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MIDDLE CLASS DECLINE IN FINLAND 1995 – 2012: DECOMPOSITION AND DIRECTIONAL MOBILITY

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Middle class decline in Finland 1995-2012: Decomposition and directional mobility

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Abstract

This paper investigates middle class decline in Finland from 1995 to 2012. The purpose was to examine the subgroup contributions, the role of structural change, and directional mobility. Change in middle class rate was decomposed to study contributions of group-specific rates and structural changes, and the directional mobility was analysed by changes in individuals' income status. The results from earlier studies about the middle class decline in Finland were confirmed, and decomposition analysis indicates that the majority of the decline has been due to the rate-effect, especially among the lowest educated population. Furthermore, changes in age and education structures have contributed to the decline, while the structural change in primary activity status has had a counteracting effect. Results of the decomposition are supported by the mobility results, which indicate that population with tertiary (no secondary) degree have been subject to upward (downward) mobility over the observed time period. In conclusion, the middle class decline and polarization in Finland have asymmetrically affected different education groups. Most educated have climbed up the income distribution, while the lowest educated group have fallen.

Keywords: Income mobility, Decomposition, Middle class decline
JEL: I24, J62, O15

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1. Introduction

Decline of the middle class has been an ongoing topic in economics literature since empirical evidence of the phenomenon emerged from United States in 1980s, and later in other industrialized countries. The decline has raised interest, among politicians and economists, as sizable and well-off middle class is presumed to have an important role in an economy. The importance stems from the presumption that middle class provides political stability, tax revenue, skilled labor force, investments in human capital, and consumption [e.g. Thurow, 1984, Easterly, 2001, Galor and Zeira, 1993, Banerjee and Duflo, 2008].

One of the earliest work on decline of the middle class is Thurow's article in New York Times stating "The American middle class is disappearing." [Thurow, 1984]. Thurow defined the middle class as share of population with an income between 75% and 125% of the median, and reported a decline of the middle class population share with shifts towards the tails. While choosing an income range around the median to identify middle class can be abstract, and, in some cases, even effecting the results, other studies with alternative income ranges or identifying methods have resulted with similar results about middle class decline and polarization of the income distribution. Jenkins [1995] studied income distribution using kernel density estimation in United Kingdom. Later, Burkhauser et al. [1999] used kernel density estimation to compare changes between United States and United Kingdom. In addition, to the theoretical contributions on statistical inference, Davidson [2018] provided empirical evidence of middle class decline in Canada. The empirical evidence from middle class decline in Europe has emerged slightly later [e.g. Pressman, 2007, Grabka and Frick, 2008, Chauvel, 2013, Riihelä and Tuomala, 2019].

Previous studies on middle class decline have tended to focus on middle class identification, empirical evidence of changes between selected years, statistical methodology, and inference. Thus, research has debated on middle class defining factors (income or other social variables), ways to measure the phenomenon, and how to statistically analyse changes. Rather less attention has been given to changes over time, decomposition of the decline to analyse the underlying dynamics of the change, and whether the phenomenon affects the population heterogeneously. Interestingly, the direction of the shift in different subgroups have received less attention, despite that the direction of the shift has been seen important in income distribution studies.

The purpose of this paper is to study the dynamics behind middle class decline in Finland. First, decompose the change into subgroup-specific rate-effects and structural change effects. Second, analyse directional income mobility between socio-economic subgroups to further extend the analysis of middle class decline phenomenon. The national register-based data with over 500 000 annual observations from 1995 to 2012 allows to examine changes over time compared to analysing changes between selected years in most earlier studies. The decomposition method, proposed by Gupta (1978), allows to examine the rate-effect overall and, due to it's additive nature, by subgroup to reveal group specific contributions to the aggregate change, while simultaneously separating the structural change effects by three socio-economic factors. While the middle class decline as population share can be due to shifts towards either tail of the distribution, the mobility analysis has a benefit of distinguishing the direction of the shifts by subgroup.

The results of this study suggest that, while structural effects have contributed to the decline of middle class in Finland, the majority of the decline is due to the decreases in probabilities of belonging to middle class, especially among the population without higher education. The population with higher education has been enjoying a period of upward mobility evident in shifts from low to middle, and from middle to high income groups. The results imply that there are clear asymmetries on how different groups are effected during the middle class decline in Finland.

The remainder of this paper is divided into four sections. Section 2 provides method used in the identification of middle class, and baseline estimations for the size of middle class. Data sources are presented in Section 3. Section 4 presents the methodology and results from the decomposition of the middle class decline and mobility analysis. The main conclusions are summarized in Section 5.

2. Middle class decline in Finland

Scholars from different fields can have very different view on what makes one belong to the middle class, and even among economists, there is no consensus on exact definition of the middle class. Atkinson and Brandolini [2013] have examined different identifications of the middle class. In addition to analysing changes in middle class defined by income from 1985 to 2004, their results and conclusions suggest to re-integrate occupation and wealth into the analysis of personal incomes. Although it would be ideal to be able to identify the middle class by all of its characteristics, it raises a problem in practice due to limited data availability. This is especially the case for longer time-series. However, if one decides to include more characteristics in defining middle class, the choice of which characteristics to include is not necessarily obvious. See Deutsch et al. [2014], for a summary of what characteristics of middle class have been stressed in the literature.

Two restrictions, the lack of consensus in choice of characteristics to include and the limited data availability, lead me to focus on identification of middle class based on income and income distribution. I define the household to belong to the middle class if its equivalised disposable income is within fixed boundaries relative to the country median of the current year. A problem, that naturally arises from this identification, is that choosing the boundaries is abstract and results may vary significantly depending on the set of boundaries [See, e.g., Foster and Wolfson, 2010]. Naturally, changing the upper boundary for middle-class has a direct effect on the population share. The higher the top boundary, the larger is the middle class population share. An obvious advantage of using a commonly used approach in the analysis is comparability with earlier literature.

An estimate of middle class population share within a fixed boundary income range tells how large share of a population belongs to the middle class. In the analysis, I focus on the middle class population share based on equivalized household disposable income between 75 % and 150 % of the median. The lower boundary of 75 % is a common practice in earlier literature, and, according to Atkinson and Brandolini [2013], defines a margin between the middle class and those at-risk-of-poverty. Atkinson and Brandolini also discusses justifications for the upper limit, and they claim a population shares of the rich above one-thirds unrealistic. I set the upper limit to 150% of the median, which leaves the size of well-off between 10 and 20 percent of the population. This definition for middle class implicitly divides the population also to lower and higher income groups with less than 75 % of the median and over 150 % of the median, respectively. The simple formulas to compute the population share estimates of middle, low and high income groups are defined formulas 1, 2 and 3 below. Figure 1 presents the development of the population shares of the three income groups (low, middle and high) in Finland from 1995 to 2012. The overall shape of the curves representing the development is robust to varying the upper boundary for middle-class between 125 %. 150 % and 200 % of the median. The estimates of the population shares with alternative upper boundaries are presented in the Table A.1 in Appendix.

The following formula displays a natural estimate of the middle class population share at time t, $PS_{MC,t}$, as a sample average of identification function values

$$PS_{MC,t} = \frac{1}{n}\sum_{i=1}^{n} I[\text{Low bound} \leq y_i \geq \text{Upper bound}], \quad (1)$$

where the identification function I is given value 1 if y_i, the equivalized disposable household income of person i, is within the income range set for the middle class, and 0 otherwise. One can similarly set the identification function to reflect the membership of lower and higher class, and compute the estimates for lower and higher class shares as

$$PS_{Low,t} = \frac{1}{n}\sum_{i=1}^{n} I[y_i < \text{Low bound}], \quad (2)$$

and

$$PS_{High,t} = \frac{1}{n}\sum_{i=1}^{n} I[y_i > \text{Upper bound}]. \quad (3)$$

The Figure 1 presents how population share estimates for the three income groups has changed from 1995 to 2012. Using the income range of 75 to 150 % of the median in current year, 65.8 % of the population belongs to the middle-class in 1995. In 2012, the share of middle class is 56.1 %. The total change in middle class is by 9.6 percentage points (hereafter %p). During the same period from 1995 to 2012, the share of lower class has increased from 21.4% to 27.2%. Similarly, the share of higher class increased from 12.8% to 16.7%. Hence, the share of lower class has increased by 5.8 %p. and the share of higher class by 3.8 %p.

