\Delta Y)$ and $D_{it+1} < D_{it}$.
  - An individual *i* will be *IM*, otherwise.

The 'Mean-Relative' income mobility group definition requires income changes to be larger than the mean population change, to be included into a 'mobile' population group. Thus, in expansion periods, where many individuals get ahead, only those that gain more than the population mean should be considered as upwardly mobile, and in recession periods, only those losing more than the population mean should be considered as downwardly mobile. All those individuals whose family income changes are lower than the population mean will be included in an immobile category.

According to the `Distribution-Relative' income mobility group definition, an upwardly mobile would be an individual experiencing, not only a positive income shock larger than the mean population change, but also jumping to a higher income decile. Similarly, a downwardly mobile would be individual experiencing negative income shocks, worse than the mean population shocks, moving downwards in the decile ladder. Here, the immobile category will be a much larger group than the one in the 'Mean-Relative' mobility definition, since, by definition, it now includes all individuals within the diagonal of a decile transition matrix.

The equation to be estimated is similar to the one described in the previous section -equation (1)- but now, the dependent variable is categorical, taking values corresponding to the population groups described. The specific questions we now address are: other things equal, what household characteristics are correlated with becoming an upwardly mobile? And which are correlated with becoming a downwardly mobile? In other words, do different population groups always include the same kind of people, or can we actually establish different group characteristics depending on the type of economic shock suffered at each point in time?

5.2. Estimation Results

Our aim is to identify the correlates of these mobility population groups. For the 'Mean-relative' definition, a simple logit model was estimated, where

the dependent variable had only two possible values – upwardly or downwardly mobile (the immobile group was neglected since it represented less than 2% of the population in three of the panels). For the 'Distribution-relative' definition, since the three categories (upwardly mobile, downwardly mobile and immobile) were similarly represented in the data, a multinomial logistic regression was chosen[21]. The main conclusions of the paper are not altered across the two definitions, though some significance levels vary across definitions. For the sake of simplicity, we are only going to comment here on the results for the 'Distribution-relative' definition and only when contradictory results come up across the two definitions, will we mention the two of them (results for the 'Mean-relative' definition are included in the appendix).

Table 4 shows the coefficients, t-statistics and statistical significance levels for our multinomial logit models, where immobile were chosen as the reference category. Hence, the estimated coefficients reflect the effect of each explanatory variable on the likelihood of becoming an upwardly (or downwardly) mobile, relative to the possibility of remaining immobile.

Let us concentrate for the moment on the probability of becoming an upwardly mobile. The first thing we observe is that our indicator of initial economic position, that is, predicted log per capita family income, is not always significant (particularly related to becoming upwardly mobile), and when it is, there is not sign consistency over time. Thus, no evidence of a structural regression to the mean over the period appears from the multinomial logistic analysis, at least when an indicator of longer term economic position is used instead of reported initial income.

Being in a household with a female highest earner significantly increases the probability of becoming a mobile individual (both upwardly – in three panels- or downwardly –in two panels), relative to staying immobile. In the other panels, the variable is not significant. If we focus on the coefficients of the age category, we see that no clear pattern related to the probability of being a downwardly mobile in our multinomial logit model is observed. However,

[21] Another possibility could have been to estimate an ordered logit model. However, since our data did not satisfy the proportional odds assumption, and since we were reluctant to consider categories as ordered when the immobile group includes individuals who do not move from extreme deciles, even if they might have positive or negative mobility, the multinomial logit was finally chosen. In spite of the possible loss of efficiency through insignificant results, parameters should nevertheless be unbiased. See Mesnard (2002).

individuals living in households where the highest earner is older than the base age-category (less than 30), are less likely to be upwardly mobile. This is very similar to what we had found in the previous section.

Concerning the education level of the highest earner, in general we observe that having some university education (completed or incomplete) is significantly and negatively related with being downwardly mobile. . But university education presents an additional structural effect: living in a household where the highest earner has finished a university degree, is not only negatively related with the fact of being a downwardly mobile, but also with the fact of being an upwardly mobile (significance is found in 4 out of 5 panels in each case). Of course, around 60 % of individuals living in households with a university graduate highest earner are already in the highest quintile, and therefore considered as immobile according to the 'distribution-relative' income mobility classification. Looking at the simple logit estimations of the probability of being an upwardly mobile according to the 'mean-relative' definition, the dummy corresponding to complete university is only significant in two out of five panels (though in both cases the coefficient is positive). Therefore, what we could conclude from the results using both hybrid mobility concepts is that those living in a household with a highest earner that is a university graduate seem to be protected from falling down the income ladder, but not necessarily linked to upwards short term mobility.

The occupational category of the highest earner (where the reference category is the employee) has a couple of consistent effects across both hybrid mobility measures. First, those that live in households where the highest earner is self-employed usually have a significant positive probability of becoming downwardly mobile. If the highest earner is an employer, the coefficient on the probability of becoming upwardly mobile in the multinomial logit is negative. The fact that about 70-80% of employers (depending on the year-panel) are already in the upper quintiles might help explain how it is possible that households with an employer as highest earner can be more often immobile than those with an employee as highest earner.

If we turn to variables related to the structure of the household, we see that having children in the household, if significant, is positively related with both being upwardly or downwardly mobile. No relevant consistent results (across definitions and over time) are found for the presence of elderly in the household. On the contrary, the initial number of income earners shows a

significant positive effect on the probability of becoming a downwardly mobile, and a negative coefficient (in four out of five year-panels) on the probability of becoming an upwardly mobile.

6. Conclusions

This paper investigates the dynamics of income in Argentina during the nineties and identifies household characteristics that drive the changes in household log per capita income. By using five different one-year panels, corresponding to different GDP performances, we find that 'mobiles' did change over time.

Among the structural patterns of income mobility, we find that households in which the highest earner is a woman exhibit larger income gains. The initial number of income earners in the household is also found to play a structural role, though this is probably related to changes in the employment status of some household members, since the higher the initial number of income earners, the higher (lower) the probability of becoming downwardly (upwardly) mobile. University education protecting against income declines though not generally linked to upwards movements. Also, Age ranges increase the probability of suffering income losses for highest earners 40 or more years old. This result is important as it clearly identifies a vulnerable population group.

