

The Drivers of Income Mobility in Europe

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Abstract

In this paper we study intra-generational income mobility in European countries over the years shortly preceding the outburst of the global crisis. Income mobility plays a crucial role in shaping distributive patterns and is closely related to the capacity of a socio-economic system to provide equality of opportunities and the removal of social impediments. In this study we exploit the longitudinal structure of the EU-Silc database to provide a comprehensive overview of income mobility across 25 European countries, classified into six capitalistic models. After having descriptively analysed heterogeneity in income dynamics by means of alternative mobility measures, we identify the microeconomic drivers of household income mobility, focusing on the role of household and household head demographic, economic and job characteristics. Outcomes reveal that the levels and determinants of mobility differ remarkably in the various institutional models across Europe, particularly regarding demographic attributes, education and temporary/permanent/self-employment positions.

Keywords: Income mobility, Household structure, Institutional Settings, EU-Silc data

JEL Classification: D31, J10, O15

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1. Introduction

The study of mobility, compared to income inequality, has been much less developed so far; the growing attention gained on both the methodological and the empirical side has demonstrated its high potential in complementing more traditional approaches to the study of distributional dynamics. Income mobility allows investigating the movements of agents - individuals or households - along the income ladder and the demographic, structural and economic factors driving these changes. Longitudinal analysis allows therefore to identify the causes (not only the symptoms) of crucial issues like poverty and possible treatments to escape from disadvantaged positions.

This paper investigates short term intra-generational income mobility in Europe in the period preceding the outset of the global crisis. We employ here the EU-Silc longitudinal dataset for 25 European countries (23 EU members plus Iceland and Norway) with reference years 2004-2006, with the aims of providing (i) alternative measures of relative and absolute household income mobility; (ii) descriptive evidence of the demographic and economic features shaping different levels of mobility; and (iii) econometric evidence of its drivers in different institutional contexts. A first contribution of the paper lies in the fact that it is the first study providing such an extensive comparative approach across Europe, since available analyses have been limited so far to one or few countries or to wage/earnings mobility. A second major contribution of the paper is that we integrate in the analysis the importance of institutional factors, by classifying European countries into six different groups which reflect geographical proximity, but also correspond to different models of capitalism (in the wake of the Variety of Capitalism approach).

The paper proceeds as follows. In Section 2 we review the existing literature on income mobility, focusing on those contributions which provide evidence for European countries and explicitly consider the role of demographic, labour market and institutional factors. In Section 3 we describe the methodology used for the descriptive (3.1) and the econometric (3.2) analysis. The dataset, the definition of country grouping, the descriptive picture of income mobility in Europe and a decomposition analysis are presented in sections 4.1 to 4.4. In Section 5 we report and comment the estimates of the drivers of income mobility for the whole sample and the sub-groups of countries. Section 6 concludes.

2. Overview of Major Relevant Literature

The study of income mobility has developed remarkably in recent years but the literature is rather sparse and, differently from static inequality measurement, still lacks from a unified view on how to measure and compare the dynamics of income distribution (Fields 2007). Alternative indices reflect different underlying conceptual entities and methodological approaches. Besides the basic distinction into relative versus absolute mobility measures (see D'Agostino and Dardanoni 2009; Fields and Ok 1996), mobility indicators are also designed to capture the role of income movements in equalizing long-term inequality (Fields 2009). Other qualifications of mobility measures may reflect: (i) the adoption of a normative *versus* an axiomatic approach; (ii) the employment of single-stage versus two-stage indicators; (iii) the pros and cons of measuring mobility in terms of wages, incomes or consumption; and (iv) the use of individual versus household data. Interested readers can usefully refer to Fields (2007) and Ayala and Sastre (2008) for comprehensive and detailed discussions of all available methods. In Section 3.1 we will present the main methodological aspects of the measures used here.

As far as the determinants of income mobility are concerned, a variety of possible approaches do exist too. The literature has primarily emphasised the role of demographic factors such as age, gender of the individuals, as well as the size and demographic profile of the household (e.g., Shi et al. 2010). On the more strictly economic side, attention has been devoted to the evolution between and within income sources, in particular by focusing on physical and human capital endowments, labour market conditions and positions, initial income levels (e.g., Woolard and Klasen 2005). More recently, as happened for income inequality analysis (e.g., Checchi and Garcia-Penalosa 2010), institutional aspects started receiving explicit consideration too. Ayala and Sastre (2008) stress the importance of comparing income mobility for different labour market and redistributive institutional settings¹. Pavlopoulos et al. (2010) estimate the impact of labour market institutions and welfare regimes on wages mobility. They also classify the countries of their sample according to the features of capitalistic models (*a la* Esping-Andersen 1990), and find that institutional settings explain a remarkable part of cross-country differences in wage mobility (from 1994 to 2001). Sologon and O'Donoghue (2011) also consider the effects of labour market institutions in 14 EU countries in the same period, again limited to men earnings mobility. They find that higher employment protection is associated with lower mobility, whereas the opposite effect is produced by stronger unionisation and corporatism.

The scarcity of studies relating institutions to income mobility is of little surprise considering the scanty availability of analyses carried out under a comparative perspective, due to the significant challenge arising from the lack of homogenous longitudinal data sources. Among the few comparative analysis concerned with EU countries, Ayala and Sastre (2008) find that mobility over the period 1993-1997 was higher for Spain, Italy and UK compared to France and Germany, a result that is relatively robust to alternative mobility indices. Pavlopoulos et al. (2010) provide evidence of an inverse U-shaped pattern of wage mobility (1994-2001) for the different parts of the distribution in 15 Western EU members. They also reveal high stability of wages for continental Europe, as opposed to higher mobility for Mediterranean and Nordic countries. Sologon and O'Donoghue (2011) report, for the same period, highest earnings mobility for male workers in Denmark, Finland, Belgium and UK, and lowest levels for Portugal, Luxembourg and Germany. Aaberge et al. (2002) examine income mobility in the Scandinavian countries (compared to the US) during the '80s and find that relative income changes are primarily associated with changes in labour market positions and marital status. As for Eastern EU countries, Lokshin and Ravallion (2004) show that between 1992 and 1997 in Hungary income growth was higher for larger households, those living in urban areas, with higher education attainments and with access to land. Lower mobility was instead associated to households with more children and more elderly. The only study considering both Eastern and Western EU (21 countries for the period 2005-2007) is the report to the European Commission published in 2010 (GHK 2010). Very high levels of income mobility are reported for Eastern countries (especially Baltic states, Poland and Slovak Republic); high levels are also found for UK, Spain and Italy. Nordic countries experience the lowest values. As for the drivers of income mobility at the household level (based on the pooled sample), full-time employment increases incomes more than part-time; on the contrary, mobility decreases as household size and the number of children grow.

3. Analytical and Empirical Approach

¹ An interesting precedent is Burkhauser et al. (1997), who analyse earnings mobility in the US and Germany in the light of labour market institutions and report similar mobility patterns. Comparing the same two countries, Jenkins and Van Kerm (2006) confirm strong similarities but also highlight higher mobility (in terms of re-rankings) and a larger progressivity effect for Germany.

3.1 Descriptive Measures of Mobility

Among the alternative indexes proposed in the literature, we focus on four descriptive measures that represent the variety of possible approaches. We firstly consider the Fields and Ok (1999) index, which refers to absolute mobility, i.e., absolute changes in income between two periods, and is concerned with the dynamics of absolute individual wellbeing. Formally, it can be defined as:

$$FO_n(x, y) = \frac{1}{n} \sum_{i=1}^n |\ln x_i - \ln y_i| \quad (1)$$

where $x = \{x_1, x_2, \dots, x_n\}$ and $y = \{y_1, y_2, \dots, y_n\}$ are the initial and final distributions of income in ascending order, respectively, and n is the number of individuals. FO is a single-stage (i.e., it examines mobility using the entire distributions), axiomatic (i.e., characterized in terms of some axioms) measure. The use of logs has interesting implications in terms of social utility since, under an utilitarian approach to social welfare, FO corresponds to per capita aggregate change in the individual social utility levels experienced in the change from x to y . An interesting property of the index is its additive decomposability into two sources that can be interpreted as total social utility due to growth (K) and total social utility due to transfers (T), i.e., transferred from the L individuals whose income decreased in the two periods to those who gained:

$$FO_n(x, y) = K(x, y) + T(x, y) = \frac{1}{n} \sum_{i=1}^n (\ln x_i - \ln y_i) + \frac{2}{n} \sum_{i \in L} (\ln x_i - \ln y_i) \quad (2)$$

Fields and Ok (1999) also show that the index is subgroup consistent and can be decomposed as the weighted average of the mobility of the various population subgroups, the weight being proportional to the demographic importance of each group. With J groups the decomposition simply reads:

$$FO_n(x, y) = \sum_{j=1}^J C^j \cdot M^j = \sum_{j=1}^J \left(\frac{n^j}{n} \right) \left[\frac{1}{n^j} \sum_{i=1}^n |\ln x_i^j - \ln y_i^j| \right] \quad (3)$$

In view of the aims of the paper and of data availability, we carry out this decomposition by household (size and typology) and household head (age, gender, education) groups.

The second measure considered is the Chakravarty, Dutta and Weymark (1985) index, which is a welfarist measure of relative mobility defined as:

$$M_{CDW}(x, y) = \left\{ \frac{I(x) - I(z)}{1 - I(x)} \right\} \times 100 \quad (4)$$

where $z = \{(x_1 + y_1), (x_2 + y_2), \dots, (x_n + y_n)\}$ is a distribution of aggregate income for the whole population: $I(x)$ and $I(z)$ are relative inequality measures with certain properties associated to the distributions and related to a social welfare function defined as: $W(x) = \mu(x)[1 - I(x)]$. M_{CDW} is again a single-stage indicator, but offers the possibility of introducing normative valuations for the changes in social welfare produced by mobility, to be interpreted as the result of comparing the welfare associated to one income structure with another income structure in which the positions of the initial distribution are held constant. The welfarist connotation of the CDW index is reflected by the possibility of taking both positive and negative values, corresponding to increase/decrease of social welfare associated to income mobility. The CDW index can also be decomposed into two sources, associated to structural (S) and exchange (E) mobility (Ruiz-Castillo 2004):

$$M_{CDW}(x, y) = S(x, y) + E(x, y) = \left\{ \frac{I(x) - I(z_c)}{1 - I(x)} \right\} \times 100 + \left\{ \frac{I(z_c) - I(z)}{1 - I(x)} \right\} \times 100 \quad (5)$$

where $z_c = \{(x_1 + y_1^*), (x_2 + y_2^*), \dots, (x_n + y_n^*)\}$ and y^* is a hypothetical distribution which would result if the final distribution y was ordered as the initial distribution x . Structural mobility reflects the welfare effects of differences between the inequality of the initial and the final distribution, once all re-orderings have been eliminated: this would represent changes in the availability of positions in the upper part of the distribution. Exchange mobility reflects re-rankings associated to the transition between the initial and final distribution, therefore representing exchanges of positions in the income ladder.