Overall, the estimates in this section indicate that the share of middle class decreased and the population shifted towards both tails of the income distribution, and as such is evidence of polarization in Finland. In absolute terms, the shift towards the tails has been unbalanced. 62 % of the shifted mass has shifted to lower income group while 38 % has moved into the higher income group. In relative terms, the change is more balanced as the share of lower income group has increased by 27 percent and higher income group by 30 percent.

As insightful as estimates for simple population shares are, the results also raise questions related to the underlying processes. First, the changes evident at population level leave changes at subgroup-level and structure undetected. This encourages studying the overall change by socio-economic group decomposition. Second, repeated cross-section analysis in this section does not take into account the dynamics at the individual level. The income mobility analysis compliments the analysis by focusing entirely on the dynamics, and allows examining changes in these dynamics over time and in subgroups.

3. Data

The panel data used in this study is from Statistics Finland's income distribution statistics. The panel data allows to track individuals over time from 1995 to 2012, and has over 500 000 annual observations (10 percent sample of the Finnish population). The sample is representative and the number of observations is increasing over time, as a subset of newborns are brought into the data every year. Attrition from the data is due to emigration or death. The institutionalized individuals and individuals without address are not included in the data. The information are gathered from different official register databases. The variables of interest for this study originates from Population Register Center, Tax Administration, The Register of Completed Education and Degrees.

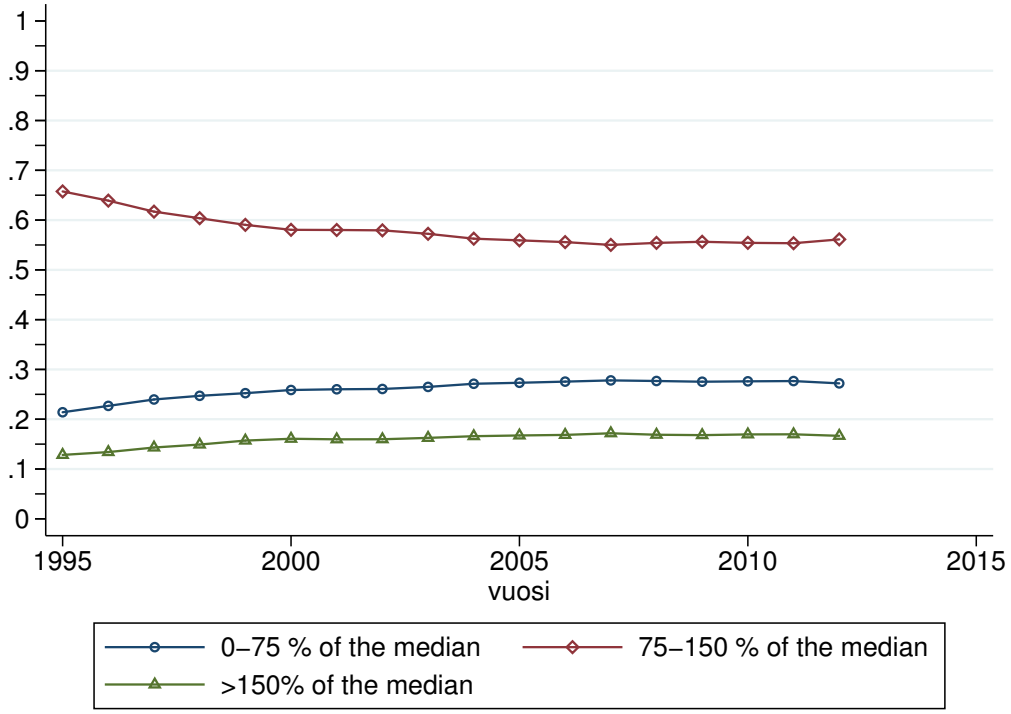

Figure 1: Population shares of the low, middle and high income groups in Finland from 1995 to 2012

The income variable used in this study is the disposable, post-tax and post-transfer, household income. This includes wage income, self-employment income, capital income, transfers and others. Paid taxes and transfers are deducted from the income. The disposable household income is then equivalised to take into account different household structures using the OECD equivalency scale. All household members have the same disposable equivalised household income, and thus the income measure assumes income sharing among the household members. The income data is from the tax administration register, and represents the most reliable data source for income data in Finland. As the measure includes all incomes together, the income shifting between wage and capital incomes is not an issue. Naturally, the measure does not capture any income that is hidden from the tax administration on purpose or by mistake.

The Register of Completed Education and Degrees has information on highest degree achieved which is recorded in 8 levels. For the purpose of this study, I re-code the education level into three categories: 1 ”No secondary-level degree”, 2 ”Secondary-level degree”, and 3 ”Tertiary-level degree”. First group represents individuals with at most comprehensive/elementary school level education. The second group has completed high school or vocational school. And the third group identifies individuals with at least bachelor-level university-degree or one from an equivalent institution.

The data contains individual age in years. To keep the number of factors reasonable, I use 7 groups to categorize the sample and capture the age structure. 1st group is individuals less than

15 years old, 2nd group for 15-24 years old, 3rd for 25-34 years old..., and the 7th group for 65 years old and older.

Primary activity information is based on the primary activity during the last week of the previous year. The primary activity is recorded in 8 levels: 11 "Employed", 12 "Unemployed", 21 "0-14 years old", 22 "Student", 24 "Retired", 25 "Military or civil service", 29 "Unemployment retired", and 99 "Others outside of workforce". For this study I have combined together groups 24 and 29, as well as groups 25 and 99. The groups are further assigned new values from 1 to 6. Values 1, 2, 3 and 4 represents groups 11, 12, 21 and 22, respectively. Groups 24 and 29 have value 5, and groups 25 and 99 are assigned value 6.

4. Methods and results

Earlier in section 2, we learned that middle class population share, identified as share of population with an equivalised disposable household income between 75 % and 150 % of the median, has decreased by 9.6 %p. from 1995 to 2012. In this section, I first go through the method and results of decomposing the observed shrinking middle class phenomenon by three socio-economic factors. Later on, the analysis is extended by examining income mobility, defined as flows between the income groups, overall and within socio-economic groups during this period.

4.1. Decomposition of the change in middle-class share

In the decomposition of the change in middle class population share, I use a decomposition method described by Das Gupta [1978] with three factors defining the socio-economic groups. The three variables that define individuals socio-economic group are education-level, age group and primary activity. In total, using these factors allow theoretically to identify 126 groups, when groups are based on 3 education levels, 7 age groups, and 6 different status for primary activity. Empirically, we don't observe all groups in the sample. The main benefit of the decomposition is that is allows to separately examine the contribution of main components group-specific rates and structural changes in three dimensions (defined by the number of used factor variables). Furthermore, it can be of interest to look at which of the socio-economic groups are main drivers of the components.

Following the notation from Das Gupta [1993], the cell proportions are defined as

$$\frac{N_{ijk}}{N_{...}} = A_{ijk}B_{ijk}C_{ijk}, \tag{4}$$

where

$$A_{ijk} = (\frac{N_{ijk}}{N_{.jk}})^{\frac{1}{3}}(\frac{N_{ij.}}{N_{.j.}}\frac{N_{i.k}}{N_{..k}})^{\frac{1}{6}}(\frac{N_{i..}}{N_{...}})^{\frac{1}{3}}, \tag{5}$$

$$B_{ijk} = (\frac{N_{ijk}}{N_{i.k}})^{\frac{1}{3}}(\frac{N_{ij.}}{N_{i..}}\frac{N_{.jk}}{N_{..k}})^{\frac{1}{6}}(\frac{N_{.j.}}{N_{...}})^{\frac{1}{3}}, \tag{6}$$

and

$$C_{ijk} = (\frac{N_{ijk}}{N_{ij.}})^{\frac{1}{3}}(\frac{N_{i.k}}{N_{i..}}\frac{N_{.jk}}{N_{.j.}})^{\frac{1}{6}}(\frac{N_{..k}}{N_{...}})^{\frac{1}{3}}. \tag{7}$$

A_{ijk}, B_{ijk} and C_{ijk} reflect the ratios for the structural effects I, J and K, respectively. In this decomposition setting, this refers to increasing education levels, aging society and the changes in primary activity groups (e.g. unemployed getting employed or leaving the work-force).