The initial number of income earners in the household is also found to play a structural role, though this is probably related to changes in the employment status of some household members, since the higher the initial number of income earners, the higher (lower) the probability of becoming downwardly (upwardly) mobile. Finally, we find that households in which the highest earner is a woman exhibit larger income gains. This might reflect again changes in employment status.

Concerning the controversial role of the initial income, we can deduce no stable pattern from the Argentinean case. Once we control for other correlates, the predicted initial income level is clearly a year-dependent result: the sign of the effect is negative in 1993/94 and 1998/99 but positive in 1994/95. And when we divide the sample into different groups, according to type of mobility, this variable is significantly negative for upwardly mobility in 1993/94 but positive in 1999/00. A slightly clearer pattern is found for downwardly mobility: initial income is positive in three panels (1993/94,

1998/99 and 1999/00) but negative in 1991/92. Altogether this evidence suggests that neither the regression towards the mean hypothesis (pro poor income mobility) nor the cumulative advantage (pro richer income mobility) should be taken for granted. Having found that the determinants of income changes *change* over time, we add a new concern to policy makers involved in income distribution issues.

As we are data constrained to one-year panel series, a caveat is in order: we are measuring short term income mobility and therefore one must be cautions interpreting our results. Incomes fluctuate in the short run and, as a consequence, a clear pattern is hard to be identified[22]. In addition, measurement error is likelier to bias the results in the short run. We think our results provide a good reason to generate panels covering longer periods.

Some priorities for future work are clear. Now that we know that the socio-economic factors determining income dynamics do change, it would be interesting to add a cross-country dimension by constructing different panels corresponding with different economic shocks in a wider sample of countries. Additionally, we know that income of rich households is hopelessly underestimated in the Latin American income surveys (see Székely and Hilgert, 1999). Techniques directed to fill this information gap, such as looking at income tax declarations (see Piketty, 2003) or comparing with national accounts (see Ravallion, 2001 and Banerjee and Piketty, 2005) are worth trying. Other priorities for research on this topic are beyond our scope but must be encouraged: the improvement and the generalization of comparable international longitudinal data, appropriate for the study of income dynamics.

[22] In a companion paper (Albornoz and Menendez, 2004), we analyse income volatility and find that this has increased during the nineties, especially for low-income households.

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Table 1. Comparison between Initial Cross Section Surveys and Year Panels

	Period 1991-1992		Period 1993-1994		Period 1994-1995		Period 1998-1999		Period 1999-2000	
	1991 survey	**Final panel**	**1993 survey**	**Final panel**	**1994 survey**	**Final panel**	**1998 survey**	**Final panel**	**1999 survey**	**Final panel**
Number of observations	9827	3223	10850	3654	10687	3761	11524	4268	11291	4071
Characteristics of household highest earner:										
Gender of highest earner										
% male	0.69	0.68	0.74	0.78	0.75	0.76	0.72	0.73	0.70	0.70
% female	0.31	0.32	0.26	0.22	0.25	0.24	0.28	0.27	0.30	0.30
Age of highest earner										
% Less than 30	0.20	0.19	0.18	0.16	0.17	0.15	0.17	0.16	0.18	0.19
% [30,40[	0.26	0.25	0.26	0.27	0.27	0.29	0.25	0.24	0.24	0.24
% [40,50[	0.25	0.27	0.26	0.27	0.25	0.27	0.26	0.28	0.26	0.27
% [50,60[	0.13	0.13	0.15	0.15	0.14	0.14	0.16	0.16	0.16	0.15
% 60 or more	0.16	0.16	0.16	0.15	0.16	0.15	0.17	0.16	0.16	0.15
Level of schooling of highest earner										
% None/incomp. Primary	0.15	0.16	0.14	0.15	0.12	0.13	0.13	0.13	0.12	0.12
% Complete primary	0.36	0.38	0.33	0.33	0.36	0.39	0.32	0.31	0.33	0.33
% Incomplete secondary	0.18	0.18	0.20	0.21	0.19	0.20	0.21	0.21	0.19	0.18
% Complete secondary	0.15	0.15	0.15	0.14	0.17	0.15	0.16	0.17	0.17	0.17
% Incomplete university	0.06	0.06	0.07	0.08	0.06	0.06	0.07	0.07	0.08	0.09
% Complete university	0.09	0.08	0.09	0.09	0.09	0.08	0.11	0.11	0.11	0.11
Occupational category of highest earner										
% Employee	0.59	0.62	0.57	0.59	0.57	0.58	0.60	0.62	0.60	0.60
% Employer	0.04	0.03	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04
% Self-employed	0.15	0.12	0.19	0.19	0.19	0.18	0.17	0.16	0.16	0.16
% Unemployed	0.01	0.01	0.03	0.03	0.04	0.04	0.04	0.03	0.05	0.05
% Inactive/discouraged	0.21	0.23	0.15	0.13	0.16	0.15	0.15	0.15	0.16	0.16

Table 1 (continued)

