Middle class income dynamics and mobility: an Italian perspective

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June 6, 2015

Abstract
This paper aims to investigate the drivers of mobility of the middle class in Italy and assessing the changes of middle class members vulnerability during the beginning current recession phase. To this aim, we use the longitudinal component of the SHIW dataset and cluster individuals in three groups (low, middle and high class) according to income thresholds obtained following the method proposed by Esteban, Gradín, and Ray (2007). The findings reveal a general impoverishment of the middle class due to the economic recession and show an increasing rigidity of the Italian social structure, because lower entry and exit rates between classes emerges after 2008. Furthermore, through a multinomial logit regression, we study the association between downward or upward movements of middle class members and their characteristics, also focusing on the role played by some demographic and economic events affecting individuals and households in the observed time period (i.e. changes in household composition and employment statuses). Comparing regressions’ results for the periods 2002-2006 and 2008-2012, different probabilities to move characterise the various groups of individuals and, mostly, the association between the occurrence of positive and negative trigger events and individual mobility strengthens in 2008-2012, maybe due to the growing weakness of the welfare state and the increasing inability of the families to cope with the difficulties.

JEL Classification: D31; D63; I32

1 Introduction

The media in Europe and the USA started to perceive the decline of the middle class many years before the economic recession. The attention in the public debate to the shrinking middle class has lead to an increase in literature on polarization in economics which aims to investigate what evidence emerges from the distribution of incomes. For many years distributional studies have focused mainly on the poor and on the rich, leaving out the middle (Atkinson and Brandolini, 2013).
The research on polarization reverses this perspective considering the middle group as a crucial element. Measures of polarization capture not only the degree to which income distribution spreads out from its center (Foster and Wolfson, 1992), but also the formation of some earnings groups (poles) around local means (Esteban and Ray, 1994). The polarization phenomenon is often considered dangerous as it signals a reduction of social cohesion and can lead to conflict. Furthermore, it appears very unpleasant because it is likely to trigger broader processes of segregation, which in turn implicate consequences that are not acceptable in terms of social justice (Franzini, 2010).

However, economic concerns on the malaise of the middle class not only depend on its absolute level of incomes and on the distance from other social groups since also vulnerability, defined as uncertainty and income volatility, can play a crucial role. The link between the concepts of economic stability and security and the middle class has been widely discussed by sociologists in social class analysis (Goldthorpe and McKnight, 2004) and recently it has been considered also by economists (Lopez-Calva and Ortiz-Juarez, 2014; Krugman, 2014).

In Italy it is particularly relevant to explore income dynamics of the middle income groups as the analysis of this dimension has helped to explain the puzzle between the empirical evidence of stability in distributional indices and the worsening of confidence and expectations experienced by Italian households in the 2000s before the financial crisis (Bagnasco, 2004; Boeri and Brandolini, 2004; Pisano and Tedeschi, 2007; Franzini, 2010). The evaluation of income volatility appears even more interesting in the context of the economic crisis which has lead to a general impoverishment and an increasing polarization of the distribution of income, given the fact that a literature on the consequences of the increasing distance between social groups on individual income dynamics is still lacking.

The aim of the paper is, therefore, to extend the analysis of the middle class towards an inter-temporal framework, by observing the mobility across different time periods of those belonging to the middle class.

By using longitudinal data, a picture of income dynamics for this group in Italy between 2002 and 2012 will be provided. This will be done exploring downward or upward mobility of the middle class and the relationship between changes in relative position and their determinants over time.

The paper is structured as follows. Firstly, the issue of mobility is considered exploring its connections with vulnerability and the analysis of the middle class and presenting some evidences from the existing literature. Secondly, distinguishing the different aspects of income mobility, a review of the studies on the concept of mobility that we intend to study is provided, considering the most adequate mobility measures to capture that concept (Section 2). In Section 3, data and methodological choices are briefly presented. Then, empirical results are discussed (Section 4). Finally, the last section (Section 5) proposes a summary of the main reflections emerged in the paper, pointing out the relevance of the consideration of the longitudinal component in the study of middle class.
2 Theoretical framework

2.1 Mobility, vulnerability and middle class dynamics

The concept of mobility is well established in the literature as witnessed by the number of proposed definitions and the wide range of mobility measures developed in order to obtain a quantitative assessment. As discussed in Pisano and Tedeschi (2007), the attempts to give a normative basis to mobility can be broken down into two groups. On the one hand, there are some studies that conceive mobility as a measure of the degree of fluidity of society. According to this view mobility represents a value to be pursued by itself. On the other hand, some literature considers mobility a fundamental requirement for economic efficiency, as a mobile society means that the skills are rewarded (rather than parental origins) and equality of opportunities are guaranteed. Furthermore, it has to be considered that mobility affects the level of social well-being in a long term perspective reducing inequality in the life-cycle and the persistence of poverty (Friedman, 1962).

However, mobility has also a negative connotation: this is the case when the instability of income translates into greater vulnerability and insecurity of income prospects, which undermine people’s well-being and aspirations as much as individuals are risk averse.

Hence, the final judgment on social mobility has to be determined by the aggregation of individual judgments. These latter depend on, among other things, the position occupied by each subject in society, the ability to deal with risk, especially in the case of imperfect markets, as well as the presence and the degree of protection offered by the social welfare (Pisano and Tedeschi, 2007).