The change in middle-class population share is a change in crude rate of middle-class between two populations or two points in time. Middle-class share at base-population is defined as $T...$ and the future middle-class share by $t....$ We then want to define the change in middle-class population share in terms of the main components or effects

$$\begin{aligned} t... - T... &= R\text{-effect} + I\text{-effect} + J\text{-effect} + K\text{-effect} \\ &= [R(\bar{t}) - R(\bar{T})] + [I(\bar{a}) - I(\bar{A})] + [J(\bar{b}) - J(\bar{B})] + [K(\bar{c}) - K(\bar{C})], \end{aligned} \tag{8}$$

where

$$R(\bar{T}) = \sum_{ijk} \frac{\frac{n_{ijk}}{n...} + \frac{N_{ijk}}{N...}}{2} T_{ijk}, \tag{9}$$

$$I(\bar{A}) = \sum_{ijk} \frac{t_{ijk} + T_{ijk}}{2} [\frac{b_{ijk}c_{ijk} + B_{ijk}C_{ijk}}{3} + \frac{b_{ijk}C_{ijk} + B_{ijk}c_{ijk}}{6}] A_{ijk}, \tag{10}$$

$$J(\bar{B}) = \sum_{ijk} \frac{t_{ijk} + T_{ijk}}{2} [\frac{a_{ijk}c_{ijk} + A_{ijk}C_{ijk}}{3} + \frac{a_{ijk}C_{ijk} + A_{ijk}c_{ijk}}{6}] B_{ijk}, \tag{11}$$

$$K(\bar{C}) = \sum_{ijk} \frac{t_{ijk} + T_{ijk}}{2} [\frac{a_{ijk}b_{ijk} + A_{ijk}B_{ijk}}{3} + \frac{a_{ijk}B_{ijk} + A_{ijk}b_{ijk}}{6}] C_{ijk}, \tag{12}$$

and similarly for $I(\bar{a})$, $J(\bar{b})$ and $K(\bar{c})$ by replacing last term with respective effect ratios and for $R(\bar{t})$ with the respective crude rate of the non-base population.

Results of the decomposition for each year are in Table A.2 in Appendix. The results indicate that the majority of the decrease in middle class population share (-9.63 %p from 1995 to 2012) is driven by decreases in group-specific rates of belonging to middle class. The rate-effect contribution covers 91.4% of the observed decrease in middle class share. The effect of change in education structure (I-effect) is contributing the change by -0.7%p (7.33 %). The effect of change in age group structure has similarly sized contribution as the education structure. The effect of change in primary activity structure is positive to the middle class share change which indicates that if group-specific rates, education and age structure had remained constant, the change in primary activity structure would have resulted with a higher middle-class population share.

In total the effect of structural change in education, age groups and primary activity contribute to the decline in middle class share by 8.6%. Intuitively this means that even if we only observed the change in group-specific rates for middle class probability, we would expect to see a decrease in middle class population share by 8.8 %p. Structural changes in the socio-economic groups contributes to the overall change by decreasing the middle class change but the effect is modest compared to the rate-effect.

The results for decomposition over time does not reveal large anomalies. Figure 2 depicts the timeline of the overall change in middle class share, and individual components from the decomposition. The contribution of the rate-effect remains highly responsible for the overall

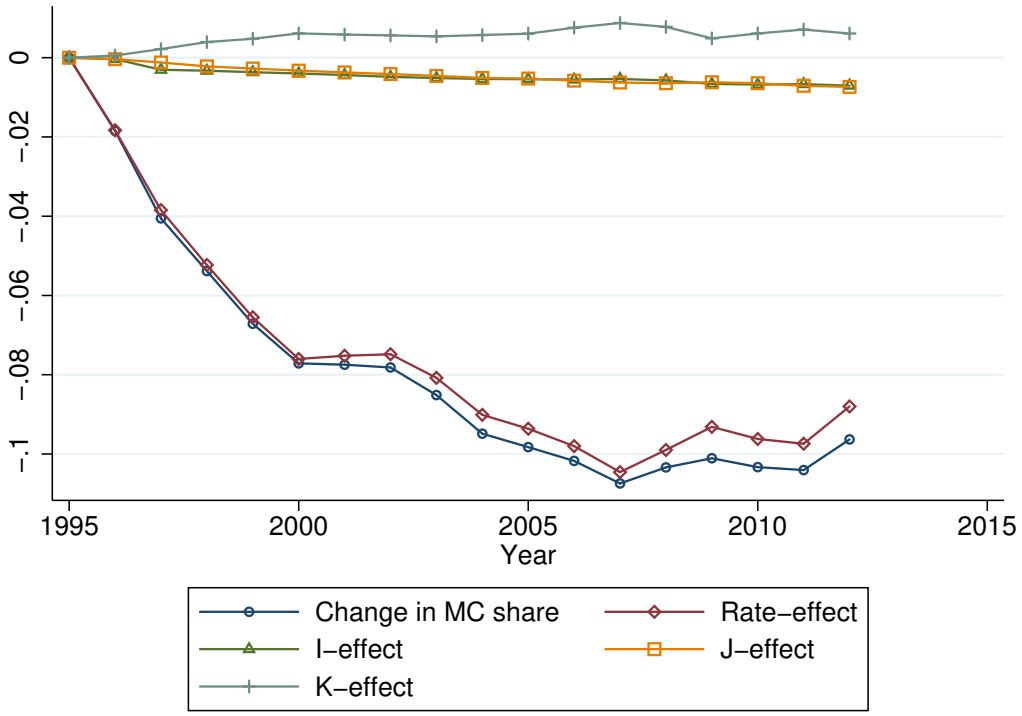

Figure 2: Decomposition of change in middle class population share into rate-effect (group-specific rates of belonging to middle class) and effects of structural changes in Education-levels (I-effect), age-groups (J-effect), and primary activity (K-effect) over time.

change. The effect of structural change in education and age groups is remains modest and linearly decreasing in time, which is unsurprising as changes in these structures do not happen over night. The effect of primary activity structure, while modest in magnitude, results with more variation over time. The size of the effect is increasing from 1995 to 2007, while the Finnish economy was recovering from the recession and then enjoying a period of good growth. A decrease in K-effect fits periodically well with the financial crises of 2007-2008.

Computed decomposition effects are additively computed across observed socio-economic groups (Formulas 9-12). This gives a good overview but can raise questions of the underlying processes. The additive nature of the decomposition method allows to separate the effect to individual groups, but perhaps a more natural step forward is to look at contributions between socio-economic factors education-level, age group and primary activity. For example, the Rate-effect component contribution by education-level can be computed by adding up effects from socio-economic groups with the same education level and allowing primary activity and age group to vary. This process results with three components for rate-effect, one for each education-level, which add up to the total rate-effect.

Computing the results by education group tells a more detailed story about the education-level groups that are driving the decrease in middle class population share in Finland. These

results are presented in the Table A.3 in Appendix. By year 2012, the contribution of the lowest education group (No secondary-level degree) to the Rate-effect is -5.84 %p, which alone represents 60 % of the total decrease middle class share. The contribution of the socio-economic groups with secondary degree is -3.3 %p, and 34 % of the total decrease. The Rate-effect for the group with tertiary degree is positive 0.34 %p. Decomposing the rate-effect by education groups then indicates that the rate-effect, which has the higher contribution to the overall decrease, is mainly driven by the rate-effects among the socio-economic groups with lower education-level. The group with the lowest education level is driving the rate-effect the most, while the effect among the highly educated is modest and opposite by direction.

The effects of the structural change in education by education group reveals interesting results. While the overall effect of the I-effect is modest, the effects in individual education-groups are not. By decrease in population share in the lowest group contributes by decreasing the middle class share by 7.39 %p. by 2012. This effect is mostly mitigated by increases in population share among the higher educated groups, which has a positive contribution to the middle class share. The structural change in education, where the general level of education is increasing (higher share of population in the more educated groups) has not resulted with an increases in middle class share. This results is slightly counter-intuitive. The results is partly due mobility between middle and high income group in highly educated groups. The analysis on middle class decomposition does not capture this effect, which raises a need to extend the analysis to income group mobility later in Section 4.2.

