Positional, mobility and reference effects: How does social class affect life satisfaction in Europe?

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Abstract

In this study, we analyse the effects of social class on life satisfaction and develop a theoretical framework that shows how social class affects life satisfaction through five pathways. Informed by this framework, we estimate the direct effects of class destination and class origin, the effect of own intergenerational class mobility as well as the effects of others' class position and mobility (so-called *reference effects*). To do so, we utilize European Social Survey (ESS) waves 1 to 5 (2002-2010). We obtain information on life satisfaction as well as destination and origin class for about 100,000 respondents in 32 European countries. Our mobility analyses are performed with diagonal reference models, which allow for the consistent estimation of mobility effects. We find: (1) Class destination consistently and strongly structures life satisfaction across Europe. (2) Own class mobility positively impacts life satisfaction, particularly in Eastern Europe. (3) Other's class mobility has a strong negative effect on life satisfaction. Especially the latter finding points to the hitherto neglected importance of reference effects when considering the impact of social class on life satisfaction.

Keywords: *subjective well-being, social class, ESeC, diagonal reference models, social mobility, reference effects*

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1. Introduction

The strong association between social class and life outcomes has been recognised as an enduring feature of advanced market societies. Past research provides overwhelming evidence that the upper classes enjoy a clear advantage over those towards the bottom of the class distribution: On average, they are more economically successful (Goldthorpe & McKnight, 2006), better educated (Bernardi & Ballarino, 2016; Shavit & Blossfeld, 1993), lead healthier and longer lives (White et al., 2007), and offer their children greater opportunities for a self-determined and fulfilling life (Bukodi & Goldthorpe, 2019). Occupying a sufficiently high class position, by either being born into it or achieving intergenerational upward mobility, should therefore truly matter for individuals' lives as well as their own personal evaluation thereof.

So far, quantitative scholarship has had only limited interest in the effects of social class, including class mobility, on life satisfaction. We know of only few studies with such focus (e.g. Hadjar & Samuel, 2015; Iveson & Deary, 2017; Marshall & Firth, 1999) and the existing literature appears to suffer from certain shortcomings, limiting its ability to shed light on the complex relationship: First, the literature does not yet give an encompassing theorisation of all the ways through which class position and class mobility might affect life satisfaction. With respect to the effect of class mobility Sorokin's "dissociative" (1959) and Newman's "falling from grace" (1999) hypotheses are notable exceptions, but little favourable empirical evidence has so far been accumulated. Second, studies struggle to correctly distinguish between the effects of class position and class mobility. The only two studies which accurately implement the distinction either use data on happiness rather than life satisfaction and are conducted outside the group of advanced market societies (Zhao et al. 2017) or fail to include proper controls (Marshall & Firth 1999). Finally, we note that the direct effects of own class position and parental class position beyond the effect of class mobility have also not been thoroughly examined.

Against this background, the aim of this study is to provide a comprehensive account of how social class affects life satisfaction in Europe by addressing the shortcomings mentioned above. Most importantly, the effect of social class on life satisfaction has been conceptualized narrowly, focusing only on the effect of own social class. However, when societies change their class structure, or become more mobile overall, these macro-level changes may have effects that go beyond the individual's own experience of social class. To allow for such macro-level impacts, we include so-called reference effects into our framework. Reference effects relate to outcomes of others and are of great concern in the economic literature on the effects of income on life satisfaction. However, they have not yet been given attention in this sociological literature. By introducing reference effects into our study, we thus make, as we believe, an important contribution in both theoretical and empirical terms.

Furthermore, we examine the effect of social class on life satisfaction separately for Western and Eastern Europe. In light of the different political and economic trajectories of these two country groups, social class may structure inequalities in these societies differently and consequently exert heterogeneous effects on life satisfaction. Indeed, past research found a higher class gradient in mortality rates (Bessudnov, McKee, & Stuckler, 2012; Vågerö, 2010), greater willingness to accept economic inequality (Kelley & Zagorski, 2004), and a greater dependence of political attitudes on the experience of intergenerational social mobility (Gugushvili, 2016) in Eastern than in Western Europe.

The following section presents our theoretical framework. We then give an overview of previous findings before elaborating on our data and empirical approach. Thereafter we present and discuss our results. The final section concludes.

2. Theoretical framework

We understand life satisfaction as the subjective and cognitively driven global evaluation of a person's entire life (Pavot & Diener, 2008). This conceptualization is opposed to a person's affective wellbeing, in which they merely assess immediate feelings of wellbeing (Diener, Suh, Lucas, & Smith, 1999). Regarding social class, we take a Neo-Weberian conception as pioneered by Goldthorpe and others based on employment relations (Erikson, Goldthorpe, & Portocarero, 1979). According to this conception, the service relationship and wage contract constitute either end of the class schema with the salariat at the top and the working class at the bottom. Their application depends on the level of skills required to do the job and ease of monitoring. Self-employment is recognised as a third ideal type of employment relations (Rose, Harrison, & Pevalin, 2009).

Social class may affect life satisfaction through five pathways. First, one's own class (henceforth, *class destination*) may have effects on life satisfaction. Second, the social class of one's parents (henceforth, *class origin*) could have effects of their own. Third, people potentially make comparisons between their class origin and their class destination. Consequently, this difference, i.e. an individual's experience of *intergenerational class mobility*, may also affect life satisfaction. Finally, people compare themselves to peers. Therefore, other's class position (henceforth, *reference position*) and other's class mobility (henceforth, *reference mobility*) may be further class-related determinants of life satisfaction.

Figure 1. Summary of theoretical framework.

Income (e.g. Kahneman & Deaton, 2010) and unemployment (e.g. Luechinger, Meier, & Stutzer, 2010; Wulfgramm, 2014) are socio-economic outcomes that are known to be important in determining life satisfaction. *Class destination* determines socio-economic outcomes, and should thus also affect life satisfaction. Indeed, members of the working class, have lower current incomes and are exposed to greater income variability and economic instability than those in the salariat (Goldthorpe & McKnight, 2006). Furthermore, the salaried classes experience income increases across the life course while those on wage contracts do not (Bihagen & Nermo, 2010, Bukodi & Goldthorpe 2019). Thus, class is related to poverty and material deprivation, a relation which persists beyond the effect of current income (Nolan & Whelan, 2011). Finally, class predicts the occurrence and duration of under- and unemployment (Elias & McKnight, 2003; Lucchini & Schizzerotto, 2010; Warren, 2015).

Moreover, the salaried classes enjoy more autonomy, task discretion and variation, and greater power over others. They have more opportunities to develop new skills (Paugam & Zhou, 2009) and are less exposed to health hazards (Melchior et al., 2005), each of which improves job satisfaction (Pichler & Wallace, 2009). Jobs offering greater autonomy and power are also directly associated with life satisfaction (Drobnič, Beham, & Präg, 2010).

These considerations lead to our first hypothesis:

H1: Individuals whose *class destination* is better characterised by a service relationship (a higher social class) should report higher levels of life satisfaction than those whose social class is better described by a wage contract (a lower social class).