The two remaining indicators used here are instead two-stage measures of relative mobility, since first individuals are allocated into income groups endogenously defined (e.g., deciles or quintiles of the observed distributions) and then mobility between these groups is examined by means of transition matrixes. Compared to single-stage measures, two-stage ones have the advantages of providing information on mobility in different parts of the distribution and of being more robust to measurement errors (Cowell and Schluter 1998). This comes at the cost of loss of information about income changes within the groups and about the absolute income change underlying a change in income groups (Fields and Ok 1999).

The first measure is the average jump of individuals across deciles, defined as:

$$\bar{J} = \frac{1}{n} \sum_{i=1}^n |d_{i,t} - d_{i,t-1}| \quad (6)$$

where $d_{i,t}$ and $d_{i,t-1}$ stand for deciles of the i individual at the end and at the beginning of the period considered, respectively.

A second two-stage measure of relative mobility can be simply calculated as the percentage of individuals standing in the same decile, as opposed to those getting ahead (upward relative mobility) and falling behind (downward mobility).

3.2 Empirical Model of the Drivers of Income Mobility

Starting from a simple model of the determinants of household incomes (Duncan 1983), Fields et al. (2003) derive a model of income changes driven by time invariant family characteristics (both observable and not observable), base year income, time variant characteristics in the base year and changes in time-variant characteristics. As shown by Woolard and Klasen (2005), this approach is consistent with a standard household utility maximisation model with adult equivalent household income as a measure of utility dependent on household assets and on the economic environment in which they are used to generate income.

Following Fields et al. (2003), the model of income changes used in the empirical analysis to study the determinants of absolute mobility can be formally derived starting from the following model of the determinants of the natural logarithm of household income:

$$\ln y_{i,t} = x'_{i,t} \beta_t + z'_i \gamma_t + \delta_i + \varepsilon_{i,t} \quad (7)$$

where x_{it} is a vector of time-varying household or household head characteristics, z_i is a vector of time-invariant characteristics, while δ_i represents unobservable time-invariant family characteristics and ε_{it} is a serially correlated error term such that:

$$\varepsilon_{it} = \rho\varepsilon_{it-1} + \eta_{it} \quad \text{and} \quad \delta_i = \lambda z_i + v_i$$

where η_{it} and v_i are *i.i.d.* across individuals and time, with zero mean and variances σ_μ^2 and σ_v^2 , respectively.

Subtracting $\rho \ln y_{i,t-1}$ from both sides of equation (7):

$$\ln y_{i,t} - \rho \ln y_{i,t-1} = x'_{i,t} \beta_t - \rho x'_{i,t-1} \beta_{t-1} + z'_i (\gamma_t - \rho \gamma_{t-1} + \lambda(1-\rho)) + (1-\rho)v_i + \eta_{i,t}$$

and after adding $(\rho-1)\ln y_{i,t-1}$ to both sides and adding and subtracting $x'_{i,t-1} \beta_t$ in the right hand side, we obtain:

$$\ln y_{i,t} - \ln y_{i,t-1} = \Delta x'_{i,t} \beta_t + x'_{i,t-1} \tilde{\beta}_t + z'_i \tilde{\gamma}_t + (\rho-1) \ln y_{i,t-1} + \omega_{i,t} \quad (8)$$

where:

$$\tilde{\beta}_t = \beta_t - \rho \beta_{t-1}$$

$$\tilde{\gamma}_t = \gamma_t - \rho \gamma_{t-1} + \lambda(1-\rho)$$

$$\omega_{i,t} = (1-\rho)v_i + \eta_{i,t}$$

Based on this approach, we estimate an empirical model of the form:

$$\Delta \ln y_i = \ln y_{i,t} - \ln y_{i,t-1} = f(\ln y_{i,t-1}, d_{i,t-1}, \Delta d_i, k_{i,t-1}, \Delta k_i, e_{i,t-1}, \Delta e_i) \quad (9)$$

where $y_{i,t}$ and $y_{i,t-1}$ are real adult equivalent income of household i (in initial and final year, respectively), d_i is the vector of demographic characteristics of the household i (*and/or* of its head), k_i represents physical and human assets of household i (*and/or* of its head) and e_i proxies the employment status/occupation of the head *and/or* of the other components (as a percentage of total household size) of household i . The Δ operator refers to the change between initial and final year of the corresponding time-varying variables. Clearly, all variables are assumed to contribute in explaining income in the final year, while initial year characteristics may also contribute in determining initial income levels and household characteristics in the final year.

The initial income variable is reported, not true income. When using reported income in the model, the consequent measurement error, i.e. when $\ln y_{i,t}^{rep} = \ln y_{i,t} + \mu_{i,t}$, may induce both a spurious negative correlation and attenuation bias (Fields at al. 2003). As a standard approach in this literature, we address this issue using instrumental variables (IV) techniques to predict initial incomes, employing an additional set of identifying instruments:

$$\ln y_{i,t-1} = x'_{i,t-1} \beta_{t-1} + z'_i \gamma_{t-1} + w'_{i,t-1} \psi_{t-1} + \theta_{i,t} \quad (10)$$

with $\theta_{i,t} = \omega_{t-1} + \mu_t - \mu_{t-1}$ and where w_{t-1} is a set of identifying variables selected on the basis of previous studies (Fields at al. 2003; Shi et al. 2010) and according to our availability of information (see Section 5 for details). The instrumental variables approach allows us also to control for the potential endogeneity bias due to the inclusion of initial income level among the regressors.

4. Data, Country Groups and Descriptive Measures of Mobility

4.1 Data

The dataset used for the empirical analysis is the 2007 release of the EU-Silc (European Union Statistics on Income and Living Conditions) longitudinal dataset and includes comparable panel data on individual and

households from 2004 to 2006². This time span allows the largest country coverage, as the inclusion of 2003 data would have limited the coverage to only 14 Western European countries and Estonia.

The use of this release deliberately excludes income data for 2007, available in the latest releases. The choice is motivated by the fact that the reference period for income data, which is normally the calendar year preceding the year of data collection (i.e., 2007 for the 2008 release), is different for Ireland and UK. For Ireland income refers to the 12 months prior to the interview, while for the United Kingdom it refers to the period around the date of interview (and is then converted to annual basis). For these two countries the use of the latest releases of the survey would have therefore implied considering incomes referred (at least partially) to 2008, when the effects of the financial crisis already started to hit the household sector. Moreover, as pointed out by Fondeville et al. (2010), approximately one fifth of EU-Silc households surveyed in 2008 reported to have experienced a major drop in income over the 12 months preceding the time of their interview, signalling the initial effects of the economic recession which unfolded extensively during 2008. For these reasons, limiting our analysis to the period 2004-2006, we rule out any possible bias due to the outburst of the global crisis³.

Our 2004-2006 database includes 8 Central and Eastern European countries (the Eastern EU members minus Romania and Bulgaria), 15 Western countries (all EU Western members except Germany and Malta) and 2 non-EU countries (Norway and Iceland). The sample is composed of 76,182 households after having dropped negative and zero incomes, trimmed 0.25% of lower incomes and 0.1% of top incomes at country level. Our income variable is household disposable equivalised income (OECD equivalence scale) in Euro PPP; the adoption of a household (rather than an individual) perspective provides a richer informative set if we assume the household as the pivotal dimension around which the decisions of the family components (e.g., parenthood, labour supply, education, etc.) are interdependently taken. In addition, it allows incorporating in the analysis all income sources, the effects of demographic changes and the redistributive processes taking place within the household. Table A1 in the Appendix summarizes the major characteristics of our sample, along with average incomes and income inequality levels in the period considered.

As for the variables used as drivers of income mobility, we use both information referred to the household head and to the household as a whole at the initial year and as changes over the period considered. As in the Longitudinal EU-Silc dataset the household head is not univocally defined⁴, we identify her/him as the breadwinner in the initial year and we include controls for his age (and its squared), gender, education level⁵ and work experience. Our major emphasis is however posed on the role of household-level demographic and economic characteristics, in view of the importance we attach to complementarities and interdependences taking place at the family level. Due to the short period covered, we focus primarily on initial household conditions, in order to identify the factors that represent traps or stepping stones for income mobility, whereas changes over the three years in key demographic and economic features are used as

² In particular, we use the EU-Silc Longitudinal UDB 2007 – revision 3 of March 2011.

³ For the period 2004-2006 a longitudinal sample can be also drawn from the Longitudinal 2008 EU-Silc. However, due to the four-years rotational panel structure, this would have remarkably reduced the number of household observations.

⁴ EU-Silc only allows identifying the household member responding to the questionnaire and the person responsible for the accommodation. In our view, both these definitions are unsatisfactory to correctly identify the household head.

⁵ Tertiary education includes levels 5 and 6 of the ISCED classification; Secondary education includes levels 3 and 4; primary education levels 0 to 2.

controls. We include in the model detailed information on family size and structure, as well as on labour market positions of the family members in 2004 (expressed as the share of components with a given attribute). In order to have a clearer interpretability of the variables we consider crucial for our aims (share of temporary, permanent and self-employment), we also include controls for a few crucial occupations (managers, professionals and technicians).