	Period 1991-1992		Period 1993-1994		Period 1994-1995		Period 1998-1999		Period 1999-2000	
	1991 survey	Final panel	1993 survey	Final panel	1994 survey	Final panel	1998 survey	Final panel	1999 survey	Final panel
Other household characteristics:										
Children under 14 in household										
None	0.37	0.35	0.41	0.39	0.40	0.39	0.42	0.43	0.42	0.41
1	0.19	0.19	0.20	0.21	0.21	0.21	0.22	0.22	0.22	0.23
2	0.20	0.21	0.19	0.20	0.19	0.19	0.17	0.19	0.18	0.17
3 or more	0.23	0.26	0.20	0.20	0.19	0.20	0.18	0.17	0.18	0.18
Elderly over 60 in household										
None	0.74	0.75	0.72	0.73	0.73	0.73	0.74	0.74	0.75	0.76
1	0.16	0.16	0.18	0.17	0.18	0.17	0.17	0.16	0.17	0.16
2	0.10	0.09	0.10	0.10	0.09	0.09	0.09	0.10	0.09	0.09
Household with domestic service	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01
Household property ststus										
%owned	0.78	0.81	0.80	0.83	0.80	0.82	0.77	0.79	0.79	0.85
% rented	0.12	0.10	0.12	0.09	0.13	0.10	0.14	0.12	0.14	0.10
% other	0.09	0.09	0.08	0.07	0.08	0.08	0.09	0.09	0.06	0.05
Household quality materials	0.93	0.93	0.93	0.94	0.93	0.91	0.95	0.95	0.95	0.96
Mean p.c. family income by quintiles										
1st quintile	32.72	30.78	58.72	60.40	59.52	58.70	44.83	46.11	40.79	40.30
2nd quintile	109.99	109.68	149.55	147.88	143.05	142.50	123.15	124.15	118.29	117.16
3rd quintile	173.52	174.24	233.09	231.07	224.77	225.69	203.76	205.57	201.78	201.02
4th quintile	271.50	272.14	359.27	358.86	348.71	349.49	343.74	345.13	331.74	333.75
5th quintile	707.36	692.26	823.40	824.94	839.34	838.17	901.82	927.39	838.83	801.68

Table 2. Mobility Profiles, Mean Change in Log Pc. Income

	1991-1992	1993-1994	1994-1995	1998-1999	1999-2000
Total sample	0.27	-0.03	-0.1	0	0.01
Gender of highest earner	***	***	***	***	***
% male	-0.19	-0.22	-0.23	-0.15	-0.13
% female	1.24	0.68	0.31	0.4	0.32
Age of highest earner	***	***	***		***
% Less than 30	0.57	0.2	0.1	0	0.14
% [30,40[	0.39	-0.07	-0.27	0.04	-0.08
% [40,50[	0.11	-0.09	-0.15	0.05	-0.09
% [50,60[	-0.03	-0.17	0.02	-0.11	0.02
% 60 or more	0.27	0.06	-0.02	-0.03	0.13
Level of schooling of highest earner	***	***	***		***
% None/incomp. Primary	0.53	0.22	0.14	-0.01	0.15
% Complete primary	0.22	-0.14	-0.29	-0.04	0.05
% Incomplete secondary	0.31	0.12	-0.09	0.06	-0.18
% Complete secondary	0.04	-0.03	0.16	-0.02	-0.04
% Incomplete university	0.72	-0.08	-0.24	0.11	-0.02
% Complete university	0.01	-0.32	-0.03	-0.02	0.12
Occupational category of highest earner	***	***	***	***	***
% Employee	-0.17	-0.15	-0.18	-0.13	-0.14
% Employer	-0.33	-0.61	-0.69	-0.34	-0.56
% Self-employed	-0.3	-0.32	-0.53	-0.24	-0.34
% Unemployed	1	1.05	0.33	0.87	0.19
% Inactive/discouraged	1.8	0.94	0.74	0.72	0.99
Children under 14 in household	*	***	***	**	
None	0.18	-0.08	-0.06	-0.04	-0.01
1	0.41	0.06	0.11	-0.07	0.03
2	0.23	0.11	-0.27	0.12	0.09
3 or more	0.32	-0.15	-0.26	0.04	-0.07
Elderly over 60 in household	***		**	*	**
None	0.31	-0.02	-0.12	0.04	0.02
1	0.26	0.03	0	-0.16	0.01
2	-0.02	-0.17	-0.18	-0.05	-0.12
Number of household income earners	***	***	***	***	***
None	4.23	4.72	3.99	3.88	3.97
1	-0.04	-0.08	-0.28	-0.09	-0.11
2	-0.2	-0.34	-0.24	-0.13	-0.26
3 or more	-0.25	-0.2	-0.36	-0.39	-0.35
Initial household income quintile	***	***	***	***	***
1st quintile	2.37	0.91	0.85	0.82	1.07
2nd quintile	-0.14	-0.04	-0.27	-0.02	-0.13
3rd quintile	-0.15	-0.09	-0.23	-0.28	-0.21
4th quintile	-0.4	-0.36	-0.32	-0.2	-0.28
5th quintile	-0.47	-0.54	-0.57	-0.36	-0.41
Initial predicted household income quintile	***	***	***	***	***
1st quintile	1.91	0.86	0.51	0.64	0.9
2nd quintile	-0.09	-0.1	-0.13	-0.02	-0.22
3rd quintile	-0.13	-0.26	-0.25	-0.15	-0.16
4th quintile	-0.23	-0.13	-0.39	-0.14	-0.19
5th quintile	-0.31	-0.5	-0.3	-0.28	-0.28

*= Jointly significant at the 10% prob. Level; **=significant at 5% ; ***=significant at 1%.