A new stream of research in economics tries to consider all these aspects in the analysis of vulnerability. These studies shift their focus from current deprivation to insecurity and exposure to risk and shock. Hence, the concept of vulnerability has been mainly explored from the perspective of poverty traps and poverty dynamics. In particular, the pioneering study of Morduch (1994) gives consideration to the place of risk as a component of poverty. A range of approaches to measuring vulnerability at the macro level have been developed by international organisations such as the IMF, the UN and the World Bank. The World Bank (2000) sees vulnerability as reflecting the risk of experiencing an episode of poverty over time but also a heightened probability of being exposed to a range of risks. At a micro level Whelan and Maître (2010) identify groups who are vulnerable to economic exclusion in the sense of being distinctive in their risk of falling below a critical resource level, being exposed to life-style deprivation and experiencing subjective economic stress. Bradshaw et al. (2004) suggest that it is useful to distinguish elements contributing to such vulnerability between risk factors, which signal the greater vulnerability of a category of individuals, and triggers which have a direct causal impact.

Reversing the perspective that connects poverty to vulnerability, it is possible to state that a defining feature of middle-class status is a certain degree of economic stability and resilience to shocks (Ferreira et al., 2012).
This latter point has been emphasised by Krugman (2014) who considers economic security, defined as the ability to maintain an appropriate consumption’s profile and to face income’s fluctuations, a fundamental attribute to falls within middle-class. Furthermore, López-Calva and Ortiz-Juarez (2014) develop their definition of the middle class for some Latin American countries fixing the lower income threshold where the associated probability of falling into poverty over a five-year interval is equal to 10 percent. According to the authors this value can be considered as the maximum level of insecurity for a household that can be identified as middle class. This approach has been followed also by a team of the World Bank (Ferreira et al., 2012) in the Flagship Report of the World Bank “Economic Mobility and the rise of the Latin American Middle Class” where a middle class definition based on the notion of economic security validated by self-perceptions is adopted. This study is focused on the social transformation going on in Latin America middle class and is a fundamental reference exploring the relationship between mobility and class dynamics from an economic point of view.

On the basis on the same theoretical assumptions regarding the relationship between middle class and vulnerability, Torche and López-Calva (2013) examined the determinants of middle-class intra-generational mobility in Mexico and Chile for the 2000s. According to these authors, economic and political development is strictly dependent on the stability of the middle class.

Furthermore, the relationship between a large middle class and social cohesion is positive just in case of economic security, since a household which is highly vulnerable to poverty will not take all those actions that are considered to induce economic growth and political stability (Easterly 2001; Josten 2005; Murphy et al. 1989; Leatherman et al. 1999; Birdsall 2010). On the contrary, if the probability that a middle-class household remains in its status over time is high, its investments in long-term well-being and political choices that support those investments are more likely.

But as pointed out by Torche and López-Calva (2013):

“It is important to indicate that middle-class stability is not an uncontested advantage. Stability implies the absence not only of downward mobility into poverty, but also of upward mobility into economic advantage. In other words, middle-class stability identifies high persistence in socioeconomic standing over time. This raises a normative question about which type of society is more desirable—one in which there is substantial fluidity so that the opportunity to fall or climb in the socioeconomic ladder is evenly distributed and households ‘take turns’ in advantage and disadvantage (Hout 2004) or one in which there is constancy over time? The answer is unambiguous when the question concerns poverty—the consequences of chronic poverty are worse than those associated with transient poverty. The answer is less clear, however, when we consider the middle class as it partly depends on the specific sources of stability and fluidity. Protection against shocks beyond families’ control is
likely desirable, while ascriptive sources of stability such as those based on gender or race are more questionable (Hacker 2006; Jencks and Tach 2006)” (Torche and López-Calva, 2013).

However, in order to deal with this normative concern properly, the question of the level and determinants of stability and mobility of the middle class should be first addressed.

2.2 Concepts and measurement of economic mobility

The relevance of mobility has been often highlighted in social sciences and economics. It concerns the evolution over time of a given socioeconomic status from one time period or generation to another but, as it has often been observed, it is a multi-faceted concept that cannot be easily addressed (Fields and Ok, 1996).

The first question is: mobility of what? The choice of the indicator of social or economic status and of the recipient unit is a crucial preliminary step of any sort of mobility analysis. For brevity, in the next pages following Field (2008) we will refer to mobility of “income”, referring to income from all sources, among “individuals”.

Literature on income mobility\(^1\) can be classified on the basis of different taxonomies of the mobility concepts. Fields (2008) distinguishes between mobility as a movement, mobility as origin independence and mobility as equaliser of long term income.  

The former declination of the mobility concept associates a higher mobility with higher movements that can be observed between two distributions. It can be further divided into four subconcepts:

- \textit{directional income movements} which seek to quantify the extent of fluctuation in individuals’ income not only considering the amounts of the income changes but also about their direction;
- \textit{non-directional movements}, which capture the extent of fluctuation in individuals’ income;
- \textit{share movements}, that are income’s rises or falls relative to the mean;
- \textit{positional movements}, that seek to quantify movements of individuals among various positions in the income distribution (also referred as rank mobility).

The second concept \textit{mobility as origin independence} considers a society more mobile whether one’s (or one parents’) initial position is less important to determine one’s future position. Differently, in the third case (\textit{mobility as equaliser of long term income}) a more mobile society is intended as one in which individual income changes during lifetime have the effect to reduce income inequality.