4.2 Definition of Country groups

Given our purpose to emphasize the role of institutional aspects, we have classified the 25 countries into six groups that resemble alternative models of capitalism. Our framework of reference is the Variety of Capitalism (VoC) approach initiated by the work of Hall and Soskice (2001), with the distinction between Liberal and Coordinated Market Economies. This milestone contribution has received various criticisms (see Morgan et al. 2005). The most relevant one to our purpose is that it produces a classification of countries (within the Coordinated model) which differ remarkably in other crucial institutional dimensions. The attempts by Coates (2000) and Amable (2003) address this criticism by extending the classification criteria to the intensity of product market regulation, wage and labour market institutions, finance and corporate governance models, extent and type of the welfare state, nature and attributes of the educational system. In view of these institutional dimensions and their strong complementarity, Amable (2003) elaborates five models of capitalism (Liberal Market, Asian, Continental European, Socio-Democratic, Mediterranean) in which he classifies 16 countries of Western Europe plus US, Australia, Korea and Japan at the end of the 90s. Within this stream of literature, various attempts have been made to classify the models of capitalism emerging in the former planned economies of Eastern and Central Europe (see Cerami and Subb 2011, for a survey). They unanimously agree that these countries still remarkably diverge from Western models, due to their relatively higher levels of state presence in the economy and dependence on foreign capital. The literature also tends to classify the Visegrad countries as dependent market economies (Hancké et al. 2007) or embedded neo-liberal models (Bohle and Greskovits 2007). Nölke and Vliegthart (2009) and Lane (2007) classify Slovenia along with the Visegrad group. The Baltic countries have also been identified as a separate neo-liberal model (Bohle and Greskovits 2007).

On the basis of Amable's models of capitalism, considering this literature on post-socialist states, and based on relevant institutional indicators available from OECD and Fraser Institute⁶ for the years of our analysis, we have classified the 25 EU-Silc countries into the following six clusters: Liberal Market Economies (Iceland, Ireland, UK); Continental European Economies (Austria, Belgium, France, Norway, the Netherlands, Luxembourg); Social-Democratic Countries (Denmark, Finland, Sweden); Mediterranean Countries (Cyprus, Spain, Greece, Italy, Portugal); Eastern European Countries (the Czech Republic, Hungary, Poland, Slovenia and Slovakia); and the Baltic Countries (Estonia, Lithuania, Latvia). Compared to Amable's allocation of Western European countries, on the basis of the information provided by recent Fraser and OECD indicators, we have classified Ireland (allocated by Amable, at the end of 90s, in the Continental type) and Iceland as Liberal market Economies and included Cyprus among the Mediterranean.

⁶ See <http://stats.oecd.org> and <http://www.fraserinstitute.org/> for the datasets, the definition of indicators and the major references. In particular we used here the Fraser indicators 1B (Government transfers and subsidies), 5A (Credit market regulation), 5B (Labour market regulation), 5C (Business regulation); and the OECD aggregate Product Market Regulation (PMR) index.

4.3 A Descriptive Comparative Picture of Income Mobility in Europe

The left panel of Figure 1 shows the FO measure and its decomposition into the growth and transfers components for the 25 countries of our sample. The highest levels of mobility in Western Europe are associated to the Liberal Economies and to some Mediterranean countries (Spain and Greece); the lowest are recorded for the Social Democracies. With the only exception of Slovenia, Eastern European and especially Baltic countries show higher mobility. With few exceptions (Hungary and Slovenia), the growth component is relatively more important in the former centrally planned economies, probably signalling their still under completion adjustment process.

If we contrast income mobility with initial income inequality and mean household disposable income (Figure 2), we obtain clear-cut positive and negative relationships, respectively. The evidence that higher initial inequality is associated with higher subsequent mobility is remarkable since the existing literature does not provide such a clear relationship (see Aaberge et al. 2002; Chen 2009). The negative relationship between mobility and initial mean income signals that the most mobile countries are those still lagging behind or, as in our case, completing their transition and adjustment patterns.

The CDW mobility index (computed using the Gini index, right panel of Figure 1) only partially confirms the ranking of countries emerged with the FO measure. The main differences in relative positions (Austria, the Czech Republic, Hungary) are obviously related to the definition of the CDW measure that includes information on welfare changes associated to changes in inequality patterns. This structural component emerges as relatively important in Lithuania, Austria and Poland only, with negative values (associated to an increase in inequality) scattered across all income groups. Conversely, the re-ranking component, as emerged in previous studies (e.g., Van Kerm 2004), is the major driver of mobility for all countries and supplies information consistent with the evidence of the axiomatic FO index.

Figure 1. Fields and Ok and Chakravarty–Dutta–Weymark Mobility Indices and their Decomposition

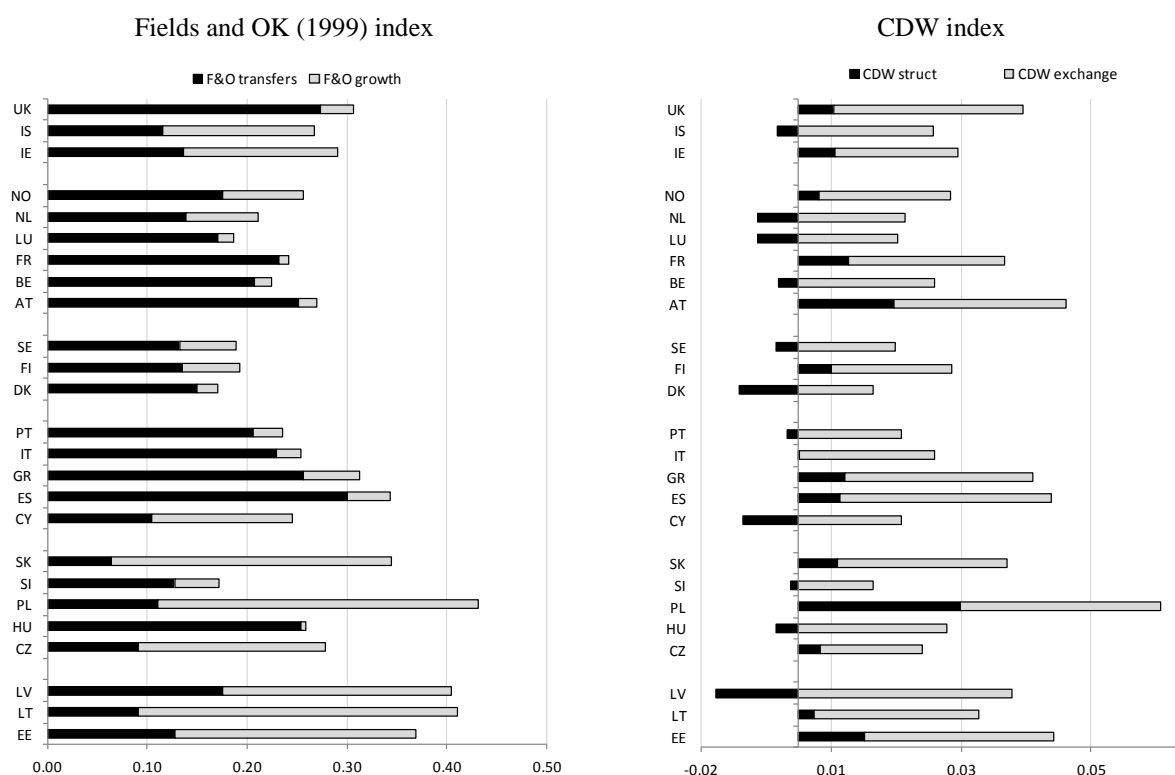
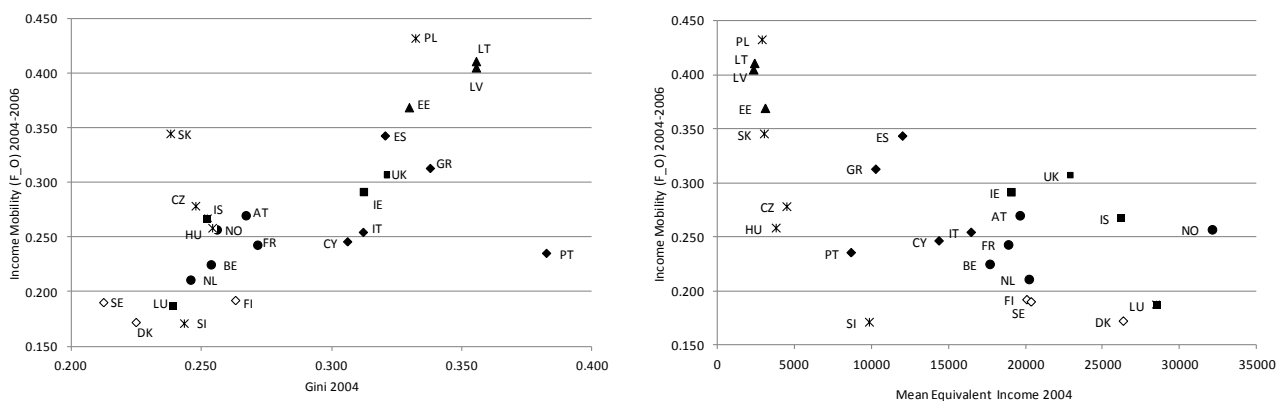
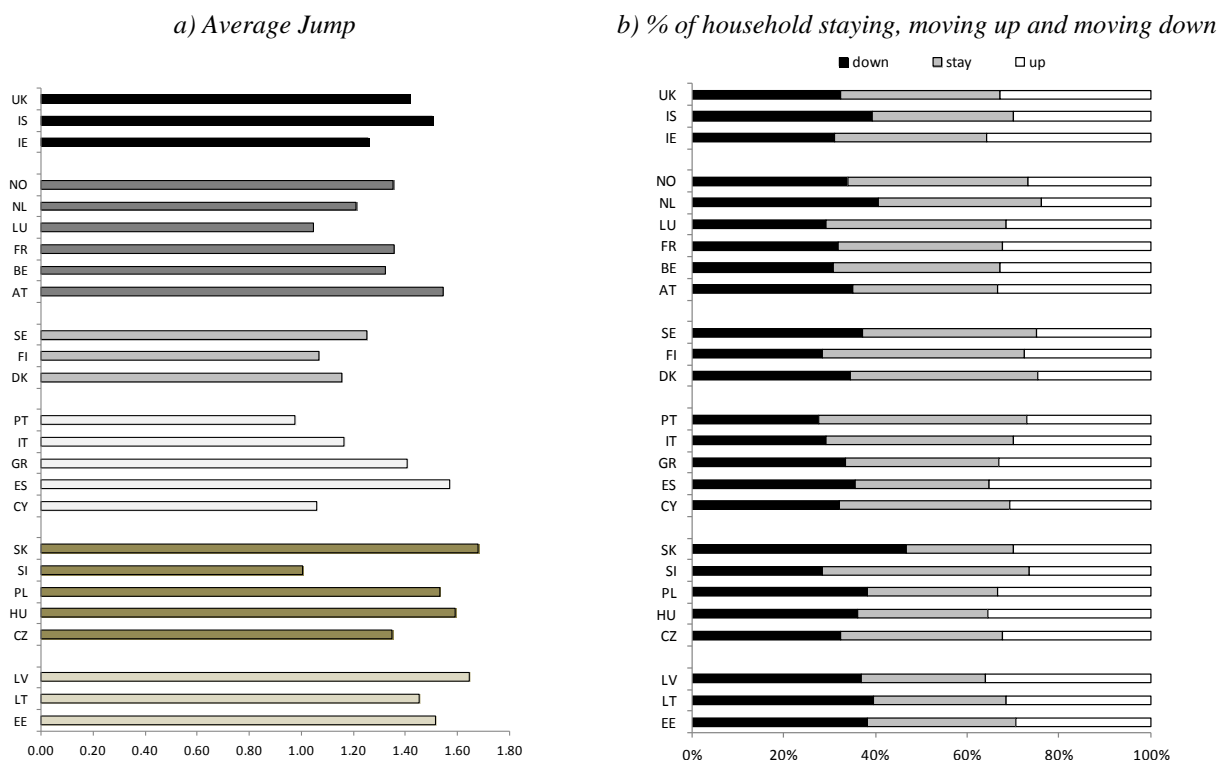