Individuals' parents have a strong tendency to transmit class-based inequalities to their children. Individuals with higher class origins are better equipped with inherited wealth, and economically opportune social networks, which reduce their risk of economic uncertainty and unemployment. Greater parental resources likewise allow children to obtain better education and thus more satisfying jobs (Shavit & Blossfeld, 1993). Moreover, parents directly transmit health-related behaviours (Gugushvili et al., 2018). Direct effects of class origin on life satisfaction are thus possible. However, since socio-economic outcomes are more strongly predicted by class destination, we expect the effects of class origin on life satisfaction to be smaller. This yields our second hypothesis:

H2: Individuals with higher *class origins* should report greater life satisfaction than individuals with lower *class origins*, even when controlling for class destination. This effect should be smaller than the one postulated under H1.

That people compare themselves with their past is a well-known phenomenon. Individuals generate “internal norms” (Senik, 2009) and evaluate their situation as a function of the difference in quality of the present with the quality of the past (Frederick & Loewenstein, 1999; Michalos, 1985). Internal norms have been most notably discussed with respect to income, where the difference between past incomes and present incomes may impact life satisfaction (Vendrik, 2013; Wolbring, Keuschnigg, & Negele, 2013). If social class is similar in this respect, we should expect that, over and above the direct effects of class destination and class origin, there will be further effects emanating from the difference between class origin and class destination, i.e. from *intergenerational*

class mobility. Newman's (1999) "falling from grace hypothesis" and Sorokin's (1959) "dissociative hypothesis" may be viewed as special cases of such effects of internal norms¹. Newman's hypothesis states that downward mobility has negative effects, but is silent on upward mobility. Sorokin's hypothesis states that individuals feel more at ease in places of cultural familiarity. Thus, leaving one's origin class may lead to disorientation and stress implying that social mobility has negative effects regardless of the direction of mobility. Both hypotheses have featured widely in the previous literature on various outcomes, but could often not be corroborated (Houle, 2011; Houle & Martin, 2011; Zang & de Graaf, 2016; Zhao et al., 2017). Given the competing claims about upward class mobility (i.e. exceeding one's internal norm vs. feeling "dissociated"), we have no prior expectation about the direction or presence of upward class mobility effects.

Hence our third hypothesis states:

H3: Downward *intergenerational class mobility* negatively impacts life satisfaction.

Furthermore, people compare themselves to others, and thus form "external norms". Here, life satisfaction is a function of the difference between the quality of one's own situation with that of one's peers, i.e. those in one's reference group. The presence of such external norms has been most notably discussed with respect to income (e.g. Delhey & Kohler, 2006; Ferrer-i-Carbonell, 2005; McBride, 2001), and unemployment (Clark, 2003; Heggebø & Elstad, 2018).

Concerning social class, individuals may compare their life that is structured by their own class with the lives of others in their reference group, which in turn is structured by their social class. If those in one's reference group predominantly occupy higher class destinations, one can be expected to evaluate one's life as worse. This is because such a more demanding external norm sets a higher bar for one's own achievement.

¹ Often the literature (including us) treat Newman and Sorokin as concerned with *intergenerational* mobility, i.e. class differences between the parental and children generation. However, in reality both authors were concerned with *intragenerational* mobility, i.e. class changes during an individual's life course.

This leads us to state:

H4a: Higher levels of *reference class position* negatively affect life satisfaction.

Analogously, if those within one's reference group have e.g. been predominantly more upwardly mobile and thus typically come from lower class origins, one may evaluate one's own performance more grimly: If I observe it to be the external norm that most of my peers come from lower class origins and thus have been upwardly mobile, I will consider my own class destination (and my ability to have been upwardly mobile) as relatively worse. I thus evaluate my life less favorably. Therefore, we expect:

H4b: Higher levels of *upward reference class mobility* negatively affects life satisfaction, while higher levels of *downward reference class mobility* positively affects life satisfaction.

The previous literature on reference income suggests that people mostly compare themselves with people who are similar to themselves, with work colleagues and friends being of particular importance (Clark & Senik, 2010; Goerke & Pannenberg, 2015). Those that either share one's own class destination or class origin, and those who are of similar age (following e.g. Ferrer-i-Carbonell, 2005; Vendrik & Woltjer, 2007), likely resemble these sets of people. They may thus serve as a proxy for one's true reference group. Therefore, when considering reference class position, we take those coming from the same class origin to be members of the reference group. When instead considering reference class mobility, we include those achieving the same class destination².

Hypotheses 1 to 4 pertain to both Eastern and Western Europe. However, there are important differences between these regions that lead us to believe that the strength of the associations between social class and life satisfaction differs. First, most Eastern European countries experienced large increases in income inequality (Grosfeld & Senik, 2010; Solt, 2019), have less

² As noted in Section 4, for reasons of perfect collinearity it is not possible to simultaneously include terms for reference position and reference mobility when the reference group is defined by class origin for both terms.

easily accessible welfare states (Kuitto, 2018) and exhibit lower levels of economic development. Thus, individuals in Eastern Europe face greater economic uncertainty and a greater risk of poverty. As explained above, class destination and origin mitigates or exacerbates such economic risks, and should therefore have greater effects in Eastern than in Western Europe.

Second, prior to Eastern Europe's economic transition to capitalism, working in white-collar professions did not result in markedly better economic outcomes than blue-collar jobs. However, during the transition period, blue-collar and manual labour became relatively more disadvantaged over time (Gerber & Hout, 1998; Slomczyński & Shabad, 1996). Thus, social classes are more stratified today than previously, which makes differences between one's class destination and one's class origin more obvious. Consequently, we expect the effect of own intergenerational class mobility to be larger in Eastern than in Western Europe.

Third, Eastern European countries today exhibit, net of overall shifts in the class distribution, a tighter association between class origin and destination than much of the West (Paskov & Bukodi, 2018). In such low social fluidity environments, reference class mobility provides individuals with a stronger signal about one's relative performance than environments where the origin-destination association is weaker. We thus also expect the effect of reference class mobility to be stronger in the East.

3. Previous findings

Hadjar & Samuel (2015) use British and Swiss data, and a collapsed Erikson–Goldthorpe–Portocarero (EGP) class scheme. For the UK, they observe a slight negative effect of being found in the unskilled compared to the upper service class, and a marginal negative effect of intergenerational downward mobility. However, they cannot replicate these findings for Switzerland. Moreover, they do not control for class origin. Therefore, their estimates of the effects of intergenerational class mobility and destination may be driven by this omission.

Chan (2018) also utilizes British data and a collapsed EGP class scheme. Results show that those in the working class are less satisfied than those in the salariat, and that those who have been intergenerationally mobile report intermediate levels of satisfaction. Unfortunately, by using dummies for each mobility trajectory, it is indeterminate as to whether class mobility effects or class origin effects drive these results.

Lipps & Oesch (2018) consider Germany and Switzerland. They also use a collapsed EGP class scheme. They exclusively investigate the effects of class destination on life satisfaction and find that those in the lower working class report 0.9 to 0.2 points lower life satisfaction than those in the upper-middle class. This class gradient runs roughly homogenously across intermediate classes.

Iveson & Deary (2017) utilize Scottish cohort data and the General Registrar's occupational classification. Focussing on the elderly, they also detect a small effect of class destination on life satisfaction, though fail to find robust class mobility effects. However, in their social mobility analyses they do not control for the separate effects of class destination and origin. Their mobility estimates may thus be biased.