\(^1\)See Fields and Ok (1996), Fields (2008) and Jäntti and Jenkins (2013) for a complete review of concepts and measurements of income mobility.
in permanent incomes, defining permanent income as an individual’s average income across all life periods.

Similarly, Jäntti and Jenkins (2013) distinguish four concepts: positional change (which has two features), individual income growth, reduction of long-term inequality, and income risk. The different concepts ‘standardise’ the marginal distributions $x$ and $y$ in different ways in order to focus attention on the nature of the link $x \to y$ (Jäntti and Jenkins, 2013; Jenkins, 2011).

According to these authors, positional change refers to “the pattern of exchange of individuals between positions” separately from any change in the shape of the distribution. In this case, we have a situation of “no mobility” when every person has the same rank in $x$ and in $y$. However, there are two different ways that can describe a situation of maximum mobility: according to the first view, perfect mobility occurs when there is no correlation between one’s income origin and one’s income destination while according to the second, a society is perfectly mobile when destination positions are a complete reversal of origin position (“rank reversal”) (Jäntti and Jenkins, 2013).

Mobility as individual income growth refers to a measure that aggregates all the changes in income experienced by each individual within the society between two points in time, that can be gains or losses at the individual level. As pointed out in Jäntti and Jenkins (2013)

> “income growth is defined for each individual separately and income mobility for society overall is derived by aggregating the mobility experienced by each and every individual” (Jäntti and Jenkins, 2013, p. 8).

Thus, mobility for each person can be defined in terms of ‘distance’ between origin and destination income. Mobility for the whole population is 0 when the measure of distance equals zero for every individual ($z_{2i} = z_{1i}$ for all $i$). Mobility is greater than 0 if the distance between origin and destination is positive at least for one individual.

The third mobility concept defines income mobility on the basis of its impact on inequality in longer-term incomes. It is very similar to the declination of the mobility concept mobility as equaliser of long term income (Fields, 2008) already discussed, since the longer-term income for each individual is defined as the longitudinal average of incomes in each period. In case of two periods, longer-term income equals $\bar{z}_i = 1/2(z_{1i} + z_{2i})$ for each $i$ (Jäntti and Jenkins, 2013).

Strictly related to this latter concept of mobility and to the non-directional income movements in Fields and Ok (1999) and Fields (2008), it is defined mobility as income risk. In this case, movements over time represent unpredictability and

> “the transitory components$^2$ represent unexpected idiosyncratic shocks to income, and the greater their dispersion across individuals each

$^2$The period-specific deviations from average.
period, the greater is income risk for this population” (Jäntti and Jenkins, 2013, p. 11).

Furthermore, another important aspect that needs to be addressed is whether the context is intergenerational or intragenerational. In the intergenerational context, the recipient unit is the family, generally a parent and a child, and the aim is to monitor how the distribution of the individual status of interest changes between different generations in a given society. On the other hand, in the intragenerational context, the recipient unit is the individual or family at two different periods (Fields, 2008).

Any different income mobility concept needs a different measure but it does not mean that the indices which aim to measure the same concept behave uniformly, since “different indices measure different underlying entities” (Fields, 2008). As reported by Fields (2008), at least twenty mobility measures have been used in the literature.

Consequently, it is important to specify which concept or concepts of mobility are considered, which measures of these concepts are used, and which questions are addressed.

Our aim is to offer an aggregate picture of mobility of individuals who can be identified as middle class both in terms of individual status and in terms of individual position in the status distribution comparing two different time periods.

Thus, in order to investigate whether an increasing or a decreasing vulnerability for the middle class can be detected after the beginning of the current recession phase, data and methods adopted will be shortly presented in the next section.

3 Data and methodological choices

We study middle class mobility in Italy by using the longitudinal component of SHIW from the Bank of Italy. Data are drawn from the Historical Archive (HA) of the survey (version 8.0, released in January 2014) which enhances comparisons over time. In order to analyse income dynamics in an intragenerational context, we selected observations for which the data are available for at least two waves between 2002 and 2012.

We consider the sum of all cash incomes earned by the household including compensation of employees, pension and other transfer, income from self-employment and entrepreneurial income and property income (income from financial assets, net of income taxes, social security contribution and imputed rents). Family income, rather than an individual measure, is used to account for the fact that most people share resources with other coresidents. However, in line with the literature on income distribution, the unit of observation is the individual and assuming as egalitarian intra-household distribution, the equivalent income of the household is attributed to each person to which he or she belongs.
To control for the fact that the same yearly income provides a higher standard of living for a single-person family than it does for individuals belonging to larger families, family income is adjusted by family size. This adjustment is made applying the Italian official equivalence scale. All incomes are valued in 2012 Euro using the deflator HED. Furthermore, all records with zero income are dropped, and observations are bottom-coded at 1 percent of the mean of equivalent disposable income and top-coded at 10 times the median of unadjusted disposable income (e.g. Atkinson and Brandolini, 2013).

Our approach to investigate middle class mobility and its changes over time is composed of three stages.

The first stage observes individual income growth between different periods across the whole distribution using income mobility profiles (Van Kerm, 2006; 2009a). Then, after having identified the low, middle and high income groups, the second stage constructs probabilities of transition to one class to another, via transition matrices. In the third stage, we move to multinomial logit models in order to identify actual characteristics associated with movements in or out of the middle class. The procedures applied are described in the following sections.