Figure 2. Income Mobility, Income Inequality and Average Income



As for the two-stage indices of relative mobility, the Average Jump across deciles (left panel of Figure 3) confirms, among the old EU members, higher values for Liberal and some Mediterranean countries (again Spain and Greece) and the lowest mobility in the Social Democracies. Remarkably high levels of mobility, with again the exception of Slovenia, are confirmed for the post-communist countries. Interesting complementary information can be derived from the right panel of Figure 3, in which the percentages of household staying in the same decile, getting ahead or falling behind are reported. High persistence is confirmed for Social Democracies, Slovenia and Portugal, whereas the opposite holds for the Eastern and the Baltic countries, characterised by both low persistence and a relatively high share of downward movements. A higher upward relative mobility emerges for the Liberal, the Continental and the remaining Mediterranean countries.

Figure 3. Two- stage Relative Income Mobility Measures (movements across deciles, 2004-2006)



Overall, more liberal models of capitalism (both the Anglo-Saxon countries and some post-socialist new-comers, especially in the Baltic area), besides the well known high inequality, show the highest levels of mobility. On the contrary, the Social-democratic capitalistic regime associates low mobility to low inequality. The countries classified in the Continental European model (and most of Eastern countries converging towards a neo-corporatist model) confirm their intermediate position, whereas the Mediterranean countries offer the more varied picture. In the next Section we take a step forward by descriptively analysing the heterogeneity of income mobility by population subgroups.

4.4 Decomposition of Mobility by Population Subgroups

The variables we have considered to define population subgroups are household size and type, household head age, gender and education. The choice of the categories of each subgroup (column 1 of Table 1) maximizes the informative content of the decomposition while keeping presentation and discussion to a reasonable size. Within a similar overall pattern, results highlight some country level differences but also many features common to the six country groups.

A first interesting piece of information comes from mobility of household size groups: for the bulk of Liberal Market Economies (Ireland and UK) a monotonic positive relationship emerges. The continental countries show a more complex picture, with the three largest ones (Austria, France, The Netherlands) showing also a positive relationship, which however reverses for the largest type (4+). A similar pattern is observed for the three Social Democracies. The Mediterranean countries are more diversified, with Spain and Italy showing a U-shaped pattern, Cyprus and Greece an inverted-U and Portugal a positive relationship, respectively. The Eastern and Baltic countries show one important common feature, i.e., a remarkable jump of mobility for the larger categories compared to the smaller ones (exceptions are again Slovenia and Hungary).

As far as household types are concerned, the basic features for Western EU countries are a greater mobility for household composed of adults only and a high stability over time of the incomes of older persons. This particularly holds for the three social democracies in which mobility of the “elderly” household type is about one third of the “adult” one. Intermediate or low levels of mobility are associated to the presence of children. A different picture emerges for Eastern and Baltic countries for which it is the second typology (adults with children) that has higher mobility in five cases out of eight.

The analysis of mobility levels for households headed by individuals of different ages confirms the basic prediction of prevalent economic theory, assigning higher levels of mobility to younger household heads. This might of course be related to their early stages of career and higher rates and various types of transition during their early phases of participation into the labour force. However, as in previous cases, exceptions exist: in the UK mobility is high in all three working age classes and especially for the third one (55-64); to a lesser extent this also holds for Ireland, France and some Mediterranean countries. Greece is a particularly interesting case in which household headed by middle-aged individuals have levels of mobility significantly higher than the ones headed by younger persons.

Table 1. Decomposition of Fields and Ok mobility index by household and household head characteristics

	Liberal						Continental												Social					
	IE		IS		UK		AT		BE		FR		NO		NL		LU		DK		FI		SE	
	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j
Household structure:																								
Number of components																								
1	0.270	15.2	0.260	23.8	0.289	27.1	0.270	30.6	0.234	33.8	0.240	25.3	0.229	27.0	0.224	37.9	0.181	25.3	0.153	29.8	0.191	33.6	0.132	22.0
2	0.274	24.3	0.249	24.6	0.309	36.5	0.269	29.2	0.206	30.0	0.251	34.5	0.221	27.1	0.183	27.7	0.182	28.0	0.173	35.5	0.177	32.0	0.178	32.0
3	0.294	17.6	0.289	19.4	0.313	15.3	0.308	20.1	0.230	15.4	0.256	17.5	0.298	16.0	0.239	14.3	0.194	18.6	0.199	13.9	0.226	16.0	0.272	20.0
4 +	0.310	42.9	0.275	32.2	0.327	21.2	0.244	20.1	0.237	20.7	0.225	22.7	0.316	29.9	0.215	20.1	0.194	28.1	0.186	20.8	0.200	18.4	0.240	26.0
Household Type																								
(1) Adults	0.328	42.8	0.273	39.2	0.326	51.4	0.309	52.4	0.252	53.4	0.261	49.0	0.309	58.0	0.238	60.5	0.211	51.2	0.202	58.7	0.240	66.4	0.234	57.8
(2) Adults with children	0.282	42.4	0.287	40.4	0.309	25.3	0.256	22.9	0.211	22.5	0.217	26.1	0.258	28.4	0.212	23.9	0.178	26.6	0.160	24.1	0.190	21.7	0.213	29.0
(3) Elderly with adults and/or children	0.285	5.7	0.312	5.8	0.329	6.9	0.234	9.0	0.233	6.6	0.318	8.4	0.228	4.0	0.187	3.9	0.192	8.7	0.206	5.5	0.171	5.0	0.174	3.9
(4) Elderly	0.215	9.1	0.203	14.6	0.252	16.4	0.217	15.6	0.179	17.5	0.212	16.5	0.131	9.7	0.136	11.7	0.140	13.6	0.101	11.6	0.069	6.8	0.076	9.3
Household head characteristics:																								
Age																								
<35	0.327	25.6	0.368	31.8	0.313	18.7	0.339	22.0	0.271	21.2	0.256	20.2	0.355	29.9	0.297	30.9	0.219	17.4	0.247	27.0	0.314	36.7	0.276	29.9
35-54	0.290	47.8	0.257	39.3	0.309	40.5	0.281	43.8	0.228	42.4	0.233	38.5	0.292	45.9	0.214	41.3	0.189	46.3	0.175	40.7	0.183	36.3	0.224	42.3
55 -64	0.308	14.7	0.215	11.6	0.361	21.1	0.256	15.0	0.231	16.1	0.266	19.4	0.195	12.6	0.176	13.7	0.201	17.0	0.160	18.0	0.194	18.0	0.167	16.2
64+	0.227	11.9	0.212	17.3	0.259	19.7	0.213	19.2	0.182	20.3	0.231	21.9	0.140	11.6	0.142	14.1	0.155	19.2	0.112	14.3	0.081	9.0	0.087	11.6
Gender																								
Female	0.276	30.1	0.281	38.2	0.340	38.8	0.282	33.8	0.228	34.0	0.238	35.7	0.245	32.8	0.216	32.2	0.179	26.5	0.168	38.1	0.185	38.7	0.184	36.6
Male	0.298	69.9	0.259	61.8	0.290	61.2	0.265	66.2	0.223	66.0	0.245	64.3	0.264	67.2	0.208	67.8	0.190	73.5	0.174	61.9	0.198	61.3	0.193	63.4
Education																								
Primary	0.291	47.2	0.260	32.7	0.321	31.1	0.256	19.6	0.206	34.5	0.238	36.1	0.188	12.1	0.171	27.7	0.174	34.6	0.176	32.5	0.140	21.2	0.121	19.0
Secondary	0.293	27.6	0.277	45.1	0.321	40.0	0.272	58.9	0.249	35.0	0.245	40.6	0.259	55.6	0.214	38.8	0.178	38.9	0.162	39.0	0.230	49.2	0.207	48.1
Tertiary	0.291	25.2	0.257	22.3	0.279	29.0	0.280	21.5	0.222	30.5	0.246	23.3	0.294	32.3	0.256	33.4	0.226	26.5	0.181	28.5	0.191	29.6	0.238	32.9

Table 1. Decomposition of Fields and Ok mobility index by household and household head characteristics (continued)