Figure 1.a. Kernel Density Estimates of Changes in Log Y

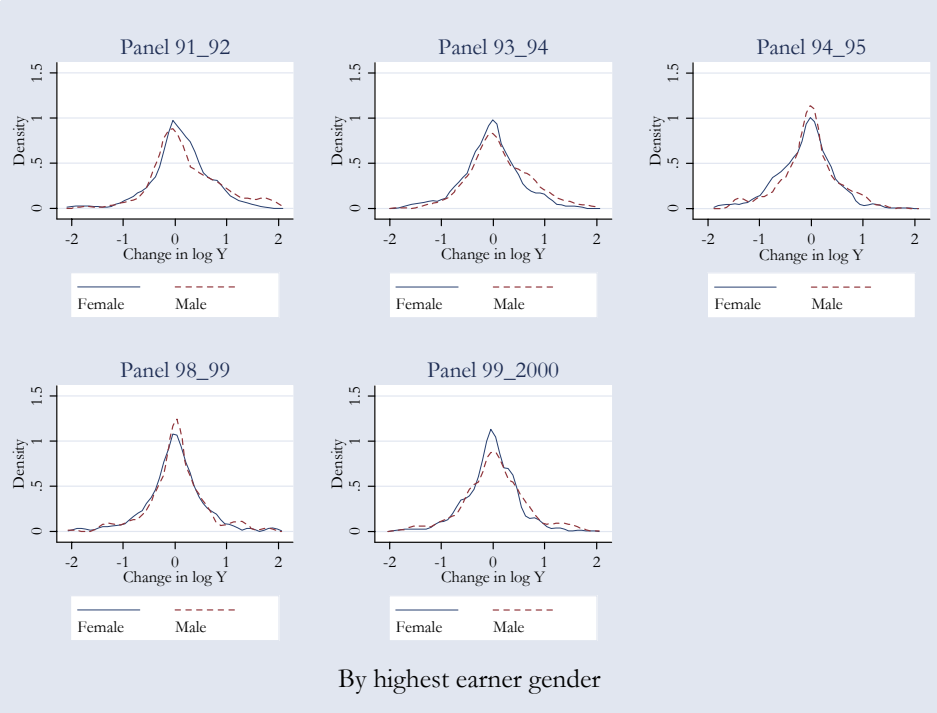


Figure 1.b. Kernel Density Estimates of Changes in Log Y

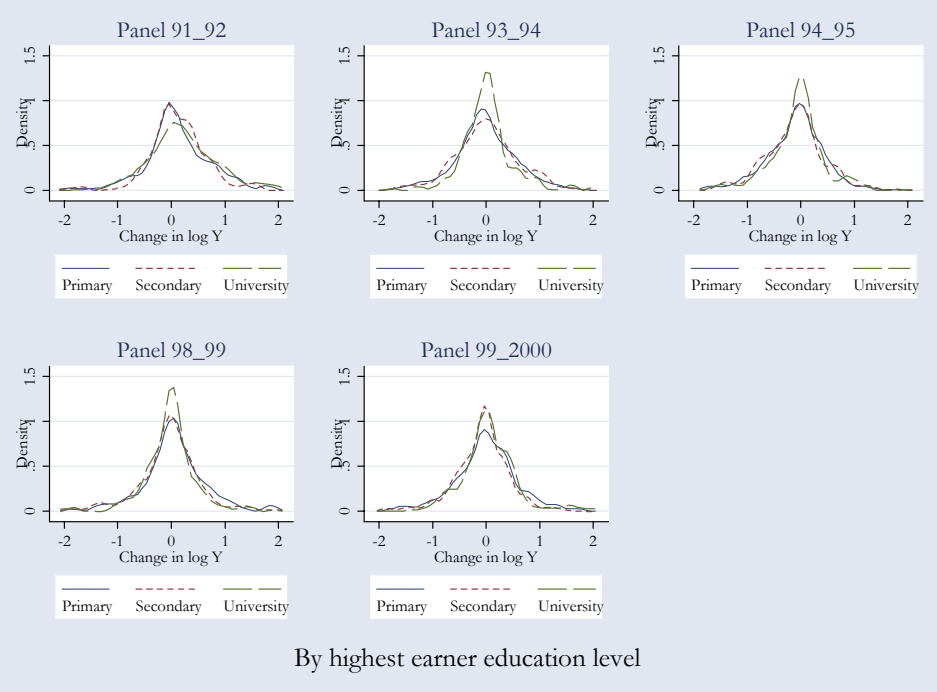
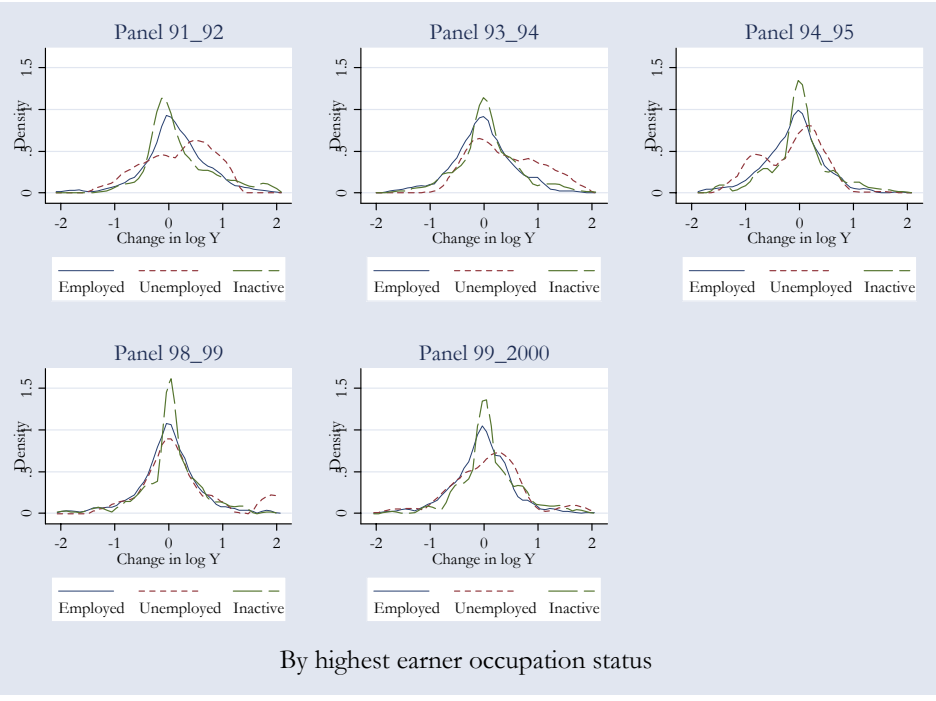
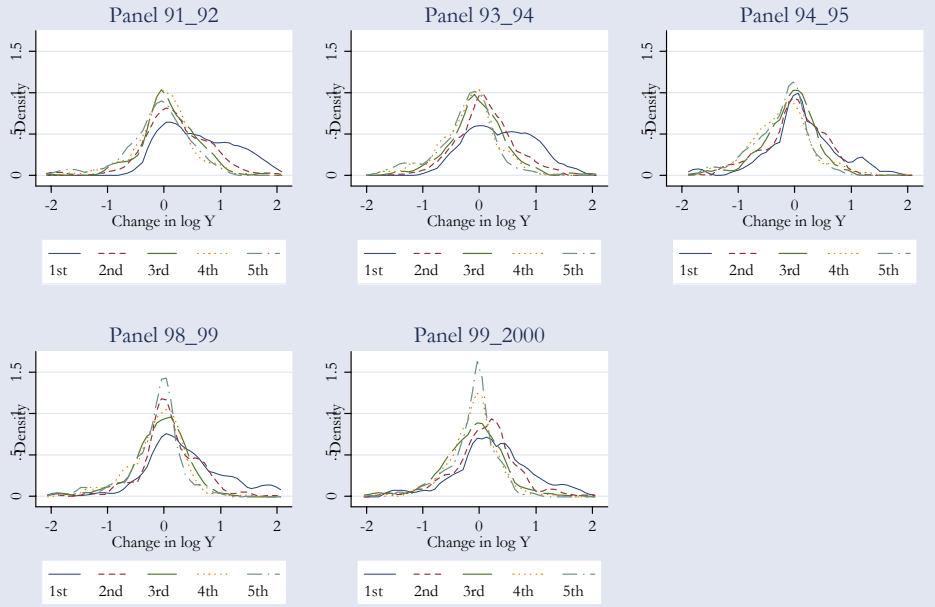