3.0.1 Income mobility profiles

To capture mobility at the individual level, we apply the mobility profiles, a graphical devices for summarise income mobility between two periods developed by Van Kerm (2009a).

Mobility profiles “provide evocative pictures of the underlying mobility structure” and are “appealing tools for depicting the structure of income mobility” (Van Kerm, 2009a). Furthermore, the use of these tools is the simplest way to observe income growth at the individual level between two periods. Directional income growth (Fields and Ok, 1999) is thereby detected converting the bivariate joint distribution to a univariate distribution of income changes (Jäntti and Jenkins, 2013).

According to Van Kerm (2006), we can assume that \(X\) and \(Y\) are two correlated random variables with joint distribution \(F(x, y) = Pr[X <= x, Y <= y]\), describing the distribution of incomes at two time periods (base and final year) as a realization of \((x, y)\). If we let \(d(x, y; F)\) be a distance function (a statistic that captures the degree of mobility experienced by an agent with incomes \(x, y\)), many of the most mobility measures can be expressed in the following way (Van Kerm, 2006):

\[
M(X, Y) = \int_{x^-}^{x^+} \int_{y^-}^{y^+} d(x, y; F)dF(x, y)
\]  

(1)

where individual changes in income (from the base year \(x\) to the final year \(y\)) are summarised into a global scalar. Mobility depends on the information contained in the original and final year distribution, and on the specific choice of the distance function.

However, the use of a synthetic measure is not able to provide all the relevant information. In order to fill this gap, Van Kerm (2006) developed a procedure.
that “permits to investigate the pattern and sources of mobility in detail”.

The approach consists of different stages (Vittori, 2011). In the first stage, the analyst chooses the distance measure that can better represent the concept of mobility he/she intends to study.

Starting from the general form, a mobility profile can be obtained by rewriting equation 1 in terms of the base year of individuals’ rank. Let $F_X$ and $F_Y$ be the marginal distribution function of $X$ and $Y$ and $F_{X|Y}$ and $F_{Y|X}$ the respective conditional distributions.

$$M(X,Y) = \int_{z_{\min}}^{z_{\max}} \left( \int_{z_{\min}}^{z_{\max}} d(x, y; F)dF_{Y|X}(y) \right) dF_X(x) \quad (2a)$$

$$= \int_{z_{\min}}^{z_{\max}} m(X,Y|X=x)dF_X(x) \quad (2b)$$

$$= \int_0^1 m(X,Y|X=x(p)) dp \quad (2c)$$

The mobility profile is generated by plotting the expected mobility $m(p) = m(X,Y|X=x(p))$ over the individuals’ ranks $p$ in the base year, hence conditional on where individuals started in the base year distribution. Implementation of the method requires reliable estimation of the conditional expectation $m(p)$. In our case, the mobility profile are estimated using a locally weighted regression.

The area underneath the curve, obtained by integrating the regression function with respect to the individual rank $p$, can be used as a measure of mobility.

In general, simply looking at the graphical representation it is possible to evaluate the overall mobility and to consider how income changes are distributed relative to people’s position in the base period income distribution (Van Kerm, 2006).

In this way:

“it is therefore straightforward to identify, e.g., whether it is the rich, the poor or the middle class that experience greatest mobility and to assess their respective impacts on aggregate indices” (Van Kerm, 2009a).

Furthermore, an extension is derived from the profiles to incorporate concerns about the distribution of individual mobilities.

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3 Following Vittori (2011), estimates are obtained in STATA using "locpoly" (Cleveland, 1979). This command performs a local polynomial regression which is a generalization of local mean smoothing as described by Nadaraya (1964) and Watson (1964) (Gutierrez, Linhart, Pitblado, 2003).

The rank is calculated using the "fracrank" command from Van Kerm (2009b). This procedure assigns the same rank to all tied values in income and it uses a formulation that ensures that the mean rank is set to 0.5 (the mean of a uniform distribution).

4 See Van Kerm (2006, 2009) for a complete discussion and illustration.
In our empirical application, the distance measure adopted is the change in log income from year $x$ to $y$, $d(x, y; F) = \log(y) - \log(x)$. In this way mobility reflects the growth of a person’s income (directional income movements, Fields et al., 2002).\footnote{See Jenkins and Van Kerm (2006), Jenkins and Van Kerm (2008), Van Kerm (2009a) and Vittori (2011).}

### 3.0.2 Transition matrices

Transition matrices are particularly useful devices for summarizing the mobility content of distributional transformations (Fields and Ok, 1999; Jäntti and Jenkins, 2013). They are able to provide a simple picture of the individual’s “movement” among the specified income classes.

As reported in Fields and Ok (1999), having specified $m$ income range by one criterion, the transition mobility matrix induced by a transformation $x \rightarrow y$ can be defined as the matrix

$$P(x, y) = [p_{rs}(x, y)] \in R^{m \times m},$$

where $p_{rs}(x, y)$ is the proportion of people that from class $r$ in the distribution $x$, have moved to class $s$ in the second period. By definition, $\sum_{s=1}^{m} p_{rs}(x, y) = 1$ for all $r$.

To analyse the mobility of the middle class and its income volatility from a longitudinal perspective the main problem is how to identify this group. As pointed out in many studies (Foster and Wolfson, 1992; Esteban and Ray, 1994; Jenkins, 1995; and the following literature on polarization), arbitrary income intervals would appear somewhat unsatisfactory. Instead, members of the middle class are identified non-parametrically using kernel density procedures with the process of Esteban, Gradín and Ray in their study on polarization and as it has been suggested by Cruces, López Calva and Battiston (2011).