By using diagonal reference models, Marshall & Firth (1999) are the first to control for both class destination and origin when estimating mobility effects. Using a collapsed EGP class scheme, they utilize data on 13 European countries. They do not explicitly report their estimates of class position, but find that class destination matters up to 5 times more than class origin. The study consistently finds no life satisfaction effect of class mobility. However, they include no controls for possible confounders.

Haller & Hadler (2006) investigate the effect of subjective social class on life satisfaction using World Values Survey data. Although subjective social class is different from occupational class, it is interesting that they find significantly varying effects across regions: In traditionally capitalist countries they find weak effects, while in post-socialist countries effects are strong.

Zhao et al. (2017) use happiness instead of life satisfaction data and focus on China. Using diagonal reference models and a collapsed EGP scheme, they detect a small class position gradient in happiness. However, they do not find any effects of intergenerational class mobility.

There is also a small literature on intergenerational social mobility and life satisfaction that does not conceptualize social mobility as class mobility but rather as income mobility (Dolan & Lordan, 2013), educational mobility (Nikolaev & Burns, 2014; Schuck & Steiber, 2017), or status mobility (Clark & D'Angelo, 2015; Nikolaev & Burns, 2014; Zang & de Graaf, 2016). Most of these studies report associations that give a positive effect of upward mobility and negative effect of downward mobility, but fail to account for potential reference effects.

Thus, there is previous evidence in favour of **H1**, i.e. that higher *class destinations* improve life satisfaction. The evidence is less clear regarding **H2** (on *class origin*) and **H3** (on *class mobility*). No previous study investigated the effects of *reference class position* or *reference class mobility* on life satisfaction.

4. Data and methods

We use waves 1-5 of the European Social survey (ESS), which covers the period 2002-2010 with repeated cross-sections. The 32 European countries included are roughly evenly split between Western and Eastern European post-socialist countries. A list of countries in each group can be found in the Appendix.

Our dependent variable are responses to the question “*All things considered, how satisfied are you with your life as a whole nowadays?*”, which are scored on a scale from 0 (dissatisfied) to 10 (satisfied). See Diener, Inglehart, & Tay (2013) for a review on the validity of this measure. We treat life satisfaction as cardinal since previous research has shown that ratios of coefficients obtained from ordered logit or probit models do not differ much to those from OLS models (Ferrer-i-Carbonell & Frijters, 2004; Riedl & Geishecker, 2014).

To operationalize social class, we use the European Socio-Economic classification (ESeC), which was explicitly developed for comparative research across Europe (Rose et al., 2009). Unlike previous studies, we do not collapse the 9-category class scheme, allowing for more fine-grained analyses. We assume that most social classes are hierarchically ordered, primarily with respect to their employment relations. Moreover, within occupations that share the same type of employment relation, we assume a hierarchical ordering from blue-collar to white-collar work. However, we do not believe that the self-employed classes can be placed into a hierarchical ordering – at least when it comes to the stratification of life satisfaction by social class. Section 4.1 provides descriptive evidence that shows a gradient in life satisfaction following the assumed ordering along employed classes, from which the self-employed appear exempt. We therefore exclude the self-employed from analyses that require assumptions about the ordering of classes.

Table 1. Description and hierarchical ordering of ESeC Social Classes (adapted from Rose et al., 2009)

	ESeC Class	Common term	Employment regulation
I	Large employers, higher grade professional, administrative and managerial occupations	Higher salariat	Service relationship
II	Lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupation	Lower salariat	Service relationship (modified)
III	Intermediate occupations	Higher grade white collar workers	Mixed
IV	Lower supervisory and lower technician occupations	Higher grade blue collar workers	Mixed
V	Lower services, sales and clerical occupations	Lower grade white collar workers	Labour contract (modified)
VI	Lower technical occupations	Skilled workers	Labour contract (modified)
VII	Routine occupations	Semi- and non-skilled workers	Labour contract
SEI	Small employers and self-employed occupations (excl. agriculture.)	Petit bourgeoisie or independents	-
SEII	Self-employed occupations (agriculture)	Petit bourgeoisie or independents	-

Note: Classes SEI and SEII are assumed to fall outside any hierarchical ordering. The long-term unemployed and those that never worked are not included in this study.

We construct the “full” version of ESeC based on information on 3-digit ISCO-88 codes, employment status, number of employees and supervisory functions. When a person with a particular ISCO code has missing data on any supplementary variables, we assign the class that is assigned most often (i.e. the observed weighted mode in class destination) for those individuals with the same ISCO code but no missings on the additional variables. We use the same procedure

for origin class, where the observed mode of class origin is decisive. This is a refinement of the official “simplified” version of ESeC as it takes into account intergenerational differences in class distributions by occupational codes. To determine class origin we take parental occupational information when respondents were 14 years old. We use parental ISCO codes provided by Ganzeboom (2014) and apply the “dominance approach” (Erikson, 1984), which assigns the higher class when father’s and mother’s class position differ. Counts and shares for the distributions of class destination and origin are given in the Appendix.

For our selection of controls we draw on Angrist & Pischke's (2008) distinction between “good” controls that are determined prior or independently of the determination of social class (henceforth, *predetermined*³), and “bad” controls which are mediators of the effects of social class on life satisfaction. In our set of predetermined controls, we include dummies for NUTS1 regions, wave dummies, gender, age(-squared), ethnic minority status, and country of birth. In line with our theoretical framework, we treat the logarithm of real household income⁴ and unemployment as mediators of the effect of class destination. Self-assessed religiousness, marital status, place of domicile (urban/rural dummy), and years of education(-squared) are ambiguous concerning their status as good or bad controls: Class origin determines education, which in turn determines class destination (e.g. Bukodi & Goldthorpe, 2016). Education is thus a bad control vis-à-vis class origin, but a good control vis-à-vis class destination. Since religiousness, place of domicile and marital status are partially determined by class origin, they are mediators of the effect of class origin. However, we do not know the causal direction of these variables with respect to class destination and are thus agnostic whether they are good or bad controls when assessing its effect on life satisfaction. Therefore, we always present results with and without these ambiguous controls,

³ With “Z is predetermined with respect to X”, we mean that the value of Z is determined causally prior to X, and thus cannot mediate any effects X might have on a further variable Y. Therefore, a “predetermined” variable Z, is a “good” control when estimating the effect of X on Y.

⁴ To derive individual incomes we took, for each wave and country, mid-points from the show cards on income in the ESS questionnaire and converted these values into 2010 Euros. For the highest income category, where no upper bound is given, we use the method of Hout (2004, see equation 1).

noting that the correct effect associated with class destination should fall between these estimates.

Descriptive statistics for all variables are in the Appendix.

To test **H1** and **H2**, i.e. those relating to the direct effects of class destination and origin, we use OLS models of the following form:

$$LS_i = \alpha + \delta_d DEST_d + \theta_o ORIG_o + \beta X + \varepsilon_i \quad (1)$$

$DEST_d$ and $ORIG_o$ are dummies for class destination d and class origin o of respondent i . βX represents controls and their parameters.

To test for class mobility effects, we use diagonal reference models. When mobility is defined as the difference between class destination and origin, no mobility effects can be estimated with standard OLS given the perfect collinearity of such a variable with destinations and origins (Sobel, 1981; van der Waal, Daenekindt, & de Koster, 2017). Diagonal reference models circumvent this problem by modelling the dependent variable as a function of the population means of those that were immobile and of either the same class origin or destination as the respondent (those “*on the diagonal*”).