The decomposition results by age group are presented in Table A.4 in Appendix. Focusing on the results for 2012, the results by age group indicate that the rate-effect certainly seems to be unequally distributed along the age distribution. Especially, the younger age groups are effected the most by 2012. The contribution to the rate-effect is smallest among 45 to 54 years old. Despite the unequal distribution in magnitude of age-group-specific rate-effects, the rate-effect is negative among all age groups. The distribution of rate-effect by age groups has remained similar for most of the years. The main anomaly in the results is the rate-effect in the oldest age group in 1996, which is smallest of the age groups.

The results for the structural effects by age group do not reveal as large and significant results as the analysis by education group. It is worth noting that the J-effect, the effect of change in age-structure, indicates that the population is aging. There are large contribution to decrease J-effect in age groups 25-34 and 35-44, while population share increases in the older groups 55-64 and over 64 has opposite effect. The effect of structural change of primary activity by age group on the other hand indicates that the middle class increasing effects of changes in primary activity has occurred among the older population.

Results by primary activity are in Appendix (Table A.5). The rate-effects are negative in all primary activity groups, which indicate that no primary activity group has been safe from a decrease in middle class rate from 1995 to 2012. The largest absolute rate-effect by primary activity are for group 3 (Child aged 0-14) and group 5 (Retired). The rate-effect contribution by employed, unemployed and students are similar in magnitude despite large differences in group sizes. The change in primary activity structure indicates that from 1995 to 2012, the share of employed has increased, and population shares of unemployed, children and students has decreased.

4.2. Mobility between income groups

Income mobility is generally seen as a positive force in a society as higher income mobility lowers the long-term inequality. For a group of individuals however, not all mobility is equal. For

an individual, income fluctuations, especially unexpected shifts downwards, pose an undesirable risk. In this section, the aim is to take the directional mobility into account when examining mobility during the period of middle class decrease from 1995 to 2012. I measure mobility as a share of population that has experienced a change in their income group to or from middle class from the previous year. Like mobility for individuals, not all flows to or from middle class are equal either. By common sense, a downward shift from middle class to low income group is something to avoid. On the other hand, it is much harder to see the shrinking middle class as a problem if everyone in middle class shifts upwards. Similarly, increases in middle class population share due to inflow from high income group are hardly beneficial for the system as a whole.

To distinguish the role of directional shifts along the income distribution, I examine upward and downward mobility separately. Focusing on the middle class, there are four types of flows to examine: Low to mid (Inflow, Upward), Mid to high (Outflow, Upward,) High to mid (Inflow, Downward), and Mid to low (Outflow, Downward). Each of these flows are examined in the full sample, for an overview of overall mobility, as well as in socio-economic subgroups. Similarly as decomposition results earlier extended the analysis of the decreased size of middle class, the mobility in subgroups is examined to extend the directional mobility analysis by revealing heterogeneity of the effects and highlighting the groups driving the results.

The estimates of the income group changes for the sample population as flows in four categories, along with combined inflows and outflows, are presented in Figure 3. Estimates for year 1996 represent the change from 1995 to 1996. For example, in 1995, 6% of the population experienced a drop from middle class to low income group while the inflow from low class to middle class was 5%, which results a net outflow towards the left tail from the middle class. At the same time, there has been a net outflow from middle class to higher income group. This polarization of the income classes, shifts from middle to opposite tails of the distribution, has been largest in the late 1990s but is still evident during the first decade of the 21st century. Overall, the decreases in population shares of the middle class have been due to net outflows towards both tails of the distribution. This polarization increases income inequality. The increases in inequality are not hindered by income mobility, as the overall level of mobility has not increased.

Despite rather large changes in late 1990s, the mobility estimates overall are quite stable. However, the estimates from the sample population are weighted average of the effects in various socio-economic subgroups. Earlier results from the decomposition revealed that the effects can significantly vary between subgroups. If mobility is similarly heterogeneous between subgroups, it raises interest to examine mobility in subgroups determined by socio-economic factors. Analysis for mobility in subgroups is conducted separately for the following factors 1) level of education, 2) age group, and 3) primary activity.

Results for mobility by education groups in Figure 4 reveal that there has been net outflow from middle class across all education groups. This development has been most evident from 1995 to 2004, followed by a more stable period till 2012. Despite some similarities, there are significant differences in mobility between the education groups. For instance, mobility, as shifts to and from middle class, is at a lower level among the population with no secondary degree compared to the higher educated part of the population.

Further examination of the mobility among the population with no secondary degree reveals that majority of the shifts happen between low and middle income groups. Most of the net outflow from middle class is due to shifts towards the lower class that lasts from 1995 till 2010. These results clearly show that the during this period, the population with no secondary degree has mainly been subject to downward mobility.

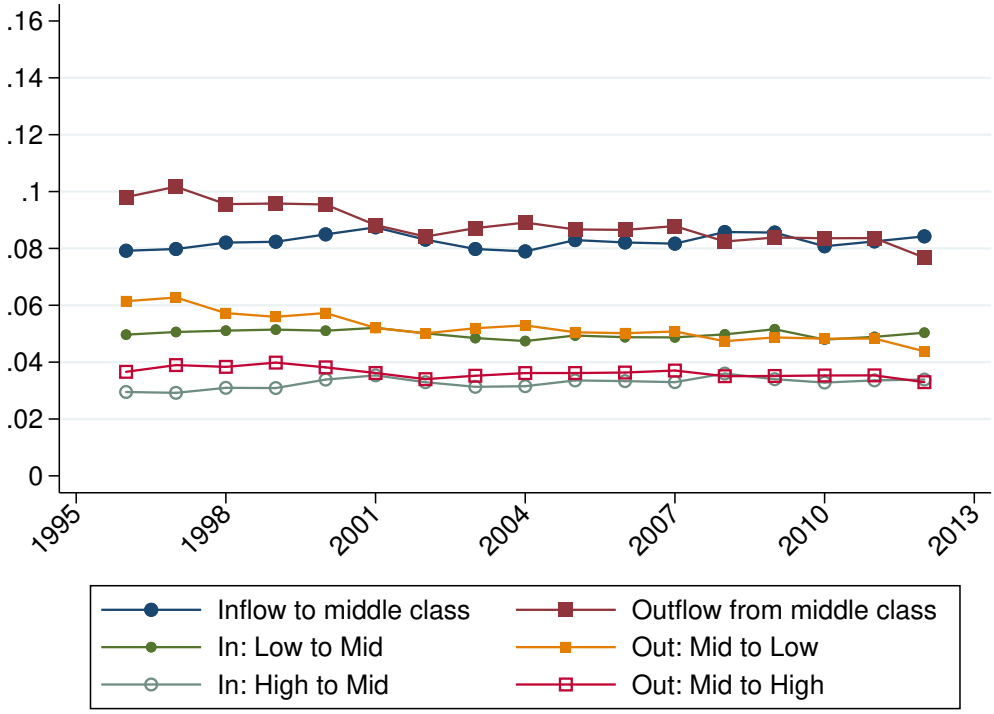

Figure 3: Directional mobility measured as flows between income groups. The estimates represent a share of population with a corresponding change in income group status.

For the population with a secondary degree, the story changes significantly. For this subgroup, the net outflow largely originates from outflow from middle to high income group between 1995 to 2001. Compared to the mobility among no-secondary degree population, the overall level of mobility is higher due to the level of shifts between the two higher income groups. Despite the net outflow towards the left tail at the very first years of the observed period, the mobility should be interpreted as upward mobility. However, this period of upward mobility seems to have been ceased during the 21st century.

The subgroup with a tertiary degree has experienced upward mobility over the whole period. This is evident between shifts from low to middle, as well as from middle to high income group. Contrary to the mobility in lower educated groups, in this subgroup the majority of the income group changes occur between middle and high income groups. The net inflow from low income group to the middle class is stable over the whole period, while the net outflow from the middle class to the high income group has been decreasing over the years. The decreasing net outflow to the high income group and the stable inflow from left tail of the distribution, results with a positive net inflow to middle class from 2005 onward.