Applying this procedure, the definition of the middle class is related to the distribution of income but lower, middle and upper class are determined endogenously for each wave since the optimal income boundaries that separate each group from the others are calculated. Furthermore, fixing $n = 3$, the resulting groups are based on a theoretical framework within which concepts such as identification, alienation and effective antagonism\footnote{See Esteban, Gradín and Ray (2007) for a complete analysis.} are precisely defined (Cruces, López Calva and Battiston, 2011).

Hence, the discrete partition permits us to calculate transitional matrices between period $t$ and $t + 1$.

### 3.0.3 Multinomial logit models

The discrete partition obtained with the procedure of Esteban, Gradín and Ray (2007) also permits the application of different multinomial logit models which
investigate the determinants of downward and upward mobility for individual members of the middle class at time $t$.

The multinomial logit model can be used when all the regressors are case specific (Cameron and Trivedi, 2010).

It specifies that

$$p_{ij} = \frac{\exp(x'_i\beta_j)}{\sum_{l=1}^m \exp(x'_i\beta_l)}, \quad j = 1, ..., m$$ (4)

Where $x_i$ are case-specific regressors, and the intercept. This model ensures that $0 < p_{ij} < 1$ and $\sum_{j=1}^m p_{ij} = 1$.

To ensure model identification, $\beta_j$ is set to zero for one of the categories, and coefficient can be interpreted with the respect to the base category. In our presentation of results, the parameters are transformed to odds ratios, where the odds ratio of being a member of category $j$ rather than alternative 1 is given by

$$\frac{\Pr(y_i = j)}{\Pr(y_i = 1)} = \exp(x'_i\beta_j)$$ (5)

So $e^{\beta_j}$ gives the proportionate change in the relative risk of being in $j$ rather than in 1 when $x_{ir}$ changes by one unit (Cameron and Trivedi, 2010).

Observable socio-demographic and socio-economic characteristics enter the vector $x_i$ and the relationships between each characteristic and the dependent variable are thus studied.

Specifically, we estimate the impact of several variables on the probability of moving from the middle class downwardly and upwardly, using the immobile status as the reference category. We perform different models obtaining results for each type of transition, including socio-demographic characteristics (age class, sex, residential area, marital status, type of occupation, class of municipalities by resident population), variables related to the main source of income, variables related to composition of the household, and variables related to some main events experienced by individuals and households.

Following the classification developed in the pioneering paper of Bane and Elwood (1986), we distinguish economic events (those associated with changes in different types of income), and demographic events which include for example events modifying the number of household’s members (Polin and Raitano, 2014).

In particular, according to suggestions of many authors and drawing on the literature on poverty dynamics (Jenkins, 2000; Berthoud and Böheim, 1998; Jenkins and Schluter, 2003; Polin and Raitano, 2014), we identify some situations faced by households and we relate them to changes in their location across the income distribution, drawing on the idea that transitions out from the middle class are associated with “trigger events” (Polin and Raitano, 2014) – e.g. changes in household members, changes in occupational status of the head of household or changes in household composition – and these events have different
impacts on the probability to move downwardly or upwardly from the middle class.

According to variables available in the longitudinal SHIW the events considered in this paper are the following:

- demographic events: changes in the number of household members, change in the individual marital status.

- Economic events: changes in the number of household earners, changes in the individual occupational status.

- Change in the head of household. Since in our case the head of household is defined as the main income earner this event is a hybrid case. It can be connected to a demographic event (death or divorce) or an economic event (intra-house earning variations which can be positive or negative). For these reasons, we created a single dummy variable to be included in the model.

To simplify the interpretation of results, we aggregate “negative” events (e.g. increase of the number of individuals, decrease of income earners), and “positive” ones, distinguishing demographic and economic events. It is reasonable to assume that downward mobility is associated with negative events, whereas upward mobility is connected with positive events. These events occur when the associate variables changes between waves \( t \) and \( t + 1 \).

4 Empirical results

In this section empirical results are presented. Firstly, we analyse income mobility profiles which explore income dynamics for the whole population in different time periods. Then, on the basis of the partition of low, middle and high income classes that derives from the procedure of Esteban, Gradín and Ray (2007), we comment what emerges from transition matrices. Finally, results of the analysis of mobility of middle class members using multinomial logit models are shown.

4.1 Mobility profiles and transition matrices

To address the general question of how individual income dynamics have evolved over time, we draw the mobility profiles for different time periods in which the distance measure \( d(x, y; F) = \log(y) - \log(x) \) indicates mobility as incomes share movements. With this graphical tool, we can observe individual earnings growth according to the initial base year rank.

In Figure 1, income mobility profiles estimated for the years 2002-2004, 2004-2006 and 2008-2010, 2010-2012 are represented.

Income mobility profiles show income growth in proportionate terms (the units are log 2012 euro). In the graphs, the horizontal continuous line demarcates positive (above zero) and negative (below zero) income growth.
Mobility profiles are negatively-sloped for each of the four periods. As discussed in Jenkins and Van Kerm (2011), this means that, from a longitudinal perspective, “the pattern of individual income growth is progressive: the lower the rank in the base-year distribution, the greater the expected income growth” (Jenkins and Van Kerm, 2011, p. 17). In our case, it is important to observe that expected income growth is positive for the majority of individuals and negative for individuals in the richest part of the distribution in the base year until the period 2008-2010. On the contrary, in the last time frame considered (2010-2012) income growth is negative for the majority of individuals observed and a significant impoverishment for the majority of the sample can be noticed. To sum up, average income growth for the population as a whole decreased in each period in proportionate terms, becoming negative in 2010–2012. This confirms that the worsening of the general living conditions perceived by the Italians also depends on an income reduction experienced with the financial crisis.