Formally, we estimate models of the following form:

$$LS_i = \alpha + p\mu_{dd} + (1-p)\mu_{oo} + \gamma_1 DIST_i + \gamma_2 REFPOS_{oct} + \gamma_3 REFMOb_{dct} + \beta X + \varepsilon_i \quad (2)$$

Here, μ_{dd} and μ_{oo} are parameters associated with those on the diagonal and of the same class destination (μ_{dd}) or class origin (μ_{oo})⁵ as respondent i . We will refer to our estimates of μ as estimates of “*class position*”. Parameter p is an estimated weight that represents the relative importance of destinations (p) and origins ($1-p$). In robustness analyses, we let these weights themselves be conditional on destinations and origins, i.e. we replace p with respectively p_d or p_o in equation (2).

⁵ μ_{dd} and μ_{oo} can respectively be written as $DEST_d\delta_d$ and $ORIG_o\delta_o$, where δ_d and δ_o are parameters. We hence estimate the class position effects of those on the diagonal (i.e. when $d = o$) by constraining the origin and destination effects to equal (cf. Sobel, 1981, p.898).

$DIST_i$, $REFPOS_{i_{oct}}$, and $REFMOB_{i_{dct}}$ are measures of own class mobility, reference position and reference mobility, respectively.

We measure own class mobility using the difference between class origin and destination ($DIST_i = ORIG_i - DEST_i$). Class I is assigned the value 1, Class II is assigned the value 2, etc. Thus, more positive values on $DIST$ imply that individuals are more upwardly mobile, while more negative values imply that individuals are more downwardly mobile. We also separately investigate the effects of the number of classes moved up or down. Since own class mobility is determined by both class destination and class origin, it is unclear whether variables that are bad controls with respect to class origin but good controls concerning class destination (e.g. education) should be included. It is also unclear whether unemployment and income should be considered mediators of a class mobility effect. We therefore give results with the full set of controls, as well as results when including controls that are predetermined with respect to class origin.

We define our measure of reference position as the average class position of those in the reference group:

$$REFPOS_{oct} = \frac{\sum_{j \in POS_{oct}} w_j DEST_j}{\sum_{j \in POS_{oct}} w_j} \quad (3)$$

Where POS_{oct} is the set of individuals indexed by j , who are different from respondent i , observed in the same wave, country, class origin and who are up to five years younger or older than respondent i . w_j is the combined ESS post-stratification and population weight associated with respondent j . Since lower values on $DEST$ denote hierarchically superior classes, lower values on $REFPOST$ indicate that those in the reference group come from more advantaged classes.

Analogously, our measure of reference mobility is defined as the average class mobility of those in the reference group:

$$REFMOB_{dct} = \frac{\sum_{j \in MOB_{dct}} w_j DIST_j}{\sum_{j \in MOB_{dct}} w_j} \quad (4)$$

MOB_{act} is the set of individuals who are different from the respondent i , observed in the same wave, country, class destination⁶ and are between five years younger or older than respondent i . Our measure of reference mobility thus has the same scale as our variable for own mobility. When considering reference effects, we assume that all control variables are predetermined with respect to reference class and reference mobility and are thus good controls.⁷

We also ran models in which the reference groups were defined independently of class origin and class destination. However, in our preferred specifications with the full set of controls, all of these models yielded insignificant and very small coefficients. Indeed, and as will become clear in Section 5, we only find significant effects for reference mobility where the reference group is restricted to those of one’s destination class – i.e. to the people who are particularly likely to be the immediate colleagues of individuals.

Table 3. Summary of methodological choices

Quantity of interest	Type of model	Preferred set of controls
Own class destination	OLS	“Predetermined“ / “More demographics”
Own class origin	OLS	“Predetermined“
Own class mobility	DRM	“Predetermined” / “Full”
Reference class position	DRM/OLS	“Full”
Reference class mobility	DRM/OLS	“Full”

Note: “Full” controls include: Age(-squared), years of education(-squared), household size(-squared), Ln real HH income, unemployed, gender, ethnic minority, born in country, self-assessed religiosity, marital status, place of domicile (urban/rural), ESS round, NUTS I region. “More demographics” removes from the above: Ln real HH income and unemployed. “Predetermined” additionally removes from the above: Household size(-squared), self-assessed religiosity, marital status, place of domicile, and years of education.

All of our methodological choices are listed in Table 3, where we summarise which methods and which sets of controls are preferred for each quantity of interest. For diagonal reference models

⁶ Defining a term for reference mobility such that the reference group is constituted by those of one’s own class origin (i.e. the same reference group as used for reference position), would yield a term for reference mobility that is given by own class origin minus reference position ($REFMOB_{oct} = ORIG_o - REFPOS_{oct}$). Reference mobility would then be perfectly collinear with reference position and own class origin and could therefore not be entered in a regression model.

⁷ It may be that reference class position or mobility have network effects, e.g. lowering the probability of unemployment. We thus also provide results with just predetermined controls.

we use the “drm” Stata package (Kaiser, 2018). We apply post-stratification and population weights and cluster standard errors at the region-wave level.

5. Results

We start by examining the descriptive evidence presented in Figure 2. The top panel shows the full sample and a clear gradient in mean life satisfaction across social classes. Within each class destination we also observe some variation in mean life satisfaction across class origins.

The bottom panels show that mean life satisfaction in Eastern Europe is substantially lower than in Western Europe. Remarkably, in the East life satisfaction in destination Class I is even lower than mean life satisfaction of destination Class VII in the West. Moreover, the position of the self-employed (SEI) and farmers (SEII) greatly differs across these European regions. In the East, these classes are the most satisfied of all, while no such pattern exists in the West. One reason for the high life satisfaction of the self-employed in Eastern Europe may be that following the collapse of socialism many who were in state-managerial positions entered careers as entrepreneurs (Slomczyński & Shabad, 1996). This vindicates our view that the self-employed classes cannot be straightforwardly placed in a hierarchical ordering for the purpose of this study. Furthermore, class origin appears to play a smaller role in the West than in the East. This can be seen from the much greater variation in mean life satisfaction across class origins within each destination in Eastern when compared to Western Europe. Such greater variation is in line with our discussion in Section 3, where we expected own intergenerational class mobility to matter more in Eastern Europe.

However, these figures can neither show direct mobility effects nor indicate the presence of reference effects. They also do not net out the effects of confounders. Therefore, we now turn to our regression results. We start with our results for Western Europe and subsequently turn to the East.

Figure 2. Mean life satisfaction across social classes

The line represents observed mean life satisfaction across social class destinations. Filled dots with 95%-confidence intervals show mean life satisfaction for those with the same class origin and destination, i.e. the immobile. Hollow labelled dots represent mean life satisfaction within each destination across class origins.

5.1 Western Europe

5.1.1 Class destination and class origin

Table 4 presents results for the effects of class destination and class origin in Western Europe. As we move from the first to the last column, we consecutively add additional controls. For both class destination and origin, we define Class I, i.e. the upper salariat, as the reference category and analyse whether life satisfaction is different in the other classes.