Computing the mobility measures by age group reveal that while effects are heterogeneous between age groups, within age groups changes in mobility over time are modest (Figure A.5). Moreover, mobility measures in different age groups could be greatly driven by life-cycle. In-

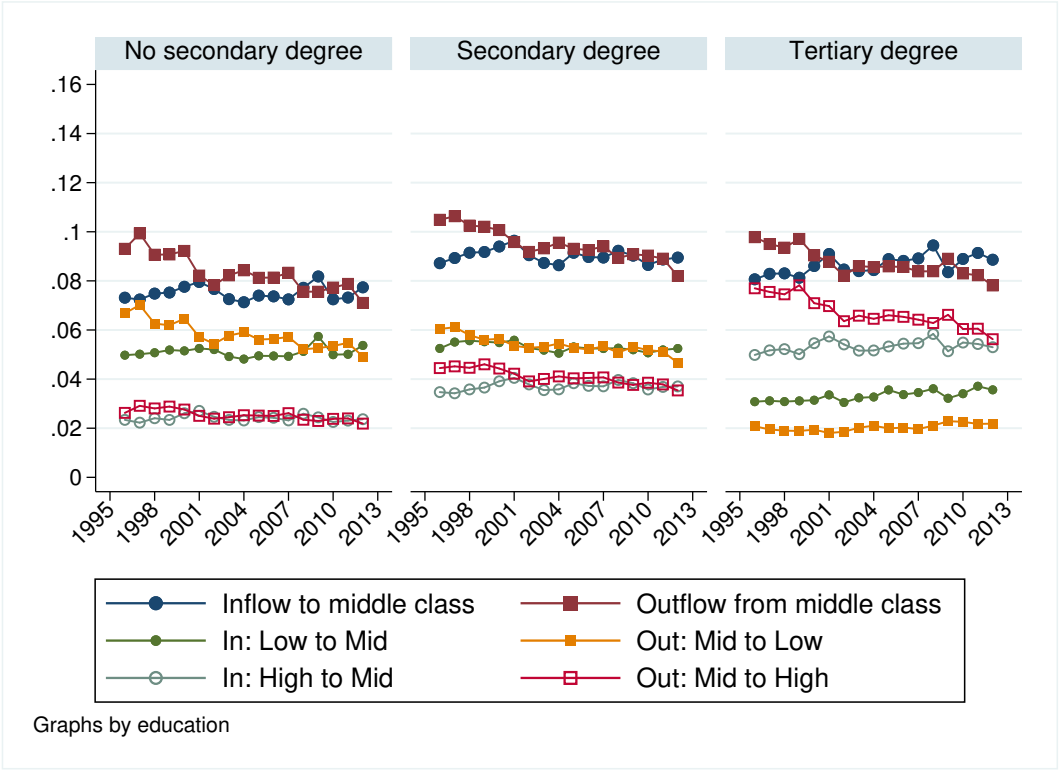

Figure 4: Directional mobility by primary activity. Flows are measured as a share of individuals with a corresponding change in income group status. Estimates are relative to the size of an education group.

terpreting the results from the life-cycle point of view, the results would indicate clearly distinguishable phases in life: polarization during childhood driven possibly by parents' income (0-14) and shifts between low and middle income groups while education and starting in work-life (15-24), upward mobility in young adulthood (24-35), polarising adulthood (35-44), upward mobility among the well-off during ages 45 to 54, and downward mobility in the older age (55-64, and over 65). The level of mobility seem to be first rapidly increasing during the education phase, and then decreases over time.

The figures for the mobility in primary activity groups over time is presented in Figure A.6 in Appendix. There are significant yet mostly unsurprising differences between the groups. Both the unemployed and outside of workforce groups have been subject to downward mobility, and the majority of the overall outflow from middle class is due to net-outflow towards the low income group. Despite a similarly large net outflow from mid to low income group among students, the story is different due to the simultaneous net outflow from middle to high income group. Therefore, the development among students is more polarising. For employed, the most surprising results is that the development has been rather stable over time. While overall inflow to and outflow from middle class have remained stable and seem to fluctuate around a same mean, the separation to shifts downwards and upwards reveals that the employed have enjoyed a period of upward mobility over the whole observed period.

In conclusion, the results from the decomposition revealed that the decreased population share of middle class is largely driven by the rate-effect, which means that group-specific probabilities of belonging to middle class has decreased. Meanwhile, the effect of structural change in education, age and primary activity are modest, and in case of primary activity of a different sign. Further investigation of the rate-effect revealed that two of the lower education groups are most effected. These results are further strengthened by the mobility analysis, which shows that the population with no secondary degree has been subject to downward mobility. In the meantime, population with secondary or tertiary degrees have been more likely to shift between middle and high income groups, and outflow from middle-class is mostly driven by upward mobility. The implications of these results, as well as advantages and disadvantages of the methodology, will be further discussed in the following section.

5. Discussion and conclusions

This paper set out to investigate dynamics of the middle class decline in Finland between 1995 and 2012. The aim of the study was to assess contributions from individual subgroups based on socio-economic factors, and the role of structural change. In addition, the mobility analysis was conducted to extend the analysis to reveal possible asymmetries in directional mobility by education-level, age-group and primary activity.

The most obvious finding to emerge from this study is that the group-specific rates have been the main driver of the observed middle class decline in Finland. The rate-effect has been most distinct among population with lower education levels. The changes in education- and age-structures have further contributed to the decline, while the structural change in primary activity status has had a counteracting effect. In addition, to the structural changes having opposite effects, their contribution to the overall decline is less than 10 percent. The second major finding was the relationship between directional mobility and education-level. Among the population with no-secondary degree, the rate-effect contribution is driven by downward mobility (shifts from middle class to low income group). While the contribution for the rate-effect from the population with tertiary was low, the directional mobility analysis revealed, that there has been upward mobility from low income group to middle class, but the effect to the size of middle class is mitigated by a simultaneous outflow from middle class to high income group.

Taken together, these results suggest that decomposition of the change, and directional mobility by subgroup should be taken into account when investigating middle class decline. Despite that, the effects of structural changes were small in this study, they can be more relevant in longer time series or other countries. Direction of the change behind middle class decline is important to distinguish. Especially, when middle class is identified by an income range, the middle class decline can be due to middle class households shifting upwards along the income distribution, which one might want to separate from the shifts downwards. Additionally, we can observe a stable middle class with proportionate shifts downwards or upwards along the income distribution or in case of different subgroups moving opposite directions. The former requires to track sizes of all income groups. The latter requires to examine the changes and contributions by subgroup, which once more leads one to consider decomposition methods.

This work contributes to existing knowledge of Finnish middle class decline in several ways. First, the middle class in Finland has declined mainly due to decreases in probabilities of belonging to middle class among population with lower education. Second, structural changes of education, age and primary activity do not explain much of the middle class decline in Finland. Third, the direction of the shifts from middle class seem to be associated with education level.

Thus, this suggests lower middle class consensus due to smaller middle class size and more divergent groups along the income distribution. Both of these can negatively effect future growth or political stability in Finland.

The limitations of the study should be taken into account when interpreting the results. The major limitation of this study is that the direction and channels of causality are unclear. It is likely that there are omitted factors driving the results, especially in the case of education and mobility. Additionally, regarding results on role of structural effects, the study would benefit from a more detailed information of the employment. For example, while it is possible to account for structural change in primary activity, the data lacks required information to analyse the effect of changes in job descriptions or tasks. This is a common problem when data is originally gathered for other purposes, like income taxation. For analysis of income mobility, it would be great to have more sophisticated measures to analyse subgroup mobility. While there are more advanced measures of income mobility, I didn't find them suitable for the scope of this study.

In spite of its limitations, the study certainly adds to our understanding of the role of structural changes, and that the middle class decline is asymmetrically effecting various socio-economic subgroups in the society. While the causal relations remain unclear, the results in this study describe phenomenon of the middle class decline in Finland.

Further studies regarding middle class decline should continue to investigate the phenomenon in more details, and include effects within subgroups. This line of research, would also benefit from improved statistical measures to analyse sub-populations and to provide estimates of statistical inference, especially in smaller samples. The role of structural effects, while marginal in this study, can be more relevant in longer time series or other countries, and should be of interest itself and not only controlled for. Additionally, middle class well-being could be an interesting extension to literature of middle class decline. In this study, as in many others, the analysis was based on income, which is at most an incomplete proxy for well-being.

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Appendix A. Tables and figures

Table A.1: Income group population shares and asymptotic standard errors. Including alternative income ranges relative to the median income identifying middle class.