But what about transitions across classes?

Tables 1, 2, 3 and 4 report transition matrices for the years 2002-2004, 2004-
2006, 2008-2010 and 2010-2012 respectively.

From the comparison between the transition matrices for the different periods interesting income dynamics emerge. Since the main diagonals identify the proportion of subjects who remain in the same class of income from one period to another, lower entry and exit rates between classes can be observed in the second time period (2008-2012). In particular, those who can be considered middle class in 2008 and in 2010 have a probability of staying in the middle class in the subsequent wave equal to 75.72% and 70.36% respectively, percentages significantly higher than the ones observed between 2002-2004 and 2004-2006 of 65.6% and 63.62%. Similarly, the members of the higher class persist in their status in around 76% of the cases since 2008, with a difference of more than 10 percentage points respect to the values observed six years before. Only those individuals in the lowest class show no significant change, even though the probability to become members of the high class for this group decreases overall.

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<tr>
<th>Table 1: Transition matrix 2002-2004</th>
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<tr>
<td>Origin 2002</td>
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<tr>
<td>Low class</td>
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<tr>
<td>Middle class</td>
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<td>High class</td>
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<td>Total 2004</td>
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<th>Table 2: Transition matrix 2004-2006</th>
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<tr>
<td>Origin 2004</td>
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<tr>
<td>Low class</td>
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<tr>
<td>Middle class</td>
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<td>High class</td>
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<td>Total 2006</td>
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<th>Table 3: Transition matrix 2008-2010</th>
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<tr>
<td>Origin 2008</td>
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<tr>
<td>Low class</td>
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<tr>
<td>Middle class</td>
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<td>High class</td>
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<td>Total 2010</td>
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Table 4: Transition matrix 2010-2012

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<th>Origin 2010</th>
<th>Destination 2012</th>
<th>Low class</th>
<th>Middle class</th>
<th>High class</th>
<th>Total 2008</th>
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<tbody>
<tr>
<td>Low class</td>
<td>77.09</td>
<td>21.94</td>
<td>0.96</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Middle class</td>
<td>13.03</td>
<td>70.36</td>
<td>16.61</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>High class</td>
<td>2.63</td>
<td>20.95</td>
<td>76.42</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Total 2010: 35.63 41.84 22.54 100

4.2 Determinants of upward and downward mobility

The aim of this Section is to establish the main socio-economic determinants of downward or upward transition of the middle class in Italy considering two different periods before and after the beginning of the economic recession.

We run two different models: the first estimates the probabilities of moving towards the lower and higher classes controlling for characteristics of the individual and the household in the base year (state variables model), whereas the second includes the consideration of changes in some characteristics between the two waves (event variables model).

Tables 5 and 6 show estimated odds ratios and their statistical significance of the multinomial logit models, where immobile is chosen as the reference category. Hence, the estimated values reflect the effect of each covariate on the likelihood of becoming upwardly (or downwardly) mobile, relative to the possibility of remaining in the middle class (see also Albornoz and Menéndez, 2007).

In case of dummy variables, reference modalities are the following: owner for tenure status; an age of less than 41 for age group; low education for educational attainment; North for residential area; married for marital status; income from employment for main income source; less than 20,000 inhabitants for division of municipalities, absence of change of the head of household and of negative/positive demographic and economic events (grouped as it has been reported in the previous Section).

Findings reveal that estimated coefficients present the expected value above or below 1, being the probability to move toward the lower class significantly higher in both periods considered for individuals not home owners, living in the South or the Islands of Italy, belonging to families with a higher number of components.
Table 5: Determinants of downward mobility for the middle class in Italy.
Multinomial logit models: estimated Odds Ratios.