Table 4 Class position effects in Western Europe

	(1) Region & wave FEs	(2) Predetermined	(3) Education	(4) More demographics	(5) Unemployment & income
Destination=II	-0.132*** (0.035)	-0.149*** (0.035)	-0.131*** (0.037)	-0.117** (0.036)	-0.039 (0.034)
Destination=III	-0.213*** (0.042)	-0.253*** (0.043)	-0.211*** (0.045)	-0.180*** (0.045)	-0.055 (0.044)
Destination=IV	-0.519*** (0.054)	-0.521*** (0.054)	-0.442*** (0.056)	-0.421*** (0.056)	-0.239*** (0.055)
Destination=V	-0.594*** (0.057)	-0.630*** (0.058)	-0.552*** (0.061)	-0.518*** (0.060)	-0.291*** (0.057)
Destination=VI	-0.752*** (0.060)	-0.742*** (0.060)	-0.628*** (0.065)	-0.592*** (0.063)	-0.306*** (0.061)
Destination=VII	-0.889*** (0.057)	-0.895*** (0.056)	-0.778*** (0.060)	-0.700*** (0.059)	-0.397*** (0.058)
Destination=SEI	-0.343*** (0.055)	-0.326*** (0.055)	-0.253*** (0.057)	-0.247*** (0.055)	-0.119** (0.052)
Destination=SEII	-0.586*** (0.099)	-0.577*** (0.101)	-0.465*** (0.101)	-0.500*** (0.098)	-0.262** (0.096)
Origin=II	-0.007 (0.037)	-0.001 (0.036)	0.009 (0.037)	-0.003 (0.038)	0.021 (0.037)
Origin=III	-0.058 (0.053)	-0.061 (0.052)	-0.041 (0.053)	-0.048 (0.050)	-0.028 (0.049)
Origin=IV	-0.068 (0.047)	-0.060 (0.047)	-0.034 (0.047)	-0.075+ (0.046)	-0.038 (0.046)
Origin=V	-0.036 (0.056)	-0.028 (0.057)	0.003 (0.057)	-0.015 (0.055)	0.027 (0.054)
Origin=VI	-0.061 (0.046)	-0.047 (0.047)	-0.002 (0.048)	-0.046 (0.046)	0.026 (0.045)
Origin=VII	-0.142** (0.047)	-0.122** (0.047)	-0.070+ (0.048)	-0.106** (0.048)	-0.041 (0.047)
Origin=SEI	-0.009 (0.048)	0.000 (0.048)	0.027 (0.048)	-0.008 (0.048)	0.025 (0.047)
Origin=SEII	0.143** (0.055)	0.154** (0.055)	0.204*** (0.056)	0.085+ (0.056)	0.101* (0.055)
Fixed effects	YES	YES	YES	YES	YES
Predet. demogr.	NO	YES	YES	YES	YES
Education	NO	NO	YES	YES	YES
More demogr.	NO	NO	NO	YES	YES
UE & income	NO	NO	NO	NO	YES
Log likelihood	-163853	-163650	-163582	-162311	-160933
AIC	327895	327498	327366	324841	322089
N	76965	76965	76965	76965	76965

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Column (2) estimates an upper bound for the total class effect. Here we only control for variables that are predetermined with respect to class destination and class origin, i.e. gender, ethnic minority

status, age, and citizenship. For class destination, the difference between Class I and Class VII is 0.90 on the life satisfaction scale and statistically significant. This is a very substantial effect, far exceeding that of being of an ethnic minority ($=-0.35$; not shown in table), which is the next largest coefficient in this model. Gaps between the classes are generally similar, roughly equalling 0.1, though there is a larger gap between Class III and IV ($=0.27$). The self-employed classes also show lower life satisfaction than those in the upper salariat placing them in the middle of the employed class hierarchy. These results for Western Europe are very much in line with those of Lipps & Oesch (2018) for Germany and Switzerland.

We observe very limited effects for class origins. This aligns with the descriptive impression of Figure 2. The only significant coefficients are those for Classes VII ($=-0.12$; semi-skilled and unskilled workers) and SEII ($=0.15$; self-employed in agriculture). The latter effect is striking, since it implies that children of farmers are more satisfied than those whose parents are from the presumably most socio-economically advantaged social class.

In Column (3) we add education. As explained in Section 3, education is a good control with respect to class destination, but a mediator vis-à-vis class origin. In our models, the effect of education is generally positive ($=0.06[-0.002]$ for years[-squared]⁸; not shown in table). The inclusion of education causes the coefficient for class origin VII to be substantially reduced. This implies that most of the negative effects of growing up in the working class is mediated by education.

In Column (4) we add additional demographics including place of residence, marital status, religiousness and household size. These are bad controls concerning class origin and ambiguous concerning class destination. Apart from reducing the destination class gradient in life satisfaction, the addition of these variables turns the positive effect of having been raised by farmers (SEII) marginally insignificant. This is driven by place of residence as measured by an urban/rural dummy:

⁸ Therefore, the marginal effect of years of education becomes negative at 22 years. It takes a PhD to make education dissatisfying.

Children of farmers are more likely to live on the countryside, which appears to improve their satisfaction with life.

In Column (5) we add unemployment and the log of household income⁹. These are mediators of class destination. Compared to Column (4), the overall gradient in class destination is reduced by about a third. However, there is no statistically significant difference between Classes II and III versus Class I. This suggests that most of the difference between Classes I to III are driven by current income and unemployment rather than other benefits of Class I.

It is clear that there is a substantial gradient in life satisfaction across class destinations. Class origin, with the exception of having farmers as parents, has no significant effects in Western Europe when controlling for class destination. Therefore, these results largely corroborate **H1** and partially contradict **H2**.

5.1.2 Class mobility and reference classes

Using diagonal reference models in Table 5 we now assess the effects of class mobility. Columns (1) and (3) show results with our set of predetermined controls, whereas Columns (2) and (4) include all available controls.

Our findings for class position are generally in line with those of Table 4: For the immobile with predetermined controls there is roughly a 1 point difference in life satisfaction between Classes I and VII. This is reduced to roughly 0.4 points when adding the full set of controls. Similarly, weight parameter p is larger than 0.5 indicating the greater importance of class destination compared to class origin, which was already visible in Figure 2.

At baseline, we find no significant evidence for effects of intergenerational class mobility in Western Europe. Although in the expected direction, the coefficients for class mobility are insignificant. If the dissociative hypothesis was true, both moving up and down the social ladder

⁹ Coefficients for unemployment and income are -1.00 and 0.35, which is at the upper end of commonly reported estimates.

would decrease life satisfaction. We therefore separate the effects of moving up and down in Columns (3) and (4). Again, all coefficients remain insignificant.

However, in Columns (5) to (8) we repeat these analyses, but now allow the weight parameter p to also depend on class origins. We thus let the relative importance of class destination *versus* class origin in determining life satisfaction itself depend on where individuals originate. Now, when using the full set of controls, terms for own (downward) mobility are significant at the 1% level.

The result of Column (8) in particular, where we use all controls, implies loss aversion – a notion that has been extensively discussed by the mobility literature to explain mechanisms of intergenerational immobility (Breen & Goldthorpe, 1997): While moving up has no effects beyond positional effects, there is a negative effect of downward class mobility. The estimates of Column (8) imply that a person coming from Class I and moving to Class VII can, holding all other variables constant, be expected to lose 0.456 ($=0.076*6$) points on the 0-10 life satisfaction scale¹⁰. In the Appendix, we verify this by allowing weights to depend on class destinations rather than class origins yielding similar results. Thus, we obtain some evidence corroborating **H3**: Intergenerational class downward mobility indeed appears to negatively affect life satisfaction.