Year	0-75%	75-125%	75-150%	75-200%	over 125%	over 150%	over 200%	n
1995	.214	.523	.658	.751	.263	.128	.035	504709
1996	.227	.503	.639	.737	.27	.134	.036	504449
1997	.24	.483	.617	.718	.277	.143	.042	505624
1998	.247	.47	.604	.707	.283	.149	.046	506491
1999	.252	.46	.59	.695	.288	.157	.053	507532
2000	.259	.45	.58	.686	.291	.161	.055	508098
2001	.26	.448	.58	.687	.292	.16	.052	509608
2002	.261	.447	.579	.687	.292	.16	.053	510636
2003	.265	.44	.572	.68	.295	.163	.055	511698
2004	.271	.432	.563	.671	.297	.166	.057	513001
2005	.273	.428	.559	.668	.299	.167	.059	515106
2006	.276	.425	.556	.665	.299	.169	.059	516900
2007	.278	.42	.55	.66	.302	.172	.062	519249
2008	.277	.424	.554	.664	.299	.169	.059	521664
2009	.275	.426	.557	.667	.299	.168	.058	523858
2010	.276	.424	.554	.664	.3	.17	.06	526049
2011	.277	.423	.554	.663	.3	.17	.06	527773
2012	.272	.43	.561	.671	.298	.167	.057	530471

Note: Asymptotic standard errors are omitted due to being negligibly small. For example, the estimate of the population share with an income between 75% and 150% of the median in 2012 is 0.561 and the asymptotic standard error is 0.0007.

Table A.2: Decomposition of change in middle class share, ΔMC, into Rate-, I-, J, and K-effect in percentage-points. Effect-specific contribution rates R%, I%, J%, and K% are computed as percentage share of ΔMC, respectively.

Year	ΔMC	Rate	R%	I-effect	I%	J-effect	J%	K-effect	K%	n
1995	0	0		0		0		0		504709
1996	-1.85	-1.83	99.02	-.04	1.95	-.04	1.99	.05	-2.96	504449
1997	-4.05	-3.85	94.88	-.3	7.5	-.12	2.99	.22	-5.36	505624
1998	-5.38	-5.23	97.15	-.33	6.11	-.22	4.07	.39	-7.32	506491
1999	-6.71	-6.55	97.59	-.37	5.45	-.27	4.07	.48	-7.11	507532
2000	-7.71	-7.6	98.56	-.4	5.17	-.33	4.22	.61	-7.95	508098
2001	-7.75	-7.52	97.09	-.44	5.65	-.37	4.8	.58	-7.53	509608
2002	-7.82	-7.48	95.73	-.48	6.19	-.41	5.29	.56	-7.21	510636
2003	-8.51	-8.08	94.9	-.51	6.03	-.46	5.41	.54	-6.33	511698
2004	-9.49	-9.01	94.99	-.54	5.65	-.51	5.39	.57	-6.03	513001
2005	-9.83	-9.36	95.28	-.54	5.53	-.53	5.36	.61	-6.17	515106
2006	-10.17	-9.8	96.32	-.55	5.42	-.58	5.69	.76	-7.44	516900
2007	-10.74	-10.46	97.33	-.54	4.99	-.63	5.83	.88	-8.16	519249
2008	-10.34	-9.9	95.74	-.57	5.55	-.64	6.23	.78	-7.52	521664
2009	-10.11	-9.32	92.16	-.66	6.54	-.62	6.13	.49	-4.83	523858
2010	-10.33	-9.62	93.12	-.68	6.58	-.64	6.23	.61	-5.93	526049
2011	-10.41	-9.74	93.62	-.67	6.41	-.71	6.8	.71	-6.83	527773
2012	-9.63	-8.8	91.36	-.71	7.33	-.74	7.65	.61	-6.34	530471

Table A.3: Decomposition by Education

Year	Education	Rate-effect	I-effect	J-effect	K-effect	n
1995	1	0	0	0	0	278455
1995	2	0	0	0	0	196519
1995	3	0	0	0	0	29735
1996	1	-1.03	-.61	.03	-.03	273588
1996	2	-.73	.44	-.06	.07	199701
1996	3	-.07	.14	-.01	.01	31160
1997	1	-2.49	-1.1	.04	-.05	269912
1997	2	-1.36	-.07	-.13	.22	196536
1997	3	.01	.87	-.04	.04	39176
1998	1	-3.31	-1.5	.05	-.15	266069
1998	2	-1.88	.17	-.2	.47	199514
1998	3	-.04	.99	-.06	.08	40908
1999	1	-4.08	-1.93	.07	-.21	262747
1999	2	-2.35	.41	-.26	.59	201819
1999	3	-.12	1.16	-.08	.09	42966
2000	1	-4.78	-2.39	.1	-.23	258838

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Table A.3 – *Continued from previous page*

Year	Education	Rate-effect	I-effect	J-effect	K-effect	n
2000	2	-2.7	.63	-.33	.73	203906
2000	3	-.12	1.37	-.09	.12	45354
2001	1	-4.8	-2.88	.12	-.26	255713
2001	2	-2.65	.82	-.39	.72	205858
2001	3	-.07	1.62	-.1	.12	48037
2002	1	-4.78	-3.39	.13	-.27	252259
2002	2	-2.68	.99	-.43	.71	207432
2002	3	-.03	1.91	-.11	.13	50945
2003	1	-5.2	-3.85	.15	-.3	248664
2003	2	-2.86	1.12	-.48	.7	209011
2003	3	-.03	2.22	-.13	.13	54023
2004	1	-5.72	-4.27	.14	-.32	245271
2004	2	-3.26	1.23	-.52	.75	210626
2004	3	-.03	2.51	-.13	.15	57104
2005	1	-6	-4.68	.14	-.3	242763
2005	2	-3.37	1.34	-.53	.76	212249
2005	3	.01	2.79	-.14	.15	60094
2006	1	-6.27	-5.02	.12	-.31	239834
2006	2	-3.56	1.4	-.56	.89	213833
2006	3	.03	3.07	-.14	.17	63233
2007	1	-6.75	-5.27	.09	-.36	237370
2007	2	-3.8	1.39	-.57	1.04	215466
2007	3	.09	3.35	-.15	.2	66413
2008	1	-6.52	-5.65	.08	-.41	234989
2008	2	-3.55	1.32	-.58	.97	216040
2008	3	.17	3.75	-.15	.21	70635
2009	1	-6	-6.21	.09	-.44	232166
2009	2	-3.43	1.52	-.55	.76	218105
2009	3	.11	4.03	-.16	.17	73587
2010	1	-6.12	-6.6	.08	-.45	229300
2010	2	-3.66	1.6	-.55	.87	219905
2010	3	.16	4.32	-.18	.2	76844
2011	1	-6.3	-6.96	.08	-.46	226249
2011	2	-3.69	1.68	-.59	.96	221636
2011	3	.25	4.61	-.19	.21	79888
2012	1	-5.84	-7.39	.08	-.5	224029
2012	2	-3.3	1.76	-.6	.9	223363
2012	3	.34	4.93	-.21	.2	83079

Table A.4: Decomposition by Age-group

Year	Age-group	Rate-effect	I-effect	J-effect	K-effect	n
1995	1	0	0	0	0	96468
1995	2	0	0	0	0	62388
1995	3	0	0	0	0	71672
1995	4	0	0	0	0	78341
1995	5	0	0	0	0	68112
1995	6	0	0	0	0	57570
1995	7	0	0	0	0	70158
1996	1	-.56	-.08	0	0	95892
1996	2	-.26	.01	.09	-.04	62696
1996	3	-.34	.05	-.31	.03	69760
1996	4	-.3	.04	-.17	.03	77486
1996	5	-.22	0	.34	.01	71003
1996	6	-.14	-.03	-.07	.01	56964
1996	7	-.01	-.02	.07	.02	70648
1997	1	-.97	-.14	-.03	-.03	95093
1997	2	-.54	-.04	.24	0	63561
1997	3	-.62	.06	-.6	.09	68086
1997	4	-.47	.02	-.4	.11	76659
1997	5	-.34	-.05	.5	.06	73033
1997	6	-.3	-.1	.01	-.03	57749
1997	7	-.62	-.04	.15	.02	71443
1998	1	-1.28	-.21	-.09	-.09	93966
1998	2	-.72	-.05	.55	-.12	64716
1998	3	-.78	.09	-.98	.19	65973
1998	4	-.71	.05	-.62	.25	76165
1998	5	-.55	-.04	.56	.18	74605
1998	6	-.43	-.12	.11	-.01	58936
1998	7	-.74	-.06	.25	.01	72130
1999	1	-1.6	-.27	-.11	-.11	93269
1999	2	-.9	-.05	.63	-.16	64967
1999	3	-1	.12	-1.2	.22	64728
1999	4	-.93	.08	-.77	.3	75529
1999	5	-.64	-.04	.48	.2	74435
1999	6	-.54	-.14	.36	-.01	61371
1999	7	-.95	-.07	.34	.03	73233
2000	1	-1.75	-.33	-.13	-.13	92653
2000	2	-.9	-.06	.63	-.18	64658
2000	3	-1.16	.15	-1.36	.27	63944
2000	4	-1.13	.11	-.94	.36	74652
2000	5	-.71	-.03	.33	.25	73590
2000	6	-.67	-.16	.73	-.01	64691
2000	7	-1.28	-.07	.41	.04	73910