	Mediterranean										Eastern										Baltic					
	CY		ES		GR		IT		PT		CZ		HU		PL		SI		SK		EE		LT		LV	
	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j	M^j	C^j
Household structure:																										
Number of components																										
1	0.237	13.9	0.366	15.6	0.275	14.8	0.240	24.4	0.205	12.6	0.262	23.0	0.236	20.9	0.387	21.1	0.190	21.5	0.259	17.7	0.365	28.1	0.372	18.3	0.304	15.0
2	0.246	28.8	0.302	24.5	0.301	26.2	0.229	25.8	0.222	25.4	0.257	29.7	0.255	29.9	0.381	19.3	0.154	21.6	0.304	20.7	0.355	28.4	0.359	22.4	0.372	25.2
3	0.252	16.0	0.363	25.0	0.346	23.8	0.272	22.4	0.233	28.1	0.306	21.5	0.268	20.8	0.447	21.2	0.180	22.8	0.416	23.3	0.382	20.0	0.485	29.3	0.464	30.1
4 +	0.248	41.2	0.354	34.9	0.320	35.2	0.283	27.4	0.261	33.9	0.302	25.9	0.275	28.4	0.488	38.5	0.168	34.1	0.394	38.3	0.384	23.5	0.421	30.0	0.459	29.7
Household Type																										
(1) Adults	0.279	42.5	0.371	43.1	0.366	40.0	0.292	45.2	0.259	37.9	0.302	51.9	0.294	46.8	0.483	44.9	0.200	47.6	0.368	48.0	0.445	51.1	0.464	40.0	0.467	44.1
(2) Adults with children	0.229	32.6	0.367	29.1	0.309	26.1	0.287	27.8	0.245	31.8	0.312	27.5	0.286	30.5	0.487	30.7	0.168	27.0	0.412	28.3	0.396	25.8	0.464	35.9	0.494	32.5
(3) Elderly with adults and/or children	0.267	12.1	0.314	14.6	0.330	17.9	0.239	12.6	0.265	17.8	0.234	8.5	0.215	10.4	0.370	12.1	0.153	12.1	0.316	10.0	0.317	11.1	0.364	13.7	0.345	15.2
(4) Elderly	0.194	12.8	0.268	13.2	0.223	16.1	0.162	14.4	0.150	12.5	0.192	12.0	0.169	12.3	0.290	12.3	0.126	13.3	0.231	13.7	0.215	12.0	0.248	10.3	0.193	8.2
Household head characteristics:																										
Age																										
<35	0.254	16.3	0.404	22.0	0.314	13.3	0.306	17.2	0.242	19.8	0.333	23.9	0.291	22.1	0.514	20.7	0.207	19.8	0.390	18.4	0.513	30.1	0.469	23.4	0.464	25.5
35-54	0.236	42.6	0.340	40.9	0.340	43.3	0.280	44.6	0.268	46.1	0.307	43.4	0.292	46.1	0.487	45.2	0.179	48.5	0.395	48.6	0.386	37.3	0.469	46.1	0.478	46.2
55 -64	0.300	20.7	0.364	15.4	0.348	17.3	0.282	17.2	0.216	12.9	0.254	16.7	0.245	14.4	0.400	15.1	0.170	13.5	0.300	14.1	0.356	15.8	0.385	14.3	0.391	14.1
64+	0.221	20.4	0.294	21.7	0.260	26.1	0.179	21.0	0.188	21.1	0.199	15.9	0.184	17.4	0.314	19.0	0.132	18.2	0.260	18.9	0.236	16.8	0.280	16.2	0.241	14.3
Gender																										
Female	0.262	28.0	0.354	28.4	0.295	28.2	0.259	33.2	0.253	37.7	0.279	36.2	0.253	43.3	0.424	44.9	0.174	42.8	0.345	44.0	0.355	46.8	0.426	54.5	0.393	44.1
Male	0.241	72.0	0.339	71.6	0.320	71.8	0.252	66.9	0.224	62.3	0.278	63.8	0.262	56.7	0.439	55.1	0.170	57.2	0.345	56.0	0.383	53.2	0.394	45.5	0.416	55.9
Education																										
Primary	0.238	37.6	0.340	54.0	0.307	56.0	0.250	60.1	0.238	79.5	0.264	10.7	0.222	27.9	0.389	22.2	0.174	22.5	0.280	10.6	0.301	15.6	0.347	21.8	0.334	18.6
Secondary	0.257	35.6	0.376	20.0	0.341	29.2	0.257	27.4	0.214	9.4	0.275	72.6	0.267	53.5	0.452	62.5	0.169	62.1	0.354	70.5	0.390	54.2	0.461	55.0	0.442	61.2
Tertiary	0.245	26.9	0.328	26.0	0.285	14.8	0.269	12.6	0.230	11.1	0.306	16.7	0.306	18.6	0.427	15.3	0.177	15.4	0.359	18.8	0.377	30.2	0.380	23.2	0.385	20.2

Notes: groups are formed on the basis of households and household heads characteristics observed in the initial year.

For each Country M^j represents group j mobility, while $C^j = (M^j / M) \times P^j$ is group j relative contribution to mobility with M representing overall mobility, P^j is the percentage of sample in each group and $\sum_j C^j = 100$.

Interestingly enough, households headed by women show in the large majority of cases higher or comparable mobility to those with male counterpart, even though the contribution of the latter to overall mobility is much higher in view of a larger demographic weight. Notable exceptions are Ireland, Greece, Estonia and Latvia. Similarly, for the whole group of the Social Democracies, mobility of male-headed households is slightly higher. This interesting evidence is partly explainable in view of the definition of household head adopted, and will be discussed when presenting econometric evidence in the same direction (see Section 5).

Lastly, interesting and unexpected outcomes are revealed by the last decomposition (by education of the household head). While a tertiary education level assures higher mobility for all Continental Europe, this not the case for the Liberal countries, for which there are either small differences between strata (as in Ireland) or higher mobility is associated to lower education levels (Iceland and the UK). The evidence is more mixed for Social Democracies, with Finland presenting highest levels of mobility for household headed by individuals having attained secondary education at most. This is in fact the case for Mediterranean countries, with the exception of Italy and Portugal for which this attribute seems of little importance. Similar to the Western EU countries, for the continental Eastern Europe tertiary education assures higher mobility; in Baltic countries secondary education is instead more conducive to income volatility.

This preliminary empirical evidence provides a basis for the micro-econometric empirical model of the following Section, in which the effects of these variables on individual income growth are estimated (*coeteris paribus*) while controlling for other demographic and socio-economic characteristics.

5. The Drivers of Income Mobility in Europe

The model presented in equation (9) is firstly estimated on the pooled sample of 25 EU-Silc countries and then on the six country groups representing the geographical and institutional clusters discussed in Section 4.2.

Columns 1 and 2 of Table 2 show OLS estimates with inclusion of country dummies and country groups dummies, respectively. These results are contrasted (columns 3 and 4) with those obtained using a IV approach to address the measurement and endogeneity issues related to the inclusion of initial income level among the regressors. Based on Fields et al. (2003) and Woolard and Klasen (2005), in order to obtain the predicted initial income, we use as instruments additional household head and family characteristics, as well as cluster average incomes (by occupational status, education and job position) and assets ownership variables. As shown by the tests reported in the Table, the instruments have the desirable properties. The F-tests on the joint significance of instruments in the first stage regression reject the null hypothesis of weak instruments. Similarly, the test of overidentifying restrictions show that instruments, while significantly affecting initial household income, are uncorrelated with the error term of the second stage regression, i.e., they are exogenous to income mobility. The comparison between the two approaches in Table 1 reveals that most variables have similar effects in both models on income mobility, yet differences in the significance of some coefficients exist. Consistent with the available literature, the explanatory power of the models decreases with the IV approach, and this could be attributed to data limitations about household expenditures and ownership variables used as instruments for initial income (Fields et al. 2003; Shi et al. 2010). The Wu-Hausman test comparing the IV and OLS estimates points out significant differences between the two and addresses toward the IV approach.

The estimates reported in Table 2 show an overall consistency with *ex ante* expectations derived from the literature and the descriptive evidence. Firstly, we notice that the inclusion of dummies identifying country groups (instead of country dummies) reduce the explanatory power of the model only marginally. The strong statistical significance of the dummies confirms, on a pure empirical side, the validity of approaching cross-country variety of the drivers of mobility by grouping those countries that are *ex ante* expected to share relevant institutional features. This supports our choice of analysing mobility determinants by subsamples of countries, as in Table 3. The size of the country groups coefficients indicate that Liberal Market economies have the highest (average) income growth over 2004-2006. The hierarchy of country groups is then not fully consistent with the empirical evidence provided by the FO measure (growth component). This is clearly due to the fact that in the regression the role of additional significant factors is controlled for.

With respect to the household head characteristics, age is negatively related (although with decaying strength) to income mobility. This is consistent with the descriptive evidence and the results provided by the literature (e.g., Ayala and Sastre 2008), and can be motivated by the fact that younger workers have lower levels of tenure and more volatile job positions. Younger workers are also expected to be affected to a larger extent by shocks compared with older workers, which usually have a high attachment to the labour market and a better protection from the institutional framework (Sologon and O'Donoghue 2011). As suggested by Glewwe and Hall (1998), the result might also depend on the fact that the elderly tend to have more obsolete formal skills and poorer incentives to acquire new ones in order to adapt to changing circumstances and shocks. Lastly, age cohort effects could also play a role: within the generalised ageing pattern of EU countries, older workers are expected to suffer stronger competitive pressures which negatively impact on their incomes level and prospects (Brunello 2010).

The positive effect of female headed household seems in contrast with the overwhelming evidence of women discrimination and segregation into low incomes. However, the available empirical literature on mobility is not conclusive on this point, with most of studies providing no evidence of a significant negative relationship (the only exception is Woolard and Klasen 2005). Our result should also be interpreted in view of the identification of the household head as the breadwinner: in the relatively few cases (35%) in which the household head is a woman (i.e., she earns more than any other male household component), she is in a high earning occupations (manager or professional in over 50% of cases, compared to about 30% for males) and more components participate into the labour market. These factors positively reverberate on overall household mobility.

Secondary and tertiary education levels of the household head have the expected positive and increasing impact on income mobility. This is consistent with all existing evidence and clearly reflects better returns to human capital accumulation, greater adaptability to changing circumstances, ability to access better credit arrangement and in general to grasp new income opportunities more quickly (Schultz 1975). These results corroborate the idea of a second low-income trap (besides the one related to ageing) associated to poor education endowments since, while improving education assures higher income growth, those starting with low education face additional difficulties in moving upwards. A similar evidence is obtained for non-formalized knowledge endowments, approximated by experience.