¹⁰ The weight on class destination for those with class origin=I is constrained to 0. Following Sobel (1981), we constrain weights when estimates fall outside the interval [0,1]. Not constraining the weight resulted in $p_I=-0.002$ and yielded no change in the coefficients for class mobility. The same holds for p_{III} in Column (6) where we otherwise obtain $p_{III}=1.084$.

Table 5 Own class mobility effects in Western Europe

	Standard				Weights conditional on class origin			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Distance travelled with predetermined controls	Distance travelled with full controls	Distance travelled up and down with predetermined controls	Distance travelled up and down with full controls	Distance travelled with predetermined controls	Distance travelled with full controls	Distance travelled up and down with predetermined controls	Distance travelled up and down with full controls
Class=I	0.532*** (0.039)	0.207*** (0.044)	0.529*** (0.041)	0.205*** (0.045)	0.518*** (0.047)	0.197*** (0.044)	0.523*** (0.047)	0.204*** (0.041)
Class=II	0.352*** (0.035)	0.171*** (0.038)	0.348*** (0.035)	0.166*** (0.038)	0.349*** (0.038)	0.161*** (0.043)	0.345*** (0.040)	0.141*** (0.032)
Class=III	0.220*** (0.051)	0.150*** (0.049)	0.220*** (0.054)	0.149*** (0.051)	0.232*** (0.056)	0.198*** (0.069)	0.231*** (0.055)	0.203*** (0.058)
Class=IV	-0.103* (0.054)	-0.099* (0.055)	-0.103* (0.056)	-0.100* (0.057)	-0.101+ (0.062)	-0.106+ (0.073)	-0.102+ (0.066)	-0.122 (0.117)
Class=V	-0.207*** (0.063)	-0.110* (0.062)	-0.204*** (0.063)	-0.107* (0.061)	-0.213*** (0.082)	-0.132 (0.118)	-0.221** (0.090)	-0.211* (0.121)
Class=VI	-0.274*** (0.101)	-0.070 (0.080)	-0.278** (0.114)	-0.073 (0.086)	-0.243*** (0.066)	-0.059 (0.056)	-0.240*** (0.072)	-0.012 (0.058)
Class=VII	-0.521*** (0.066)	-0.249*** (0.059)	-0.513*** (0.069)	-0.240*** (0.061)	-0.542*** (0.060)	-0.260*** (0.061)	-0.536*** (0.070)	-0.202*** (0.066)
p	0.717* (0.418)	0.652** (0.282)	0.727+ (0.490)	0.659** (0.318)				
p _I					0.642*** (0.248)	0.493+ (0.343)	0.598** (0.274)	0.000 (constr.)
p _{II}					0.646*** (0.137)	0.575* (0.295)	0.600*** (0.139)	0.103 (0.303)
p _{III}					0.867*** (0.198)	1.000 (constr.)	0.840*** (0.204)	0.854*** (0.253)
p _{IV}					0.558*** (0.162)	0.620+ (0.427)	0.563*** (0.204)	0.696* (0.385)
p _V					0.605*** (0.183)	0.597 (0.590)	0.634** (0.256)	0.884*** (0.250)
p _{VI}					0.440*** (0.156)	0.249 (0.327)	0.473** (0.231)	0.370+ (0.243)
p _{VII}					0.551*** (0.125)	0.472+ (0.346)	0.584*** (0.194)	0.685** (0.269)
#Classes moved	0.034 (0.072)	0.025 (0.022)			0.056+ (0.042)	0.034*** (0.012)		
#Classes up			0.019 (0.084)	0.010 (0.025)			0.048 (0.048)	0.008 (0.016)
#Classes down			-0.051 (0.084)	-0.042+ (0.026)			-0.066+ (0.049)	-0.076*** (0.018)
Fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Predet. demogr.	YES	YES	YES	YES	YES	YES	YES	YES
Education	NO	YES	NO	YES	NO	YES	NO	YES
More demogr.	NO	YES	NO	YES	NO	YES	NO	YES
UE & income	NO	YES	NO	YES	NO	YES	NO	YES
Log likelihood	-114135	-112163	-114131	-112159	-114126	-112154	-114126	-112149
AIC	228454	224535	228448	224528	228448	224527	228450	224518
N	55006	55006	55006	55006	55006	55006	55006	55006

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Table 6 presents the effects of reference class position and reference mobility. Since reference effects operate independently of individual-level variables, unemployment and income should now be considered “good” controls. We use mean class position of people in the reference group as a measure of reference class position (equation 3), and mean distance travelled by those in the reference group (equation 4) as our measure of reference mobility. Reference position is insignificant throughout, thus contradicting **H4a**. However, reference mobility is initially marginally insignificant ($p=0.10$) in Column (1), and then turns significant at the 1% level in Column (2). The negative coefficient implies that greater upward (downward) mobility of those in an individual’s reference group has a negative (positive) effect on an individual’s life satisfaction. This is similar to the negative reference effects found in the literature on relative income and in line with **H4b**. Since there are seven hierarchically ordered classes, our measure of reference mobility is theoretically bounded between -6 and 6 but has an observed range of -5.02 and 5.25, and a standard deviation of 1.43. Thus, given that our coefficient estimate is -0.08, moving from the lowest observed value of reference mobility to the highest value would imply a decrease in life satisfaction by 0.84 points on a 0-10 scale. Alternatively, a one standard deviation increase implies a 0.12 point decrease in life satisfaction.

In Columns (3) and (4), we disentangle whether these results differ between those that performed better or worse than their reference group. We do so by entering separate terms indicating whether the respondent has a class position above or below her reference group, and separate terms for cases in which the respondent was either more or less mobile than her reference group. We find that the negative effect of reference mobility is stronger when the respondent outperformed her reference group (i.e. has been more upwardly or less downwardly mobile). Though initially counterintuitive, this result has a simple explanation: By construction, those from lower class origins are more likely to be more upwardly mobile than their reference group. Thus, our result suggests that the effect of reference mobility is stronger for those from lower class origins. To verify this intuition, we estimate origin-specific effects of reference mobility (see Appendix). We

indeed find a gradient in the effect of reference mobility with the effect being largest for those of Class origin VII ($=-0.11$) and smallest for those of Class origin III ($=-0.03$).