<table>
<thead>
<tr>
<th>State variables</th>
<th>Event variables</th>
<th>State variables</th>
<th>Event variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>0.879</td>
<td>0.96</td>
<td>0.908</td>
</tr>
<tr>
<td>Tenant</td>
<td>1.888***</td>
<td>2.093***</td>
<td>2.401***</td>
</tr>
<tr>
<td>Age 41-55</td>
<td>0.432***</td>
<td>0.489***</td>
<td>0.486***</td>
</tr>
<tr>
<td>Age &gt;55</td>
<td>0.550***</td>
<td>0.673***</td>
<td>0.441***</td>
</tr>
<tr>
<td>Middle education</td>
<td>0.498***</td>
<td>0.491***</td>
<td>0.553***</td>
</tr>
<tr>
<td>High education</td>
<td>0.307***</td>
<td>0.271***</td>
<td>0.339***</td>
</tr>
<tr>
<td>Centre</td>
<td>1.172</td>
<td>1.166</td>
<td>1.499***</td>
</tr>
<tr>
<td>South and islands</td>
<td>2.061***</td>
<td>1.970***</td>
<td>2.647***</td>
</tr>
<tr>
<td>Single</td>
<td>0.557***</td>
<td>0.726**</td>
<td>0.608***</td>
</tr>
<tr>
<td>No longer married</td>
<td>0.746***</td>
<td>0.706***</td>
<td>1.019</td>
</tr>
<tr>
<td>Self employed</td>
<td>1.246</td>
<td>1.289</td>
<td>1.476***</td>
</tr>
<tr>
<td>Pensioner and not employed</td>
<td>1.071</td>
<td>1.072</td>
<td>0.93</td>
</tr>
<tr>
<td>Income from self employment</td>
<td>1.129</td>
<td>1.027</td>
<td>2.618***</td>
</tr>
<tr>
<td>Pensions and other transfers</td>
<td>0.864</td>
<td>0.969</td>
<td>0.909</td>
</tr>
<tr>
<td>Property income</td>
<td>0.818</td>
<td>0.812</td>
<td>1.939***</td>
</tr>
<tr>
<td>From 20,000 to 40,000 inhabitants</td>
<td>0.971</td>
<td>0.928</td>
<td>0.781**</td>
</tr>
<tr>
<td>From 40,000 to 500,000</td>
<td>0.788**</td>
<td>0.753***</td>
<td>0.806**</td>
</tr>
<tr>
<td>More than 500,000</td>
<td>1.265*</td>
<td>1.038</td>
<td>1.798***</td>
</tr>
<tr>
<td>Number of components</td>
<td>1.286***</td>
<td>1.479***</td>
<td>1.265***</td>
</tr>
<tr>
<td>Number of income earners</td>
<td>0.621***</td>
<td>0.433***</td>
<td>0.633***</td>
</tr>
<tr>
<td>Change head</td>
<td>1.211*</td>
<td>2.095***</td>
<td>1.211*</td>
</tr>
<tr>
<td>Positive demographic event</td>
<td>0.93</td>
<td>0.450***</td>
<td>0.450***</td>
</tr>
<tr>
<td>Positive economic event</td>
<td>0.438***</td>
<td>0.521***</td>
<td></td>
</tr>
<tr>
<td>Negative demographic event</td>
<td>3.917***</td>
<td>6.999***</td>
<td></td>
</tr>
<tr>
<td>Negative economic event</td>
<td>3.410***</td>
<td>5.688***</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.185</td>
<td>1.074</td>
<td>0.513***</td>
</tr>
</tbody>
</table>

N. of observation 5,288 5,288 6,248 6,248

LR chi2(40) = 612.33
Prob > chi2 = 0.00000
Pseudo R2 = 0.0655

Significance level: * 90%; ** 95%; ***99%.
Source: own calculation on weighted household income data from SHIW, longitudinal component.
Table 6: Determinants of upward mobility for the middle class in Italy. Multinomial logit models: estimated Odds Ratios.

<table>
<thead>
<tr>
<th>Variable</th>
<th>2002-2006 Event Variables</th>
<th>2008-2012 Event Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>1.09</td>
<td>1.062</td>
</tr>
<tr>
<td>Tenant</td>
<td>0.649***</td>
<td>0.444***</td>
</tr>
<tr>
<td>Age 41-55</td>
<td>1.311**</td>
<td>1.805***</td>
</tr>
<tr>
<td>Age &gt;55</td>
<td>1.812***</td>
<td>2.512***</td>
</tr>
<tr>
<td>Middle education</td>
<td>1.409**</td>
<td>1.494***</td>
</tr>
<tr>
<td>High education</td>
<td>3.387***</td>
<td>2.912***</td>
</tr>
<tr>
<td>Centre</td>
<td>1.267**</td>
<td>1.178*</td>
</tr>
<tr>
<td>South and islands</td>
<td>0.727***</td>
<td>0.590***</td>
</tr>
<tr>
<td>Single</td>
<td>1.036</td>
<td>1.547***</td>
</tr>
<tr>
<td>No longer married</td>
<td>0.894</td>
<td>1.340**</td>
</tr>
<tr>
<td>Self employed</td>
<td>1.345*</td>
<td>1.413**</td>
</tr>
<tr>
<td>Pensioner and not employed</td>
<td>0.926</td>
<td>0.924</td>
</tr>
<tr>
<td>Income from self employment</td>
<td>1.677***</td>
<td>1.913***</td>
</tr>
<tr>
<td>Pensions and other transfers</td>
<td>0.783*</td>
<td>1.06</td>
</tr>
<tr>
<td>Property income</td>
<td>1.593**</td>
<td>2.035***</td>
</tr>
<tr>
<td>From 20,000 to 40,000 inhabitants</td>
<td>1.492***</td>
<td>0.878</td>
</tr>
<tr>
<td>From 40,000 to 500,000</td>
<td>1.373***</td>
<td>1.220**</td>
</tr>
<tr>
<td>More than 500,000</td>
<td>1.087</td>
<td>2.765***</td>
</tr>
<tr>
<td>Number of components</td>
<td>0.746***</td>
<td>0.900*</td>
</tr>
<tr>
<td>Number of income earners</td>
<td>1.325***</td>
<td>1.413***</td>
</tr>
<tr>
<td>Change head</td>
<td>1.433***</td>
<td>1.055</td>
</tr>
<tr>
<td>Positive demographic event</td>
<td>2.276***</td>
<td>2.935***</td>
</tr>
<tr>
<td>Positive economic event</td>
<td>2.180***</td>
<td>2.406***</td>
</tr>
<tr>
<td>Negative demographic event</td>
<td>0.402***</td>
<td>0.789</td>
</tr>
<tr>
<td>Negative economic event</td>
<td>0.535***</td>
<td>0.480***</td>
</tr>
<tr>
<td>Constant</td>
<td>0.095***</td>
<td>0.027***</td>
</tr>
</tbody>
</table>

N. of observations: 5,288 5,288 6,248 6,248

LR chi2(40) = 612.33
Prob > chi2 = 0.0000
Pseudo R2 = 0.0655

Significance level: * 90%; ** 95%; ***99%.