Table 2. The drivers of income mobility: pooled sample

	OLS (1)	OLS (2)	IV (1)	IV (2)
<i>Initial year (2004) variables (HH)</i>				
Age	-0.0020*** (0.0007)	-0.0015** (0.0007)	-0.0088*** (0.0008)	-0.0080*** (0.0008)
Age ²	0.0000*** (0.0000)	0.0000*** (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)
Gender (female)	-0.0140*** (0.0028)	-0.0124*** (0.0029)	0.0232*** (0.0035)	0.0197*** (0.0034)
Secondary Education	0.0746*** (0.0034)	0.0780*** (0.0034)	0.0190*** (0.0043)	0.0314*** (0.0040)
Tertiary Education	0.1645*** (0.0045)	0.1324*** (0.0045)	0.0428*** (0.0070)	0.0496*** (0.0057)
Experience	0.0009*** (0.0001)	-0.0004*** (0.0001)	0.0009*** (0.0001)	0.0004*** (0.0001)
<i>Initial year (2004) variables (H)</i>				
ln equivalent income	-0.4233*** (0.0046)	-0.3403*** (0.0039)	-0.1129*** (0.0139)	-0.1201*** (0.0095)
Size	0.0183*** (0.0014)	0.0201*** (0.0014)	0.0149*** (0.0015)	0.0172*** (0.0015)
Household type 2 (A + C)	-0.0525*** (0.0043)	-0.0639*** (0.0045)	-0.0430*** (0.0047)	-0.0451*** (0.0048)
Household type 3 (E + A/C)	0.0017 (0.0047)	-0.0187*** (0.0048)	-0.0339*** (0.0052)	-0.0410*** (0.0051)
Household type 4 (E)	-0.0191*** (0.0060)	-0.0420*** (0.0062)	-0.0423*** (0.0065)	-0.0519*** (0.0064)
Permanent Workers (%)	0.2381*** (0.0065)	0.1465*** (0.0062)	0.0973*** (0.0092)	0.0807*** (0.0071)
Temporary Workers (%)	0.2172*** (0.0118)	0.1479*** (0.0120)	0.1828*** (0.0134)	0.1793*** (0.0132)
Self-Employed (%)	0.1320*** (0.0125)	0.0787*** (0.0126)	0.1154*** (0.0136)	0.1057*** (0.0136)
Unemployed (%)	-0.2830*** (0.0155)	-0.2777*** (0.0158)	-0.0927*** (0.0192)	-0.1101*** (0.0184)
Manager (%)	0.1873*** (0.0139)	0.1638*** (0.0140)	0.0266 (0.0164)	0.0332** (0.0155)
Professionals (%)	0.1299*** (0.0065)	0.1474*** (0.0067)	0.0310*** (0.0081)	0.0500*** (0.0079)
<i>Change (2004-2006) variables (H)</i>				
Δ size	0.0078** (0.0033)	0.0075** (0.0034)	0.0157*** (0.0036)	0.0139*** (0.0036)
Δ Children %	-0.0476*** (0.0165)	-0.0618*** (0.0171)	-0.1288*** (0.0186)	-0.1201*** (0.0184)
Δ Employed %	0.3259*** (0.0089)	0.3136*** (0.0092)	0.3307*** (0.0098)	0.3323*** (0.0099)
Δ Unemployed %	-0.1790*** (0.0157)	-0.1711*** (0.0162)	-0.0887*** (0.0180)	-0.0991*** (0.0178)
Δ Retired %	0.0784*** (0.0074)	0.0821*** (0.0076)	0.0843*** (0.0080)	0.0861*** (0.0081)
Continental countries	-	-0.0312*** (0.0057)	-	-0.0434*** (0.0060)
Mediterranean Countries	-	-0.1714*** (0.0061)	-	-0.0931*** (0.0071)
Social Democracies	-	-0.0172*** (0.0060)	-	-0.0279*** (0.0063)
Eastern Countries	-	-0.4335*** (0.0081)	-	-0.0988*** (0.0155)
Baltic Countries	-	-0.5530*** (0.0108)	-	-0.0983*** (0.0211)
Constant	4.2333*** (0.0475)	3.2826*** (0.0401)	1.2498*** (0.1242)	1.3505*** (0.0862)
Country Dummies	Yes	No	Yes	No
Test of joint sig. of country dummies (<i>F</i>)	312.96 [0.000]	833.98 [0.000]	2343.05 [0.000]	233.84 [0.000]
Wu-Hausman endogeneity test (<i>F</i>)	-	-	604.09 [0.000]	607.38 [0.000]
Test of joint sig. of instruments (<i>F</i>)	-	-	567.86 [0.000]	834.73 [0.000]
Test of overidentifying restrictions (χ^2)	-	-	17.20 (7) [0.408]	11.17 (7) [0.131]
N. observations	76182	76182	76182	76182
<i>R</i> ² (adjusted)	0.3093	0.2601	0.1966	0.1820

Notes: Robust standard errors in parentheses. ***, ** and * denote significance at the 1, 5 and 10 percent level, respectively.

As regards other demographic variables, household size increases mobility, as expected since we are controlling for different household typologies. Results unequivocally indicate that the presence of children curbs equivalent incomes growth. Similarly, household composed of elderly only have more stable incomes compared to those composed of adults only (the missing category).

The shares of household components in different employment status show the expected positive signs: temporary, permanent and self-employment positions in the initial year seem to exert significantly different impacts on mobility. Since these aspects are strictly related to the institutional environment, we will devote more attention to them when presenting the outcomes for the subsamples of countries. The share of unemployed negatively affects income prospects, whereas higher growth rates are associated to managerial and professional occupations. The change variables all have the expected effects. Lastly, it is worth noticing that the initial income level is negatively related to subsequent growth. This convergence trend is consistent with the available evidence (e.g., Fields et al. 2003) and indicates that neither a cumulative mechanism nor a low income trap is in place.

Estimates in Table 3 reveal that most of the relationships found in the pooled sample also hold for the sub-groups. However, some noteworthy distinguishing features emerge. A first interesting hint is that the negative link between the age of the household head and mobility does not hold for the Liberal Market Economies, in which also the experience indicator does not play any significant role. Jarvis and Jenkins (1998) found that in Britain the variability of income was higher for the elderly, a possible explanation being more likely measurement errors also due to the higher importance of investment incomes. Similarly, Zaidi et al. (2005) find income mobility of older people to be higher in Britain compared to Germany. Also, as shown by Brunello (2010), UK and to a smaller extent Ireland are the exceptions to a generalized age pattern in Western Europe in the years 2000s, where the size of the younger age groups declines and that of the older age group increases. This might mitigate the cohort effect for LMEs. The outcomes emerged here might be also related to both labour and product market distinctive features of these contexts, which on the one side provide relatively less asymmetry in protection of job positions between age cohorts, and on the other side favour high job mobility also across the whole working life (Booth et al. 1999; Dustmann and Pereira 2008). In such contexts, competitive labour markets, fast structural change favoured by strong product market competition, and low employment protection orient workers towards investing in general skills, as opposed to firm- or sector-specific ones (Amable and Ernst 2002). Firms, on the other side, face lower incentives to upgrade the skills levels of their workforce (Acemoglu and Pischke 1998). Consistently, vocational training is weak and the educational system also emphasises general skills, in order to favour flexibility and adaptability to market signals (Amable 2003). This implies that the economic potential associated to formal education attainments does not necessarily declines as age proceeds and that informal knowledge accumulated in previous jobs does not have the crucial role instead played in other contexts in which specific knowledge acquisition (and consequently seniority and career within the firm) is favoured by a consistent institutional mix of employment protection, labour market coordination, and social protection for specific