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Table A.4 – *Continued from previous page*

Year	Age-group	Rate-effect	I-effect	J-effect	K-effect	n
2001	1	-1.84	-.4	-.13	-.13	92370
2001	2	-1.01	-.07	.59	-.19	64085
2001	3	-1.17	.18	-1.49	.24	63388
2001	4	-1.08	.13	-1.06	.33	74105
2001	5	-.63	-.03	.2	.24	72741
2001	6	-.68	-.18	1.06	.01	67966
2001	7	-1.11	-.08	.47	.09	74953
2002	1	-1.89	-.46	-.15	-.15	91866
2002	2	-1.1	-.09	.5	-.15	63754
2002	3	-1.18	.23	-1.64	.22	62687
2002	4	-1.09	.16	-1.13	.31	73750
2002	5	-.6	-.02	.05	.21	71413
2002	6	-.65	-.21	1.4	0	71137
2002	7	-.97	-.1	.56	.12	76029
2003	1	-1.97	-.52	-.18	-.18	91086
2003	2	-1.23	-.1	.49	-.14	63768
2003	3	-1.2	.27	-1.78	.21	62088
2003	4	-1.15	.19	-1.21	.29	73511
2003	5	-.69	-.02	-.15	.2	69990
2003	6	-.71	-.23	1.68	.01	73843
2003	7	-1.12	-.1	.68	.15	77412
2004	1	-2.07	-.58	-.2	-.2	90534
2004	2	-1.39	-.11	.49	-.13	63724
2004	3	-1.3	.31	-1.82	.21	62173
2004	4	-1.24	.2	-1.4	.29	72414
2004	5	-.79	-.02	-.27	.2	69180
2004	6	-.84	-.24	1.89	.02	76003
2004	7	-1.39	-.09	.8	.17	78973
2005	1	-2.13	-.64	-.25	-.25	89704
2005	2	-1.47	-.1	.39	-.01	64001
2005	3	-1.34	.35	-1.8	.19	62621
2005	4	-1.28	.21	-1.56	.25	71307
2005	5	-.73	-.02	-.34	.17	68567
2005	6	-.94	-.26	2.18	.02	78724
2005	7	-1.47	-.08	.85	.24	80182
2006	1	-2.17	-.69	-.29	-.29	88861
2006	2	-1.48	-.12	.42	.03	64233
2006	3	-1.4	.38	-1.78	.23	63377
2006	4	-1.34	.23	-1.8	.29	69891
2006	5	-.8	-.01	-.47	.2	67886
2006	6	-1.03	-.26	2.26	.03	79775
2006	7	-1.58	-.08	1.07	.28	82877
2007	1	-2.26	-.74	-.32	-.32	88264
2007	2	-1.48	-.13	.48	.01	64368

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Table A.4 – *Continued from previous page*

Year	Age-group	Rate-effect	I-effect	J-effect	K-effect	n
2007	3	-1.43	.42	-1.71	.26	64540
2007	4	-1.41	.24	-2.06	.33	68443
2007	5	-.79	0	-.57	.23	67560
2007	6	-1.16	-.26	2.5	.06	82456
2007	7	-1.94	-.06	1.07	.31	83618
2008	1	-2.29	-.8	-.35	-.35	87888
2008	2	-1.44	-.14	.51	-.08	64273
2008	3	-1.37	.45	-1.6	.23	66074
2008	4	-1.31	.24	-2.35	.29	66713
2008	5	-.72	0	-.64	.21	67412
2008	6	-1.07	-.28	2.59	.11	84032
2008	7	-1.71	-.05	1.19	.37	85272
2009	1	-2.32	-.86	-.36	-.36	87594
2009	2	-1.63	-.15	.43	-.06	64313
2009	3	-1.39	.49	-1.57	.1	66646
2009	4	-1.28	.25	-2.46	.14	65797
2009	5	-.69	.01	-.67	.09	66985
2009	6	-1	-.3	2.67	.12	85594
2009	7	-1.01	-.1	1.32	.46	86929
2010	1	-2.36	-.92	-.36	-.36	87454
2010	2	-1.7	-.18	.46	-.03	64503
2010	3	-1.49	.52	-1.59	.13	66783
2010	4	-1.29	.28	-2.6	.16	65171
2010	5	-.76	.02	-.76	.09	66410
2010	6	-1	-.3	2.63	.11	85631
2010	7	-1.03	-.1	1.58	.51	90097
2011	1	-2.42	-.98	-.33	-.33	87583
2011	2	-1.66	-.19	.52	-.07	64558
2011	3	-1.43	.56	-1.67	.14	66498
2011	4	-1.28	.3	-2.71	.19	64813
2011	5	-.78	.02	-.84	.12	66165
2011	6	-1.01	-.3	2.46	.11	84563
2011	7	-1.16	-.08	1.87	.56	93593
2012	1	-2.28	-1.04	-.32	-.32	87799
2012	2	-1.64	-.21	.51	-.09	64602
2012	3	-1.31	.57	-1.71	.09	66652
2012	4	-1.16	.32	-2.83	.13	64389
2012	5	-.66	.02	-.86	.08	66323
2012	6	-.89	-.29	2.28	.11	83417
2012	7	-.87	-.08	2.2	.62	97289

Table A.5: Decomposition by Activity

Year	Activity	Rate-effect	I-effect	J-effect	K-effect	n
1995	1	0	0	0	0	192873
1995	2	0	0	0	0	47111
1995	3	0	0	0	0	96468
1995	4	0	0	0	0	45017
1995	5	0	0	0	0	106133
1995	6	0	0	0	0	17107
1996	1	-.63	.07	-.05	.23	195121
1996	2	-.21	.01	-.01	-.12	45882
1996	3	-.56	-.08	0	0	95892
1996	4	-.22	-.01	0	-.16	43559
1996	5	-.08	-.03	.02	.04	106380
1996	6	-.13	0	-.01	.06	17615
1997	1	-.79	-.02	-.17	1.12	203073
1997	2	-.59	-.02	0	-.78	39600
1997	3	-.97	-.14	-.03	-.03	95093
1997	4	-.41	-.03	.02	-.1	44095
1997	5	-.88	-.09	.07	-.02	106295
1997	6	-.21	0	-.01	.04	17468
1998	1	-1.17	.05	-.28	2.23	212433
1998	2	-.86	-.01	-.01	-1.08	36641
1998	3	-1.28	-.21	-.09	-.09	93966
1998	4	-.53	-.04	.05	-.57	40117
1998	5	-1.12	-.11	.13	-.13	105936
1998	6	-.27	0	-.02	.03	17398
1999	1	-1.5	.09	-.41	2.67	216487
1999	2	-1.01	-.01	-.01	-1.28	34533
1999	3	-1.6	-.27	-.11	-.11	93269
1999	4	-.66	-.04	.06	-.73	38608
1999	5	-1.42	-.13	.24	-.16	106670
1999	6	-.36	0	-.03	.09	17965
2000	1	-1.69	.14	-.53	3.3	221912
2000	2	-1.14	-.02	-.01	-1.61	30993
2000	3	-1.75	-.33	-.13	-.13	92653
2000	4	-.72	-.04	.05	-.77	38085
2000	5	-1.93	-.14	.34	-.24	106778
2000	6	-.37	0	-.03	.06	17677
2001	1	-1.63	.18	-.65	3.27	222682
2001	2	-1.13	-.02	-.03	-1.64	30731
2001	3	-1.84	-.4	-.13	-.13	92370
2001	4	-.76	-.05	.02	-.79	37729
2001	5	-1.75	-.16	.46	-.17	108461
2001	6	-.41	0	-.04	.06	17635

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Table A.5 – *Continued from previous page*