Table 6 Reference class effects in Western Europe

	(1)	(2)	(3)	(4)
	Distances, with predetermined controls	Distances, with full controls	Distances in either direction, with predetermined controls	Distances in either direction, with full controls
Class=I	0.573*** (0.077)	0.331*** (0.075)	0.559*** (0.081)	0.317*** (0.079)
Class=II	0.386*** (0.061)	0.261*** (0.057)	0.385*** (0.065)	0.259*** (0.062)
Class=III	0.238*** (0.062)	0.204*** (0.054)	0.249*** (0.073)	0.213*** (0.059)
Class=IV	-0.090 ⁺ (0.055)	-0.079 ⁺ (0.058)	-0.072 ⁺ (0.055)	-0.058 (0.055)
Class=V	-0.228*** (0.070)	-0.158** (0.067)	-0.221*** (0.070)	-0.151** (0.070)
Class=VI	-0.295*** (0.101)	-0.158* (0.094)	-0.306* (0.173)	-0.166 ⁺ (0.110)
Class=VII	-0.584*** (0.101)	-0.401*** (0.086)	-0.593*** (0.131)	-0.414*** (0.094)
p	0.689* (0.392)	0.675** (0.279)	0.745 (0.788)	0.705** (0.319)
#Classes moved	0.062 (0.077)	0.044 (0.036)		
Ref. class position	-0.050 ⁺ (0.032)	-0.017 (0.032)		
Ref. class mobility	-0.054 ⁺ (0.033)	-0.082*** (0.031)		
#Classes moved up			0.058 (0.152)	0.049 (0.044)
#Classes moved down			-0.048 (0.150)	-0.037 (0.043)
Ref. class position (resp. is worse)			-0.043 (0.038)	-0.011 (0.035)
Ref. class position (resp. is better)			-0.045 ⁺ (0.033)	-0.012 (0.032)
Ref. class mobility (resp. is worse)			-0.023 (0.036)	-0.049 ⁺ (0.033)
Ref. class mobility (resp. is better)			-0.085** (0.041)	-0.115*** (0.037)
Fixed effects	YES	YES	YES	YES
Predet. demographics	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demographics	NO	YES	NO	YES
Unemployment & income	NO	YES	NO	YES
Log likelihood	-114095	-112122	-114014	-112041
AIC	228379	224456	228223	224301
N	54990	54990	54949	54949

+ $p < 0.20$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Region- and wave-clustered standard errors in parentheses.

We thus reject **H4a** and corroborate **H4b**: While there are clear negative effects from reference mobility (especially for those of lower class origins), the effects from reference position are either nil or even positive. These reference effects are robust to letting weight p be dependent on class destination or origins. We also successfully verify that our results for reference effects are robust to using OLS rather than diagonal reference models (see Appendix for both).

Notice that terms for own mobility are again insignificant in Table 6. However, like above, they become significant in the equivalent Appendix tables that let weights be specific to class origin or class destination, thus reconfirming **H3**. Nevertheless, in these estimates, the effect of own upward mobility is much more positive. This suggests that the term for upward own mobility in Table 5 was picking up the uncontrolled-for negative effect of upward reference mobility and was thus biased. Therefore, our result of loss aversion in own class mobility is not robust.

5.2 Eastern Europe

5.2.1 Class destination and class origin

Table 7 presents our results for class destination and origin in Eastern Europe. We again find a substantial effect of class destination: Those in Class VII report on average 0.66 points lower levels of life satisfaction than those in Class I, when including all controls that are predetermined with respect to class destination (Column (3)). This is somewhat smaller than the effect size we find for Western Europe and thus surprising in light of the theoretical discussion in Section 2. However, those in the upper salariat (Class I) continue to show higher life satisfaction than those in Classes II and III even after accounting for unemployment and income (Column (5)). Indeed, very little of the class destination gradient is explained via unemployment and income in Eastern Europe (compare Columns (5) and (6)). Therefore characteristics of class destination other than current income and unemployment may matter much more in the East. Moreover, the self-employed (SEI) enjoy higher relative levels of life satisfaction than in Western Europe (in line with Figure 2)¹¹. While in the West being self-employed has a similar effect as being in one of the intermediate occupations (Classes III and IV), in Eastern Europe the effect is similar to that of the upper salariat. A further difference to Western Europe are the consistently significant class origin effects. When exclusively including predetermined controls, dummies for almost all non self-employed origin classes are negative and significant. Their coefficients are similar, indicating that there is a clear

¹¹ The conditional life satisfaction of those in Class destination SEII is much lower than would be expected from Figure 2. As discussed below, the high life satisfaction of this group seems to be entirely driven by class origin.

advantage to having parents in the upper salariat, but that no further gradient exists. Adding additional controls in column (3) to (6) shows that the advantage of having parents in the upper salariat is mediated by education, income and employment status. Individuals with self-employed parents or farmers do not follow this pattern. Instead, they show a similar or even higher life satisfaction as those whose parents are from the upper salariat.

Table 7 Class position effects in Eastern Europe

	(1) Region & wave FEs	(2) Predetermined	(3) Education	(4) More demographics	(5) Unemployment & income
Destination=II	-0.288*** (0.057)	-0.276*** (0.055)	-0.217*** (0.064)	-0.229*** (0.067)	-0.203*** (0.074)
Destination=III	-0.432*** (0.110)	-0.450*** (0.095)	-0.332*** (0.102)	-0.346*** (0.107)	-0.291*** (0.104)
Destination=IV	-0.663*** (0.067)	-0.647*** (0.067)	-0.470*** (0.094)	-0.494*** (0.102)	-0.415*** (0.113)
Destination=V	-0.769*** (0.151)	-0.808*** (0.129)	-0.612*** (0.167)	-0.594*** (0.169)	-0.453*** (0.171)
Destination=VI	-0.992*** (0.054)	-0.990*** (0.058)	-0.736*** (0.085)	-0.716*** (0.090)	-0.570*** (0.101)
Destination=VII	-0.984*** (0.062)	-0.935*** (0.058)	-0.656*** (0.056)	-0.659*** (0.065)	-0.494*** (0.070)
Destination=SEI	-0.135 (0.131)	-0.157 (0.128)	0.001 (0.138)	-0.023 (0.141)	-0.029 (0.116)
Destination=SEII	-0.656*** (0.171)	-0.639*** (0.177)	-0.338+ (0.203)	-0.379* (0.208)	-0.310+ (0.213)
Origin=II	-0.178** (0.086)	-0.148* (0.083)	-0.134+ (0.083)	-0.143* (0.075)	-0.132* (0.076)
Origin=III	-0.233** (0.115)	-0.212* (0.107)	-0.189* (0.098)	-0.195** (0.094)	-0.183* (0.101)
Origin=IV	-0.299** (0.136)	-0.185+ (0.130)	-0.151 (0.138)	-0.163 (0.129)	-0.128 (0.119)
Origin=V	-0.218** (0.106)	-0.191* (0.104)	-0.148+ (0.104)	-0.176* (0.102)	-0.146+ (0.107)
Origin=VI	-0.339*** (0.062)	-0.198*** (0.056)	-0.140** (0.059)	-0.167*** (0.049)	-0.134** (0.053)
Origin=VII	-0.332*** (0.046)	-0.150*** (0.039)	-0.070* (0.040)	-0.090** (0.039)	-0.010 (0.042)
Origin=SEI	-0.015 (0.131)	0.004 (0.117)	0.041 (0.107)	0.019 (0.107)	0.059 (0.109)
Origin=SEII	-0.153+ (0.096)	0.092 (0.098)	0.193** (0.095)	0.158* (0.090)	0.180** (0.080)
Fixed effects	YES	YES	YES	YES	YES
Predet. demogr.	NO	YES	YES	YES	YES
Education	NO	NO	YES	YES	YES
More demogr.	NO	NO	NO	YES	YES
UE & income	NO	NO	NO	NO	YES
Log likelihood	-70535	-70246	-70179	-69966	-69485
AIC	141156	140588	140459	140049	139091
N	30808	30808	30808	30808	30808

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Overall, we find clear evidence in favour of **H1** and **H2** – both class destination and class origin are major determinants of life satisfaction in Eastern Europe.