Figure 1.c. Kernel Density Estimates of Changes in Log Y



By highest earner occupation status

Figure 1.d. Kernel Density Estimates of Changes in Log Y



By initial household income quintile

Table 3. Least Squares Regression of Change in Log Family Income

	1991/1992	1993/1994	1994/1995	1998/1999	1999/2000
Predicted initial log family income	-0.111	-0.662***	0.347**	-0.265**	0.061
	(0.134)	(0.109)	(0.123)	(0.091)	(0.104)
Gender of highest earner	0.501***	0.327***	0.208**	0.229***	0.163**
	(0.096)	(0.080)	(0.067)	(0.058)	(0.059)
Age of highest earner					
Less than 30 (omitted)					
[30,40[	-0.054	0.076	-0.521***	-0.013	-0.371***
	(0.103)	(0.087)	(0.087)	(0.070)	(0.083)
[40,50[	-0.329***	-0.029	-0.295***	0.099	-0.378***
	(0.094)	(0.083)	(0.077)	(0.064)	(0.074)
[50,60[	-0.560***	0.026	-0.208*	0.028	-0.049
	(0.119)	(0.092)	(0.091)	(0.076)	(0.085)
60 or more	-1.397***	0.171	-1.640***	-0.520***	-1.272***
	(0.278)	(0.180)	(0.203)	(0.136)	(0.176)
Level of schooling of highest earner					
No schooling/Incomp. Primary (omitted)					
Complete primary	-0.386***	-0.164*	-0.323***	0.178**	-0.076
	(0.089)	(0.072)	(0.079)	(0.069)	(0.078)
Incomplete secondary	-0.017	0.185*	-0.181*	0.311***	-0.176
	(0.106)	(0.082)	(0.092)	(0.078)	(0.098)
Complete secondary	-0.484***	0.166	-0.031	0.310***	-0.003
	(0.125)	(0.102)	(0.113)	(0.093)	(0.109)
Incomplete University	0.043	0.297*	-0.576***	0.446***	0.061
	(0.161)	(0.134)	(0.169)	(0.126)	(0.137)
Complete University	-0.377*	0.332*	-0.395*	0.569***	0.165
	(0.190)	(0.150)	(0.171)	(0.145)	(0.158)
Occupational category of highest earner					
Employee (omitted)					
Employer	-0.048	0.036	-0.561***	0.068	-0.275*
	(0.182)	(0.110)	(0.119)	(0.112)	(0.120)
Self-employed	-0.003	-0.064	-0.341***	-0.159**	-0.154*
	(0.093)	(0.060)	(0.060)	(0.055)	(0.064)
Unemployed	0.655	0.222	0.890***	0.665***	0.366*
	(0.392)	(0.194)	(0.230)	(0.146)	(0.158)
Inactive/Discouraged	1.773***	0.245	1.801***	0.773***	1.748***
	(0.314)	(0.182)	(0.208)	(0.130)	(0.167)
Number of children under 14 in hh.					
0 (omitted)					
1	0.017	0.016	0.338***	-0.106	0.141
	(0.117)	(0.078)	(0.078)	(0.070)	(0.077)
2	-0.206	-0.163	0.182*	-0.015	0.144
	(0.130)	(0.092)	(0.091)	(0.086)	(0.088)
3 or more	-0.117	-0.605***	0.266*	-0.238*	-0.071
	(0.167)	(0.126)	(0.134)	(0.118)	(0.127)
Number of elderly over 60 in hh.					
0 (omitted)					
1	0.314**	-0.069	0.344***	-0.044	0.031
	(0.108)	(0.076)	(0.073)	(0.069)	(0.079)
2 or more	-0.141	-0.351**	0.105	0.188	-0.281*
	(0.151)	(0.111)	(0.107)	(0.097)	(0.112)
Number of income earners in hh.	-0.326***	0.041	-0.481***	-0.209***	-0.430***
	(0.074)	(0.055)	(0.063)	(0.045)	(0.059)
Constant	1.428*	3.389***	-0.856	1.399***	0.529
R-squared	0.314	0.193	0.171	0.158	0.196
Number obs.	3223	3654	3761	4268	4065