Year	Activity	Rate-effect	I-effect	J-effect	K-effect	n
2002	1	-1.59	.24	-.77	3.24	223140
2002	2	-1.11	-.02	-.02	-1.76	29552
2002	3	-1.89	-.46	-.15	-.15	91866
2002	4	-.85	-.06	.01	-.63	39066
2002	5	-1.62	-.19	.57	-.2	109357
2002	6	-.43	0	-.05	.06	17655
2003	1	-1.73	.28	-.88	3.19	223687
2003	2	-1.14	-.01	-.03	-1.74	29648
2003	3	-1.97	-.52	-.18	-.18	91086
2003	4	-.93	-.06	.01	-.61	39102
2003	5	-1.86	-.19	.68	-.22	110179
2003	6	-.46	0	-.06	.09	17996
2004	1	-1.9	.31	-1.01	3.27	225273
2004	2	-1.26	-.01	-.02	-1.75	29124
2004	3	-2.07	-.58	-.2	-.2	90534
2004	4	-1.02	-.07	0	-.6	39155
2004	5	-2.27	-.18	.77	-.22	111115
2004	6	-.48	0	-.06	.07	17800
2005	1	-1.83	.34	-1.1	3.12	225313
2005	2	-1.3	-.01	-.02	-1.86	27877
2005	3	-2.13	-.64	-.25	-.25	89704
2005	4	-1.08	-.07	.02	-.31	41771
2005	5	-2.49	-.18	.87	-.1	113316
2005	6	-.53	.01	-.06	0	17125
2006	1	-1.87	.39	-1.22	3.62	230123
2006	2	-1.37	-.02	-.02	-2.18	24191
2006	3	-2.17	-.69	-.29	-.29	88861
2006	4	-1.1	-.07	.03	-.3	41967
2006	5	-2.75	-.17	.99	-.11	114560
2006	6	-.54	.01	-.07	.01	17198
2007	1	-1.88	.44	-1.29	4.09	235326
2007	2	-1.37	-.02	-.03	-2.44	21407
2007	3	-2.26	-.74	-.32	-.32	88264
2007	4	-1.11	-.07	.04	-.42	40808
2007	5	-3.25	-.15	1.04	-.04	116086
2007	6	-.6	.01	-.07	.01	17358
2008	1	-1.75	.47	-1.36	4.04	236526
2008	2	-1.17	-.02	-.06	-2.39	22760
2008	3	-2.29	-.8	-.35	-.35	87888
2008	4	-1.08	-.08	.04	-.55	39541
2008	5	-3	-.15	1.15	.04	117855
2008	6	-.61	0	-.07	-.02	17094
2009	1	-1.77	.5	-1.46	2.77	227940
2009	2	-1.18	0	-.08	-1.76	29315

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Table A.5 – *Continued from previous page*

Year	Activity	Rate-effect	I-effect	J-effect	K-effect	n
2009	3	-2.32	-.86	-.36	-.36	87594
2009	4	-1.21	-.09	.03	-.39	41124
2009	5	-2.18	-.22	1.31	.21	120469
2009	6	-.66	.01	-.07	.01	17416
2010	1	-1.76	.56	-1.61	3.06	231228
2010	2	-1.37	-.01	-.07	-1.99	26263
2010	3	-2.36	-.92	-.36	-.36	87454
2010	4	-1.25	-.1	.03	-.37	41296
2010	5	-2.21	-.22	1.42	.23	122205
2010	6	-.67	.01	-.07	.03	17603
2011	1	-1.6	.63	-1.77	3.33	233964
2011	2	-1.44	-.01	-.08	-2.08	24907
2011	3	-2.42	-.98	-.33	-.33	87583
2011	4	-1.25	-.11	.02	-.46	40338
2011	5	-2.37	-.2	1.52	.24	123642
2011	6	-.66	0	-.07	.01	17339
2012	1	-1.26	.67	-1.9	3.03	232522
2012	2	-1.32	0	-.11	-1.86	27585
2012	3	-2.28	-1.04	-.32	-.32	87799
2012	4	-1.25	-.13	.01	-.48	40138
2012	5	-2.02	-.2	1.67	.24	125220
2012	6	-.66	0	-.08	0	17207

Figure A.5: Directional mobility by primary activity. Flows are measured as a share of individuals with a corresponding change in income group status. Estimates are relative to the size of an age group

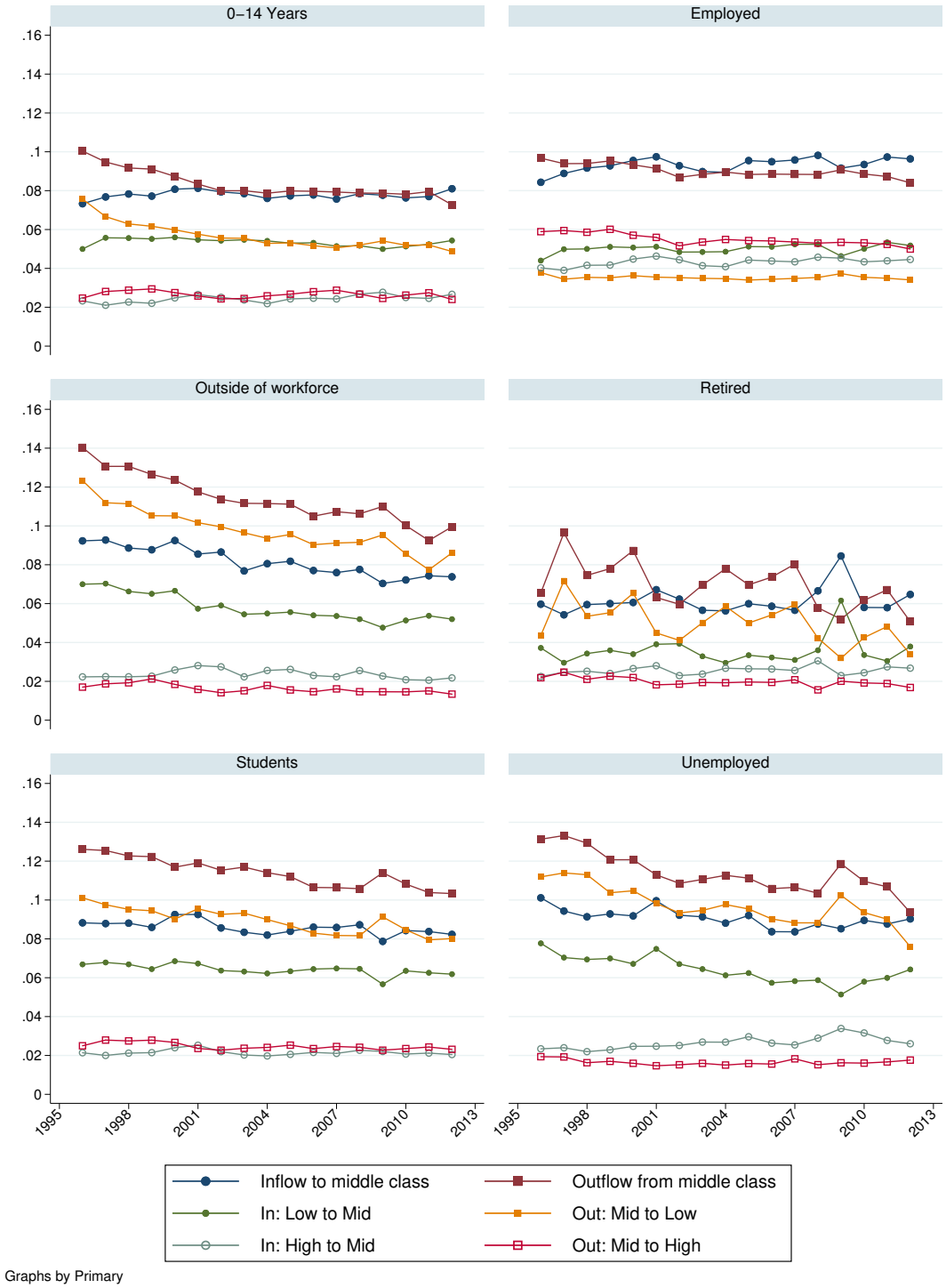

Figure A.6: Directional mobility by primary activity. Flows are measured as a share of individuals with a corresponding change in income group status. Estimates are relative to the size of a primary activity group