Table 3. The drivers of income mobility: country groups

	Liberal Countries	Continental Countries	Mediterranean Countries	Social Democracies	Eastern Countries	Baltic Countries
<i>Initial year (2004) variables (HH)</i>						
Age	-0.0049 (0.0030)	-0.0096*** (0.0017)	-0.0061*** (0.0019)	-0.0158*** (0.0023)	-0.0062*** (0.0015)	-0.0188*** (0.0036)
Age ²	0.0000 (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)	0.0002*** (0.0000)
Gender (female)	0.0165 (0.0134)	0.0219*** (0.0066)	0.0395*** (0.0080)	0.0136* (0.0083)	0.0225*** (0.0069)	0.0200 (0.0150)
Secondary Education	0.0374** (0.0151)	-0.0084 (0.0075)	0.0251** (0.0103)	0.0212** (0.0093)	0.0031 (0.0097)	0.0086 (0.0153)
Tertiary Education	0.0785*** (0.0228)	0.0205* (0.0115)	0.0476*** (0.0172)	0.0477*** (0.0120)	0.0152 (0.0194)	-0.0116 (0.0239)
Experience	0.0008 (0.0006)	0.0009*** (0.0002)	0.0012*** (0.0003)	0.0003 (0.0002)	0.0010*** (0.0003)	0.0026*** (0.0009)
<i>Initial year (2004) variables (H)</i>						
ln_equivalent income	-0.1328*** (0.0486)	-0.0346 (0.0257)	-0.0913*** (0.0266)	-0.1364*** (0.0285)	-0.0820** (0.0368)	-0.2208*** (0.0486)
Size	0.0159** (0.0063)	0.0065** (0.0031)	0.0150*** (0.0033)	0.0148*** (0.0047)	0.0145*** (0.0026)	0.0351*** (0.0061)
Household type 2 (A + C)	-0.0664*** (0.0181)	-0.0330*** (0.0093)	-0.0259** (0.0102)	-0.0675*** (0.0129)	-0.0480*** (0.0097)	-0.0247 (0.0208)
Household type 3 (E + A/C)	0.0120 (0.0246)	-0.0157 (0.0124)	-0.0198* (0.0108)	-0.0120 (0.0144)	-0.0561*** (0.0094)	-0.0424** (0.0208)
Household type 4 (E)	0.0018 (0.0294)	-0.0137 (0.0140)	-0.0345** (0.0149)	-0.0306* (0.0179)	-0.0438*** (0.0110)	-0.0668*** (0.0254)
Permanent Workers (%)	0.0684* (0.0379)	0.0515*** (0.0149)	0.1086*** (0.0249)	0.0897*** (0.0202)	0.0849*** (0.0198)	0.2189*** (0.0414)
Temporary Workers (%)	0.2122*** (0.0620)	0.1750*** (0.0250)	0.1500*** (0.0289)	0.1707*** (0.0405)	0.2150*** (0.0260)	0.3025*** (0.0676)
Self-Employed (%)	0.0376 (0.0483)	0.0431 (0.0340)	0.1233*** (0.0256)	0.0820*** (0.0276)	0.2421*** (0.0338)	0.1942*** (0.0716)
Unemployed (%)	0.0096 (0.0730)	-0.0928*** (0.0308)	-0.1511*** (0.0464)	-0.1216*** (0.0359)	-0.0428 (0.0452)	-0.0610 (0.0851)
Manager (%)	0.0111 (0.0385)	0.0057 (0.0277)	0.0421 (0.0412)	0.0196 (0.0427)	0.0329 (0.0471)	0.1145* (0.0649)
Professionals (%)	0.0267 (0.0285)	-0.0056 (0.0141)	0.0370** (0.0188)	0.0261 (0.0165)	0.0164 (0.0219)	0.1171*** (0.0418)
<i>Change (2004-2006) variables (H)</i>						
Δ size	0.0318*** (0.0111)	-0.0061 (0.0078)	0.0212*** (0.0079)	-0.0006 (0.0083)	0.0163** (0.0071)	0.0702*** (0.0141)
Δ Children %	-0.2866*** (0.0705)	-0.1575*** (0.0327)	-0.1607*** (0.0451)	-0.2603*** (0.0385)	-0.0331 (0.0426)	0.0894 (0.0712)
Δ Employed %	0.3493*** (0.0317)	0.1833*** (0.0181)	0.3943*** (0.0228)	0.2428*** (0.0246)	0.3790*** (0.0207)	0.5814*** (0.0434)
Δ Unemployed %	-0.2392*** (0.0714)	-0.0348 (0.0313)	-0.0198 (0.0418)	-0.1103*** (0.0351)	-0.1527*** (0.0376)	-0.0660 (0.0836)
Δ Retired %	-0.0242 (0.0264)	0.0740*** (0.0144)	0.1409*** (0.0164)	0.0582*** (0.0194)	0.0660*** (0.0171)	0.1974*** (0.0430)
Constant	1.3671*** (0.4317)	0.6772*** (0.2414)	0.8330*** (0.2130)	1.7750*** (0.2474)	0.9641*** (0.2776)	2.1416*** (0.3730)
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Test of joint sig. of country dummies (<i>F</i>)	103.31 [0.000]	144.15 [0.000]	126.16 [0.000]	23.02 [0.000]	1063.48 [0.000]	53.98 [0.000]
Wu-Hausman endogeneity test (<i>F</i>)	48.25 [0.000]	314.66 [0.000]	158.16 [0.000]	37.07 [0.000]	185.76 [0.000]	42.64 [0.000]
Test of joint sig. of instruments (<i>F</i>)	57.44 [0.000]	226.27 [0.000]	143.51 [0.000]	119.41 [0.000]	80.75 [0.000]	44.26 [0.000]
Test of overidentifying restrictions (χ^2)	11.74 (7) [0.110]	5.80 (6) [0.446]	7.06 (7) [0.422]	3.94 (7) [0.786]	12.11 (8) [0.146]	9.97 (8) [0.267]
N. observations	5695	19866	19281	7590	18458	5292
R^2 (adjusted)	0.1823	0.0676	0.1234	0.1867	0.2278	0.2710

Notes: Robust standard errors in parentheses. ***, ** and * denote significance at the 1, 5 and 10 percent level, respectively.

skills (see Amable 2003, pp. 108-113, Table 3.3)⁷. Interestingly, also for the group of Social Democracies the experience of the household head does not play a significant role. As regards the gender effect, female-headed households confirm higher income mobility in all contexts but LME and Baltic countries, in which the coefficient of the gender variable is not significant.

As for education, the evidence confirms that tertiary levels allow grasping better income growth opportunities in Western Europe, where also a secondary education provides advantages compared to the lowest levels. Education does not emerge as a driver of income mobility in formerly planned economies. This is not necessarily in contrast with evidence of returns to education relatively high in these countries (e.g., OECD 2008), as higher education could assure high income levels but not further income growth once the high position along the income ladder is acquired. However, it should be noted that the effect of education is strongly captured in our models for Eastern and Baltic countries by the variables describing job positions⁸. In addition, other factors such as the high variability of education premia across the new member states (Flabbi et al. 2008) and a labour demand significantly driven by foreign firms often in search of cheap and low-skilled labour (Perugini et al. 2010), might have contributed to shape statistically insignificant coefficients. In any case, due to the crucial importance of human capital, this outcome deserves further attention in future research.

The coefficients of the household taxonomy also confirm (with the exception of the Baltic group) a generalised negative impact of the presence of children in the household, compared to the first typology (only adults). Also, the presence of elderly (type 3) is associated to lower mobility in Mediterranean, Eastern and Baltic countries only and this is clearly related to the provision of care services for the elderly guaranteed by alternative welfare models, also as a result of cultural diversities. There is a tendency of classifying the less and more family-oriented European societies according to a North-South cut reflecting the degree of support expected from family members versus institutional help. On the axis there are Scandinavian countries and the Netherlands on one side and the southern Europe on the opposite one, with the continental Europe being a mixture (Viitanen 2007). It is well-known and documented that, in contexts more reliant on informal services and in the scarcity of public or community-based elderly care provisions, the presence of older age components poses a burden on the household and significantly affect labour market participation and careers (see, e.g., Ettner 1996). In the case of southern Europe, the slow development of labour market arrangements which enhance the possibility of concealing family and work necessities (such as part-time employment) also plays a role. Although the empirical evidence on this topic in formerly planned economies is scanty, the existing literature tends to describe a context quite similar to southern Europe, with a strong traditional role of the family and relatively low provisions of public care services of acceptable quality (European Commission 2009).

⁷ As Amable explains, this is typically the case for Continental countries in which the accumulation of specific skills is encouraged by strong bargaining centralization and coordination (favouring the definition of useful specific skills), high levels of social protection (allowing protection of specific-skills investments), and supportive active market policies (especially re-training schemes). In the Southern European model the emphasis on specific skills is instead driven by the persistence and structural features of industrial specialization (small firms, traditional sectors) and high employment protection for permanent workers.

⁸ In Eastern and Baltic countries managers and professionals represent 88% of the tertiary educated, as opposed to 82% in Western Europe. Over 57 % of managers in East/ Baltic groups have tertiary education, as opposed to 41% in the West. The share of managers with secondary and tertiary education climbs to 99.5% and *only* 82.1%, respectively.

As far as the effects of job characteristics are concerned, Table 3 reveals that growing shares of members employed in both temporary and permanent positions increase income mobility, as expected considering that this effect is measured against the omitted category of being out of the labour force and non retired. The size of the coefficients also shows that higher shares of temporary workers assure more mobility compared to permanent positions. This outcome is also expected, due to higher stability of earnings associated to permanent jobs. A notable exception is represented by the Mediterranean countries for which the two variables do not have a statistically significant different impact (Wald test $\chi^2= 2.36$). The strong asymmetry in protection between permanent and temporary jobs probably favours here a polarization in the labour market (Boeri and Garibaldi 2007; Holscher et al. 2011), with temporary workers often trapped into low-pay/repeated temporary positions, also as a consequence of fiscal incentives for the firms to hire fixed-terms workers and of high barriers to entry regular jobs⁹. This interpretation is consistent with the findings by Sologon and O'Donoghue (2011), who document a negative impact of a strict regular employment protection on the mobility of most vulnerable groups with temporary work contracts. The persistence into temporary positions, especially in the absence of effective active labour market policies specifically targeted, may be self-reinforcing as it increases insecurity (Clark and Postel-Vinay 2009) and generates more difficulties and less incentives to gain specific experience and skills (Belot et al. 2007). This poses severe risks of prolonged low-pay traps and reduced income mobility. This interpretation is indirectly confirmed by the effect of self-employment, which is again not significantly different from that of temporary employment in Mediterranean countries (Wald test $\chi^2= 0.66$). Self-employment is usually the most volatile component of earnings (Albarràn et al. 2009); yet, for Mediterranean countries, autonomous employment seems an option with risks/opportunities comparable to temporary employment. This could of course be also related to higher propensity to undertake autonomous work and to structural economic conditions favouring widespread self-employment (European Commission 2010). On the contrary, in other institutional contexts, in which less asymmetry exists between regular and temporary work and in which transition across jobs is facilitated by the market (as in LME) or by active labour market policies (Social-democratic and, to a lesser extent, Continental countries), job positions are more effectively allocated according to tasks, functions and personal preferences. Under such circumstances, temporary positions are not necessarily demand driven and may correctly be matched with more dynamic workers/skills, higher job mobility propensity and earnings mobility opportunities, also compared to self-employment¹⁰. In LME the effect of initial self-employment share of household components is not significant, suggesting that self employment goes along with higher risks and earnings/profits variability. This is corroborated by the fact that in LME almost 60% of self-employment is associated to entrepreneurial and management activity, as opposed to Mediterranean countries in which the highly protected and regulated professions alone stand for 35% of self-employment¹¹. It is indeed noteworthy

⁹ In our sample, 54% of temporary workers in Mediterranean countries are employed in elementary occupations or agricultural/craft works; in LME these occupations represent 20% of temporary employment only.

¹⁰ An interesting exception, besides the Mediterranean countries, is represented by the Central and Eastern European group, in which the effect of self employment is not statistically different from temporary employment. Here both self and temporary employment are largely involved (51% and 30% of total, respectively) in craftsmanship and agricultural tasks, and have on average similar remunerations.

¹¹ See Conway and Nicoletti (2006) for the methodology and an overview of indicators of non-manufacturing product market regulation. Most recent OECD data (referred to 2008) indicate that regulation of all professional services are higher for

that, even after controlling for all remaining factors, the share of professionals in the family plays a significant positive role in Mediterranean countries (as a unique case in Western Europe).