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

Table 4. Multinomial Logistic Regression

	1991/1992	1993/1994	1994/1995	1998/1999	1999/2000
	Downwardly mobiles				
Predicted initial family income	-0.625**	0.685**	0.116	0.526**	0.839***
	(0.221)	(0.226)	(0.243)	(0.188)	(0.197)
Gender of highest earner	-0.201	0.329*	-0.052	-0.226	0.239*
	(0.153)	(0.163)	(0.131)	(0.120)	(0.111)
Age of highest earner					
Less than 30 (omitted)					
[30,40[	0.483**	-0.028	0.215	0.085	-0.189
	(0.167)	(0.174)	(0.171)	(0.138)	(0.160)
[40,50[	0.373*	-0.122	0.210	0.109	-0.052
	(0.151)	(0.166)	(0.153)	(0.129)	(0.145)
[50,60[	0.571**	-0.016	-0.385*	0.066	-0.886***
	(0.184)	(0.182)	(0.177)	(0.152)	(0.165)
60 or more	2.234***	-0.481	-0.056	-0.368	-1.557***
	(0.454)	(0.363)	(0.400)	(0.276)	(0.336)
Level of schooling of highest earner					
No schooling/Incomp. Primary (omitted)					
Complete primary	0.100	0.440**	0.618***	-0.473***	0.110
	(0.141)	(0.138)	(0.160)	(0.143)	(0.145)
Incomplete secondary	-0.052	0.398*	0.639***	-0.606***	-0.422*
	(0.170)	(0.162)	(0.185)	(0.160)	(0.178)
Complete secondary	0.402*	-0.602**	0.100	-0.777***	-0.612**
	(0.197)	(0.197)	(0.226)	(0.191)	(0.202)
Incomplete University	0.153	-0.739**	0.394	-1.184***	-1.219***
	(0.262)	(0.259)	(0.329)	(0.256)	(0.254)
Complete University	-0.058	-1.248***	-1.057**	-2.061***	-2.014***
	(0.305)	(0.296)	(0.344)	(0.304)	(0.299)
Occupational category of highest earner					
Employee (omitted)					
Employer	0.264	-0.014	0.088	-0.156	-0.104
	(0.270)	(0.210)	(0.217)	(0.210)	(0.204)
Self-employed	-0.147	0.213	0.694***	0.300**	0.341**
	(0.139)	(0.111)	(0.116)	(0.107)	(0.116)
Unemployed	-0.891	0.670	-0.450	0.973**	1.424***
	(0.618)	(0.439)	(0.458)	(0.341)	(0.315)
Inactive/Discouraged	-2.191***	0.620	-0.008	0.692*	0.895**
	(0.519)	(0.378)	(0.417)	(0.272)	(0.324)
Number of children under 14 in hh.					
0 (omitted)					
1	-0.169	0.544***	0.328*	0.701***	0.557***
	(0.182)	(0.153)	(0.152)	(0.143)	(0.146)
2	0.198	0.696***	0.463**	0.327	0.200
	(0.209)	(0.185)	(0.178)	(0.175)	(0.163)
3 or more	-0.333	0.607*	-0.043	0.415	1.058***
	(0.270)	(0.247)	(0.263)	(0.242)	(0.239)
Number of elderly over 60 in hh.					
0 (omitted)					
1	-0.139	-0.139	-0.001	0.274*	0.415**
	(0.165)	(0.151)	(0.141)	(0.133)	(0.144)
2 or more	0.154	0.040	-0.237	-0.538**	0.320
	(0.229)	(0.212)	(0.206)	(0.195)	(0.204)
Number of income earners in hh.	0.555***	0.065	0.363**	0.209*	-0.093
	(0.128)	(0.112)	(0.124)	(0.092)	(0.111)
Constant	2.176*	-3.852***	-1.851	-2.916***	-3.949***
	(1.003)	(1.041)	(1.070)	(0.851)	(0.829)
LR chi-squared test	491.713	519.376	556.754	503.163	640.331
Log Likelihood	-3276.142	-3722.019	-3852.704	-4432.224	-4143.826
Number obs.	3223	3654	3761	4268	4065

Note: Immobiles are the reference group.
Absolute value of z-statistics in parentheses* significant at 10% level; ** significant at 5%; *** significant at 1%

Table 4 (continued)

	1991/1992	1993/1994	1994/1995	1998/1999	1999/2000
	Upwardly mobiles				
Predicted initial family income	0.076	-0.527*	0.272	0.057	0.411*
	(0.232)	(0.210)	(0.226)	(0.172)	(0.191)
Gender of highest earner	0.401*	0.380*	0.100	-0.041	0.338**
	(0.156)	(0.152)	(0.125)	(0.111)	(0.108)
Age of highest earner					
Less than 30 (omitted)					
[30,40[	-0.009	-0.141	-0.443**	-0.024	-1.040***
	(0.163)	(0.169)	(0.164)	(0.136)	(0.157)
[40,50[	0.134	-0.076	-0.017	0.413***	-0.598***
	(0.147)	(0.160)	(0.146)	(0.125)	(0.138)
[50,60[	-0.102	0.083	-0.454**	0.281	-0.963***
	(0.191)	(0.181)	(0.168)	(0.150)	(0.154)
60 or more	-0.036	0.311	-1.165**	0.191	-2.470***
	(0.474)	(0.350)	(0.377)	(0.266)	(0.332)
Level of schooling of highest earner					
No schooling/Incomp. Primary (omitted)					
Complete primary	-0.169	0.575***	0.060	-0.185	0.493***
	(0.145)	(0.140)	(0.141)	(0.136)	(0.145)
Incomplete secondary	0.275	0.770***	0.181	-0.305*	-0.381*
	(0.170)	(0.163)	(0.167)	(0.154)	(0.182)
Complete secondary	-0.329	0.367	-0.250	-0.278	-0.276
	(0.207)	(0.192)	(0.202)	(0.180)	(0.202)
Incomplete University	0.021	0.315	-0.513	-0.672**	-0.493
	(0.257)	(0.254)	(0.314)	(0.245)	(0.252)
Complete University	-0.654*	0.023	-1.237***	-1.086***	-0.841**
	(0.312)	(0.287)	(0.311)	(0.279)	(0.288)
Occupational category of highest earner					
Employee (omitted)					
Employer	-0.663*	0.328	-0.479*	-0.651**	-0.716**
	(0.311)	(0.221)	(0.237)	(0.244)	(0.254)
Self-employed	-0.236	-0.261*	0.146	-0.206	0.137
	(0.150)	(0.121)	(0.122)	(0.111)	(0.121)
Unemployed	0.079	0.268	0.074	1.039***	1.241***
	(0.615)	(0.387)	(0.416)	(0.297)	(0.300)
Inactive/Discouraged	0.412	-0.434	0.853*	0.245	1.472***
	(0.539)	(0.350)	(0.381)	(0.245)	(0.308)
Number of children under 14 in hh.					
0 (omitted)					
1	0.292	0.048	0.660***	0.253	0.400**
	(0.187)	(0.154)	(0.146)	(0.138)	(0.143)
2	0.719***	0.407*	0.595***	-0.038	-0.224
	(0.216)	(0.179)	(0.175)	(0.166)	(0.164)
3 or more	0.708*	-0.168	0.512*	0.055	0.423
	(0.275)	(0.245)	(0.250)	(0.228)	(0.237)
Number of elderly over 60 in hh.					
0 (omitted)					
1	0.295	0.205	0.387**	0.066	0.058
	(0.179)	(0.150)	(0.142)	(0.142)	(0.153)
2 or more	0.054	-0.352	0.377	-0.242	0.168
	(0.257)	(0.219)	(0.203)	(0.193)	(0.208)
Number of income earners in hh.	-0.414**	0.164	-0.353**	-0.205*	-0.430***
	(0.139)	(0.109)	(0.120)	(0.089)	(0.110)
Constant	-0.074	2.257*	-0.907	0.110	-0.793
	(1.047)	(0.958)	(0.998)	(0.780)	(0.797)
LR chi-squared test	491.713	519.376	556.754	503.163	640.331
Log Likelihood	-3276.142	-3722.019	-3852.704	-4432.224	-4143.826
Number obs.	3223	3654	3761	4268	4065