Source: own calculation on weighted household income data from SHIW, longitudinal component.
Conversely, the probability to become members of the higher class is positive for individuals who have a higher educational attainment, are self employed, live in municipalities with a population between 40,000 and 500,000 inhabitants and belong to a family with a higher number of income earners.

As expected, the occurrence of demographic and economic negative events increases the risk of moving to the lower class and decrease the probability to move upwardly, while the opposite is observable in case of positive economic and demographic events (even though there is not coefficient consistency over time for the occurrence of demographic events). Female dummy and the characteristic of being a pensioner or not employed do not result statistically significant in all models.

Looking at results’ differences between the two periods other interesting patterns emerge.

Being self-employed and being in a household with self-employment as the main income source is positively related with both being upward or downward mobile in the second period. This evidence confirms the rise of polarization for this group of individuals as it has been observed by recent literature (Massari, Pittau and Zelli, 2009). Similarly, after 2008, the same trend is detected for individuals living in municipalities with more than 500,000 inhabitants and belonging to families where the highest portion of income comes from property.

Concerning the educational level, in general we observe that having a tertiary education (high education) is significantly and positively related with being upwardly mobile, but this probability is much lower in the second period than in the first. On the contrary, being older than 55 years old shows an increasing positive effect on the probability of becoming an upwardly mobile and an increasing negative effect on the probability to move to the lower class.

In the period 2008-2012, the association between the occurrence of the change of the head of the household has a higher significant positive effect on the risk to move downwardly, whereas it does not have any effect on the probability to become a member of the higher class.

Furthermore, the probability to move downwardly in case of the occurrence of negative events\(^7\) has significantly increased relative to staying immobile after 2008, while the probability to move upwardly in case of experiencing positive events shows just a slight increase.

Overall, these findings reveal a growing vulnerability for some groups of individuals in the second period despite an increasing stability for others. In particular, negative events play a greater role in determining transition downwardly from the middle class, while the occurrence of positive events does not increase the chances to move to the higher class over time.

\(^7\)The percentage of people who experience this kind of events don’t show significant variations, see table in the Appendix.
5 Conclusion

The consideration of income dynamics is particularly relevant in the analysis of the middle class since, as pointed out by the literature, a defining feature of middle-class status is a certain degree of economic stability and resilience to shocks (Ferreira et al., 2012).

Furthermore, regarding the Italian case, the increasing discontent observed in the 2000s within this group has been considered dependent on a rise of uncertainty and income volatility.

This paper provided a picture of income dynamics and mobility with a focus on individuals who can be identified as middle class, using SHIW panel data.

In contrast with the traditional measures of classes based on arbitrary partitions of the distribution, we identified middle class with the calculus of the optimal income boundaries to separate this group from the others drawing from the process implemented by Esteban, Gradín, and Ray (2007).

The empirical analysis focused on mobility in different periods, comparing results between 2002-2006 and 2008-2012. As a first step, income mobility profiles have been adopted to observe income growth at the individual level between two periods, since individuals’ average income change is plotted against their normalised rank in the base-year distribution.

By means of the transition matrices, we also shed some light on how growth (positive or negative) is distributed across the population and what that means in terms of class dynamics. Then, running two different multinomial logit models we investigated the determinant of upward and downward mobility for the middle class.

Also, as we must be cautious interpreting our results since we are measuring short term income mobility (incomes fluctuate in the short run and measurement error is likelier to bias the results), the methods applied enable us to draw out some general key facts. First of all, a situation of general impoverishment accompanied by an increased immobility across classes is outlined. Secondly, a higher vulnerability can be observed for some groups of individuals who significantly increase their probability to move downwardly. In particular, this is the case of people experiencing negative events.
6 Appendix

Table 7: Share of individuals experiencing a significant event between two waves

<table>
<thead>
<tr>
<th>Period</th>
<th>Change in the household head</th>
<th>Positive demographic event</th>
<th>Negative demographic event</th>
<th>Positive economic event</th>
<th>Negative economic event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2004</td>
<td>17.65</td>
<td>12.93</td>
<td>4.31</td>
<td>12.07</td>
<td>15.44</td>
</tr>
<tr>
<td>2004-2006</td>
<td>18.26</td>
<td>12.58</td>
<td>7.73</td>
<td>13.84</td>
<td>17.16</td>
</tr>
<tr>
<td>2008-2010</td>
<td>15.27</td>
<td>9.94</td>
<td>3.89</td>
<td>10.21</td>
<td>12.87</td>
</tr>
</tbody>
</table>
References


[9] Cameron C. and Trivedi P. (2010), Microeconometric using Stata, Stata Corp, College Station, Texas.


[34] Jenkins S. and Van Kerm P. (2008), Has income growth in Britain become more pro-poor?, presented at the 30th General Conference of The International Association for Research in Income and Wealth, Portoroz, Slovenia, August 24-30.


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