Lastly, we mention another distinctive feature of LME, for which the share of unemployment in the initial year is not a trap for income mobility. This might be related to the stronger incentives that unemployed face to come back into the labour market due to the modest size of unemployment insurance benefits, their relatively shorter duration, and the strictness of eligibility criteria in terms of monitoring of job-search activity (Stovicek and Turrini 2012). A similar institutional explanation applies to Eastern and Baltic countries, in which the unemployment benefit system is even tighter compared to LME, with low support, coverage and duration of unemployment benefits, low replacement rates and strict conditions on job search and availability. We emphasise that such explanation only holds for the short-run mobility analysed here. On the contrary, longer and more generous unemployment benefits represent incentives not to accept low-paid jobs, may improve job matching and increase the likelihood of better employment and earnings patterns in the long-run (Bassanini and Duval 2006).

6. Concluding Remarks

This paper has used EU-Silc data to analyse short-term (2004-2006) income mobility in 25 European countries. After having provided a set of descriptive measures of mobility and a decomposition analysis, models of household income growth have been estimated considering demographic, economic and employment determinants referred to both the household and its head. The contribution of the paper to the existing literature is twofold. First, it provides an extensive comparative analysis of income mobility across Europe, while the empirical literature have been limited so far to one or few countries or to wage/earnings mobility. Second, it emphasises the importance of institutional factors, by classifying European countries into six groups that, besides reflecting geographical proximity, also correspond to different models of capitalism.

The evidence emerging from the aggregate measures of mobility and their decomposition show a high heterogeneity across Europe, but also allow distinguishing clear relationships between countries' mobility/inequality and mobility/development levels (positive and negative, respectively). Outcomes also highlight that the countries classified in the six groups share several important features. More liberal models of capitalism, namely the Anglo-Saxon and the Baltic countries, present the highest levels of mobility; on the contrary, the Social-Democratic capitalistic regime associates low mobility to low inequality. The countries classified in the Continental European model (and most of Eastern countries converging towards a neo-corporatist model) confirm their intermediate position, whereas the Mediterranean countries offer a more varied picture, with Spain and Greece approaching the top and Italy and Portugal the bottom tails of the spectrum, respectively.

The analysis of the drivers of household absolute income mobility carried out on the pooled sample largely confirms the *ex-ante* expectations: higher education, experience and younger age of the household head favour mobility, also higher for the families headed by women. A larger size and an increasing share of

Mediterranean countries (2.7 on average) and lowest for LME (1.1). Continental, Central Eastern and Social Democratic countries stand at 2.3, 2.7 and 0.9, respectively. Estonia is the only Baltic country covered in the dataset with a score of 2.1.

components participating into the labour market also boost household income growth. Conversely, the presence of children and elderly limits income prospects. Also, the effect of initial level of income does not highlight the presence of cumulative processes (low-income traps or high income self-reinforcing patterns); rather, a convergence mechanism seems at work. Interesting insights can be drawn from the multivariate analysis carried out on the six subsamples. Although most of the main effects are confirmed, the significance level and the size of the coefficients of various important variables differ across groups and offer the possibility to provide interpretations in the light of peculiar institutional settings. This is the case, for example, of the non-significance of the household head age variable in Liberal Market economies, which can be related to the openness of product and labour markets and to the consequent regimes of accumulation of (general) knowledge, which assures higher job and income mobility along the whole working life. Similarly, the presence of inactive components (especially elderly) seems to pose higher constraints to family income growth in contexts where welfare and social protection schemes are weaker (Eastern and Southern Europe) and less oriented to reconciling family care and labour market participation. A third important outcome is related to labour market institutional settings: while in general temporary employment assures higher mobility than permanent employment, this is not the case for Southern European countries. This can be interpreted in the light of the asymmetry in protection of regular versus fixed-term contracts and of the fiscal and firing costs incentives that firms face when undertaking hiring decisions. These factors may favour the persistence of workers into repeated low-paid temporary positions, with consequent limited upward mobility prospects.

The comparative picture of the levels, components and drivers of income mobility in different institutional contexts across Europe is useful to shed light on the forces shaping individual movements along the income ladder and changes in the distributions. This is an important contribution of knowledge, complementary to the vast literature on income inequality, which can help calibrating context-specific policy measures aimed at stimulating income mobility of different groups. One promising extension of this research will focus on the drivers of income mobility at the tails of the initial income distribution (top/bottom deciles, percentiles), the potential diversity of which has been already emphasised (e.g., Shi et al. 2010). On the one side this will allow analysing, again from comparative perspective, the factors able to bring individuals out of low-income and poverty conditions, particularly with regards to the drivers (state dependence or persistence of adverse individual attributes) of low pay traps (Cappellari 2007). On the other side, the study of the top tail of the distribution would complement the recent and growing literature which emphasises how a great deal of inequality growth observed in developed countries over the last decades depended on the evolutions of the top incomes (e.g., Atkinson and Voitchovsky 2011). Another interesting development of the research is related to the time span of the study. Our evidence should be complemented and validated, as soon as data will be available, with longer-run approaches and with analyses referred to other periods, focusing in particular on the effects on the levels and drivers of mobility exerted by the still ongoing financial and economic crisis.

Appendix

Table A1. Sample and descriptive statistics

Country	N obs	Mean eq. income 2004	Mean eq. income 2006	% Δ Eq-Inc. 04-06	Gini 2004	Gini 2006	% Δ Gini 04-06	p10/p50 2004	p10/p50 2006	p90/p50 2004	p90/p50 2006
IE	1482	19111	21729	13.7	0.312	0.301	-3.6	0.54	0.56	2.13	2.23
IS	1011	26216	30637	16.9	0.252	0.253	0.2	0.61	0.60	1.78	1.76
UK	3202	22936	23368	1.9	0.321	0.315	-2.0	0.50	0.48	2.05	2.02
AT	2703	19626	19749	0.6	0.267	0.245	-8.1	0.54	0.56	1.79	1.69
BE	2211	17672	18021	2.0	0.254	0.254	0.3	0.55	0.55	1.71	1.73
FR	4968	18872	18892	0.1	0.271	0.261	-3.9	0.56	0.56	1.86	1.80
NO	2798	28504	31436	10.3	0.239	0.230	-3.8	0.54	0.57	1.56	1.60
NL	4530	20214	21732	7.5	0.246	0.268	8.9	0.59	0.63	1.69	1.80
LU	2656	32108	32772	2.1	0.256	0.264	3.2	0.56	0.57	1.81	1.86
DK	1913	26374	27618	4.7	0.225	0.228	1.4	0.59	0.59	1.56	1.58
FI	3102	20081	20833	3.7	0.263	0.254	-3.3	0.56	0.56	1.77	1.75
SE	2575	20363	21979	7.9	0.212	0.224	5.4	0.62	0.60	1.60	1.62
CY	1568	14418	16814	16.6	0.306	0.315	2.9	0.49	0.47	1.90	1.85
ES	4856	12017	12526	4.2	0.321	0.310	-3.3	0.45	0.47	2.04	2.03
GR	2262	10269	10759	4.8	0.338	0.327	-3.1	0.46	0.45	2.16	2.12
IT	8760	16502	16944	2.7	0.312	0.311	-0.5	0.49	0.48	1.93	1.97
PT	1835	8712	9008	3.4	0.383	0.382	-0.2	0.44	0.45	2.60	2.53
CZ	3525	4545	5471	20.4	0.248	0.248	0.0	0.64	0.63	1.79	1.79
HU	3086	3810	3822	0.3	0.254	0.263	3.5	0.57	0.57	1.72	1.76
PL	6395	2930	3873	32.2	0.332	0.305	-8.3	0.45	0.51	2.09	2.00
SI	3411	9856	10282	4.3	0.244	0.243	-0.4	0.53	0.54	1.68	1.69
SK	2041	3064	4040	31.9	0.238	0.232	-2.4	0.60	0.64	1.67	1.71
EE	1931	3130	3962	26.6	0.330	0.325	-1.4	0.55	0.52	2.25	2.27
LT	1733	2458	3337	35.8	0.356	0.349	-2.0	0.46	0.49	2.29	2.42
LV	1628	2389	2977	24.6	0.356	0.369	3.8	0.52	0.46	2.22	2.44

Source: our elaboration on EU-Silc data

Table A2. Income Mobility Measures (years 2004-2006)

Country	F_O	% F&O transfers	% F&O growth	CDW	CDW struct	CDW exchange	Average Jump
IE	0.29	46.7	53.3	0.024	0.0056	0.0188	1.26
IS	0.27	43.4	56.6	0.017	-0.0033	0.0208	1.50
UK	0.31	89.3	10.7	0.035	0.0054	0.0291	1.42
AT	0.27	93.0	7.0	0.041	0.0147	0.0264	1.55
BE	0.23	92.0	8.0	0.018	-0.0030	0.0209	1.32
FR	0.24	95.5	4.1	0.032	0.0076	0.0241	1.36
LU	0.19	91.4	8.6	0.009	-0.0064	0.0152	1.05
NL	0.21	65.9	34.1	0.010	-0.0062	0.0165	1.21
NO	0.26	68.1	31.9	0.023	0.0031	0.0202	1.35
DK	0.17	87.2	12.2	0.002	-0.0091	0.0114	1.16
FI	0.19	70.3	30.2	0.024	0.0050	0.0186	1.07
SE	0.19	70.0	29.5	0.011	-0.0035	0.0148	1.25
CY	0.25	42.3	57.7	0.007	-0.0085	0.0158	1.06
ES	0.34	87.8	12.2	0.039	0.0064	0.0325	1.57
GR	0.31	81.8	18.2	0.036	0.0071	0.0288	1.41
IT	0.25	90.2	9.8	0.021	0.0001	0.0209	1.17
PT	0.24	87.7	12.3	0.014	-0.0018	0.0158	0.97
CZ	0.28	32.7	67.3	0.019	0.0033	0.0158	1.35
HU	0.26	98.4	1.9	0.019	-0.0035	0.0229	1.59
PL	0.43	25.7	74.3	0.056	0.0249	0.0307	1.53
SI	0.17	74.9	25.7	0.010	-0.0013	0.0115	1.00
SK	0.35	18.6	81.4	0.032	0.0060	0.0261	1.68
EE	0.37	34.7	65.3	0.039	0.0100	0.0291	1.52
LT	0.41	22.1	77.9	0.028	0.0023	0.0253	1.45
LV	0.41	43.2	56.8	0.020	-0.0128	0.0328	1.65

Source: our elaboration on EU-Silc data

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