Note: Immobiles are the reference group.
Absolute value of z-statistics in parentheses* significant at 10% level; ** significant at 5%; *** significant at 1%

Table A1. Least Squares Regression of Predicted Log Family Pc. Income

	1991	1993	1994	1998	1999
Highest earner is a woman	-0.457***	-0.500***	-0.283***	-0.400***	-0.311***
	(0.024)	(0.022)	(0.023)	(0.022)	(0.022)
By age of highest earner (less than 30 omitted)					
[30,40[	0.289***	0.345***	0.341***	0.224***	0.350***
	(0.031)	(0.028)	(0.029)	(0.030)	(0.032)
[40,50[	0.121***	0.290***	0.180***	0.131***	0.261***
	(0.031)	(0.028)	(0.030)	(0.029)	(0.031)
[50,60[	0.260***	0.319***	0.232***	0.259***	0.244***
	(0.038)	(0.033)	(0.034)	(0.034)	(0.035)
60 or more	1.596***	1.172***	1.298***	0.945***	1.224***
	(0.051)	(0.046)	(0.048)	(0.047)	(0.050)
By level of schooling of highest earner (none/incomp. primary omitted)					
Complete primary	0.052	0.060*	0.182***	0.187***	0.078*
	(0.031)	(0.029)	(0.031)	(0.030)	(0.033)
Incomplete secondary	0.020	0.127***	0.237***	0.215***	0.320***
	(0.036)	(0.032)	(0.035)	(0.034)	(0.037)
Complete secondary	0.335***	0.386***	0.458***	0.473***	0.444***
	(0.038)	(0.035)	(0.036)	(0.036)	(0.039)
Incomplete University	0.393***	0.623***	0.844***	0.728***	0.643***
	(0.050)	(0.043)	(0.049)	(0.044)	(0.047)
Complete University	0.827***	0.858***	0.958***	1.143***	0.961***
	(0.045)	(0.039)	(0.043)	(0.040)	(0.043)
By occupational category of highest earner (employee omitted)					
Employer	0.512***	0.333***	0.411***	0.425***	0.326***
	(0.053)	(0.041)	(0.045)	(0.047)	(0.050)
Self-employed	-0.005	-0.045	0.032	-0.005	-0.117***
	(0.029)	(0.023)	(0.025)	(0.026)	(0.028)
Unemployed	-1.400***	-1.327***	-1.500***	-0.915***	-1.139***
	(0.094)	(0.055)	(0.050)	(0.046)	(0.047)
Inactive/Discouraged	-2.199***	-1.504***	-1.551***	-1.188***	-1.399***
	(0.036)	(0.036)	(0.038)	(0.035)	(0.037)
By number of children under 14 in household (none omitted)					
1	-0.428***	-0.283***	-0.286***	-0.378***	-0.328***
	(0.031)	(0.026)	(0.027)	(0.026)	(0.028)
2	-0.547***	-0.400***	-0.375***	-0.513***	-0.356***
	(0.032)	(0.029)	(0.029)	(0.030)	(0.032)
3 or more	-0.709***	-0.578***	-0.635***	-0.671***	-0.614***
	(0.036)	(0.033)	(0.035)	(0.035)	(0.038)
Child labor dummy	-0.503***	-0.425***	-0.240***	-0.403***	-0.442***
	(0.068)	(0.065)	(0.070)	(0.074)	(0.080)
By number of elderly over 60 in household (none omitted)					
1	-0.258***	-0.187***	-0.139***	-0.196***	-0.289***
	(0.036)	(0.029)	(0.030)	(0.032)	(0.033)
2 or more	-0.327***	-0.303***	-0.288***	-0.178***	-0.277***
	(0.047)	(0.042)	(0.043)	(0.045)	(0.048)
Number of household income earners	0.572***	0.472***	0.504***	0.475***	0.565***
	(0.012)	(0.010)	(0.011)	(0.010)	(0.011)
Household property status (owned omitted)					
Home rented	0.187***	0.286***	0.247***	0.253***	0.170***
	(0.031)	(0.028)	(0.028)	(0.027)	(0.028)
Home other than owned or rented	0.066	0.044	-0.018	-0.062	0.070
	(0.035)	(0.033)	(0.036)	(0.034)	(0.041)
Household made of quality material	-0.046	0.013	0.022	0.114**	0.137**
	(0.040)	(0.038)	(0.038)	(0.043)	(0.049)
Household crowded (members/rooms)	-0.214***	-0.199***	-0.161***	-0.229***	-0.259***
	(0.011)	(0.010)	(0.010)	(0.010)	(0.013)
Household with domestic service	0.419***	0.257**	-0.162	-0.023	0.295**
	(0.109)	(0.086)	(0.108)	(0.144)	(0.113)
R-squared	0.642	0.532	0.506	0.507	0.499
N	9662	10659	10550	11522	11279

*= Jointly significant at the 10% prob. Level; ** at 5% ; *** at 1%. Regression includes constant.
Source: Authors' calculations from EPH data.

Table A2. Logits Using 'Mean-Relative' Definition of Population Groups

	Upwardly mobiles				
	1991/1992	**1993/1994**	**1994/1995**	**1998/1999**	**1999/2000**
Predicted initial family income	0.379	-1.390***	0.305	-0.119	-0.311
	(0.205)	(0.184)	(0.219)	(0.153)	(0.160)
Gender of highest earner	0.440**	-0.236	0.169	0.229*	-0.069
	(0.138)	(0.128)	(0.114)	(0.098)	(0.091)
Age of highest earner					
Less than 30 (omitted)					
[30,40[	-0.310*	-0.168	-0.557***	-0.193	-0.444***
	(0.156)	(0.138)	(0.149)	(0.116)	(0.128)
[40,50[	-0.114	-0.012	-0.007	0.393***	-0.272*
	(0.142)	(0.132)	(0.129)	(0.107)	(0.113)
[50,60[	-0.647***	0.114	0.030	0.319*	-0.068
	(0.183)	(0.146)	(0.154)	(0.127)	(0.130)
60 or more	-1.705***	1.269***	-0.964**	0.188	-0.654*
	(0.425)	(0.294)	(0.358)	(0.229)	(0.277)
Level of schooling of highest earner					
No schooling/Incomp. Primary (omitted)					
Complete primary	-0.141	0.084	-0.256	0.177	0.372**
	(0.134)	(0.114)	(0.136)	(0.115)	(0.121)
Incomplete secondary	0.288	0.451***	-0.251	0.054	0.078
	(0.161)	(0.131)	(0.157)	(0.130)	(0.151)
Complete secondary	-0.469*	0.863***	-0.060	0.202	0.443**
	(0.188)	(0.163)	(0.196)	(0.156)	(0.170)
Incomplete University	0.117	1.026***	-0.381	-0.062	1.051***
	(0.247)	(0.216)	(0.289)	(0.211)	(0.214)
Complete University	-0.150	1.651***	0.064	0.334	1.024***
	(0.289)	(0.247)	(0.300)	(0.244)	(0.245)
Occupational category of highest earner					
Employee (omitted)					
Employer	-0.775**	0.258	-0.459*	-0.421*	-0.338
	(0.274)	(0.174)	(0.198)	(0.188)	(0.185)
Self-employed	-0.052	-0.470***	-0.576***	-0.388***	-0.259**
	(0.138)	(0.094)	(0.100)	(0.090)	(0.097)
Unemployed	0.791	-0.681*	0.473	0.069	-0.191
	(0.578)	(0.332)	(0.406)	(0.249)	(0.246)
Inactive/Discouraged	1.955***	-1.554***	0.949*	0.202	0.943***
	(0.482)	(0.305)	(0.373)	(0.221)	(0.266)
Number of children under 14 in hh.					
0 (omitted)					
1	0.410*	-0.500***	0.426**	-0.116	-0.261*
	(0.177)	(0.125)	(0.134)	(0.118)	(0.118)
2	0.386	-0.529***	0.102	-0.008	-0.513***
	(0.198)	(0.147)	(0.158)	(0.144)	(0.136)
3 or more	0.795**	-0.913***	0.441	-0.027	-0.773***
	(0.252)	(0.202)	(0.232)	(0.198)	(0.195)
Number of elderly over 60 in hh.					
0 (omitted)					
1	0.365*	0.115	0.546***	-0.100	-0.305*
	(0.160)	(0.119)	(0.124)	(0.115)	(0.123)
2 or more	-0.203	-0.512**	0.543**	0.336*	-0.425*
	(0.226)	(0.176)	(0.184)	(0.164)	(0.174)
Number of income earners in hh.	-0.813***	0.325***	-0.624***	-0.520***	-0.293**
	(0.125)	(0.090)	(0.112)	(0.076)	(0.091)
Constant	-0.951	6.796***	-0.504	1.390*	2.332***
	(0.927)	(0.845)	(0.962)	(0.690)	(0.671)
LR chi-squared test	437.378	334.562	287.099	391.192	414.502
Log Likelihood	-1586.145	-2323.49	-2083.181	-2724.446	-2573.86
Number obs.	2604	3601	3215	4226	4014

Absolute value of z-statistics in parentheses. * significant at 10% level; ** at 5% level; *** at 1% level

INCOME DYNAMICS IN ARGENTINA DURING THE 1990's: 'MOBILES' DID CHANGE OVER TIME

FACUNDO ALBORNOZ AND MARTA MENÉNDEZ

RESUMEN

Clasificación JEL: C23, C41, D31, I32.

Este artículo investiga la dinámica de ingresos familiares en el corto plazo durante los años 90. La educación universitaria, como forma de protección contra caídas de ingresos, ciertos rangos demográficos asociados con mayores pérdidas y hogares en los que el jefe de hogar es una mujer, con mayores ganancias relativas, son las únicas variables que explican la movilidad económica de manera persistente a través de los años. La relación entre la posición económica inicial y el subsecuente cambio en los ingresos es contingente y especifica al período investigado. Si acaso, la relación entre ingreso inicial y movilidad es positiva.

Palabras claves: Movilidad de ingresos, desigualdad, econometría de panel, Argentina.

SUMMARY

JEL Classification: C23, C41, D31, I32.

Using panel data from Argentina during the 1990's, this paper concludes that, in Argentina, income 'mobiles' did change over time. Among the household variables with a structural relation with income dynamics, we find university education, protecting from income declines though not necessarily linked to upward movements, certain age ranges of the highest earner positively associated with family income losses and households in which the highest earner is a woman exhibiting larger income gains. Interestingly, once we controlled for other correlates, no clear structural relationship was found between initial economic position and subsequent income change. If any, this relationship is positive.

Keywords: Income dynamics, mobility, panel data, Argentina.