5.2.2 Social mobility and reference classes

The greater importance of class origin in Eastern Europe makes social mobility effects likely. To assess this, Table 8 presents our results using diagonal reference models. We indeed find a significantly positive own mobility effect: The number of classes travelled yields coefficients of 0.06 and 0.05 in Columns (1) and (2), respectively. Thus, a person who moves up from Class VII to Class I may gain 0.33 to 0.29 points in life satisfaction compared to a person who originates and remains in Class I. However, due to the effect of class position such an upwardly mobile person would, holding all other variables constant, only be expected to have a life satisfaction that is 0.04 points higher than that of an immobile person.¹²

Table 8 Own class mobility effects in Eastern Europe

	(1)	(2)	(3)	(4)
	Distance travelled with predetermined controls	Distance travelled with full controls	Distance travelled up and down with predetermined controls	Distance travelled up and down with full controls
Class=I	0.740*** (0.077)	0.446*** (0.095)	0.739*** (0.077)	0.445*** (0.095)
Class=II	0.318*** (0.070)	0.116* (0.066)	0.318*** (0.071)	0.115* (0.066)
Class=III	0.081 (0.128)	-0.027 (0.170)	0.079 (0.121)	-0.030 (0.163)
Class=IV	-0.066 (0.119)	-0.061 (0.146)	-0.066 (0.120)	-0.061 (0.145)
Class=V	-0.254+ (0.158)	-0.139 (0.168)	-0.253+ (0.158)	-0.138 (0.168)
Class=VI	-0.491*** (0.049)	-0.290*** (0.063)	-0.489*** (0.050)	-0.287*** (0.059)
Class=VII	-0.328*** (0.090)	-0.045 (0.066)	-0.328*** (0.091)	-0.044 (0.066)
p	0.620*** (0.126)	0.503*** (0.137)	0.621*** (0.126)	0.504*** (0.139)
#Classes moved	0.055** (0.025)	0.048*** (0.013)		
#Classes up			0.060** (0.029)	0.055*** (0.018)
#Classes down			-0.051+ (0.033)	-0.040+ (0.026)
Fixed effects	YES	YES	YES	YES
Predet. demographics	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demographics	NO	YES	NO	YES
UE & income	NO	YES	NO	YES
Log likelihood	-72677	-71951	-72677	-71950
AIC	145436	144008	145438	144009
N	26620	26620	26620	26620

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

¹² Since $(0.048 \cdot 6) - (0.503 \cdot 0.446 - (1 - 0.503) \cdot -0.045) = 0.041$

In Columns (3) and (4), we investigate whether these effects are asymmetric with respect to upward and downward mobility. We find no evidence of loss aversion. On the contrary, the effect of upward mobility is larger than the effect of downward mobility, which in turn is even marginally insignificant. As we did for Western Europe, we check whether these results are sensitive to letting weight p be conditional on class destinations or class origins (see Appendix). Our results are not significantly changed.

However, upon entering terms for reference position and reference mobility in Table 9, our estimates of the effect of own downward mobility as given in Columns (3) and (4) are now significant and slightly exceed the terms for own upward mobility. Generally, the estimates for own class mobility are nearly doubled in Table 9 compared to Table 8. Similar to what we find for Western Europe, this is driven by the positive correlation of own mobility and reference mobility. The own downward mobility term of Table 8 in particular picks up part of the reference mobility effect and is therefore biased toward zero. Because of these considerations we take our results in Table 9 as more reliable estimates for the effect of own class mobility. We therefore find corroborating evidence in favour of **H3** in Eastern Europe.

Finally, we now consider the effects of reference class mobility and reference class position. As was true for Western Europe, reference mobility negatively impacts life satisfaction in all specifications, but reference position has no effects in our preferred specifications. The estimates imply that as people in the individual's reference group tend to be more upwardly mobile, the less satisfied the individual. These results disconfirm **H4a**, but corroborate **H4b**.

Note that our estimates for reference mobility exceed those for own mobility. Thus, as everybody is upwardly mobile, nobody is benefited directly from this mobility. Columns (3) and (4) show whether effects are stronger or weaker for those that were more or less mobile than those in their reference group. Contrary to Western Europe, we now find very little indication for a differential in effects suggesting that the effect of reference mobility is roughly homogenous across class

origins. We confirm this in the Appendix. There, we also show that our main results are robust to letting parameter p be conditional on class destinations or origins, and to using OLS rather than diagonal reference models.

Table 9 Reference class effects in Eastern Europe

	(1)	(2)	(3)	(4)
	Distances, with predetermined controls	Distances, with full controls	Distances in either direction, with predetermined controls	Distances in either direction, with full controls
Class=I	0.934*** (0.107)	0.662*** (0.103)	0.912*** (0.113)	0.635*** (0.112)
Class=II	0.466*** (0.099)	0.272*** (0.087)	0.427*** (0.125)	0.240** (0.106)
Class=III	0.200* (0.115)	0.083 (0.168)	0.149+ (0.099)	0.042 (0.148)
Class=IV	-0.066 (0.107)	-0.056 (0.143)	-0.091 (0.123)	-0.073 (0.153)
Class=V	-0.327** (0.159)	-0.220+ (0.169)	-0.313* (0.168)	-0.205 (0.175)
Class=VI	-0.633*** (0.079)	-0.441*** (0.075)	-0.574*** (0.108)	-0.394*** (0.085)
Class=VII	-0.575*** (0.155)	-0.301*** (0.115)	-0.509*** (0.173)	-0.246* (0.127)
p	0.578*** (0.143)	0.446*** (0.166)	0.559*** (0.139)	0.446*** (0.157)
#Classes moved	0.117*** (0.039)	0.096*** (0.032)		
Ref. class position	-0.070* (0.040)	0.004 (0.039)		
Ref. class mobility	-0.144*** (0.038)	-0.116*** (0.034)		
#Classes moved up			0.101*** (0.035)	0.084*** (0.025)
#Classes moved down			-0.126*** (0.043)	-0.091** (0.042)
Ref. class position (resp. is worse)			-0.096** (0.043)	-0.017 (0.041)
Ref. class position (resp. is better)			-0.072* (0.040)	0.002 (0.039)
Ref. class mobility (resp. is worse)			-0.167*** (0.037)	-0.132*** (0.036)
Ref. class mobility (resp. is better)			-0.128*** (0.043)	-0.107*** (0.039)
Fixed effects	YES	YES	YES	YES
Predet. demographics	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demographics	NO	YES	NO	YES
UE & income	NO	YES	NO	YES
Log likelihood	-72630	-71912	-72628	-71910
AIC	145347	143934	145348	143936
N	26607	26607	26607	26607

+ $p < 0.20$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Region- and wave-clustered standard errors in parentheses.

6. Conclusion

We make three contributions: First, we develop a theoretical framework bringing together all the pathways through which social class may impact life satisfaction. Second, we are the first to consider how reference class position and mobility affect life satisfaction. Third, we comparatively assess the independent effects of class destination and class origin, as well as the effects of own intergenerational class mobility across two major European regions.

The ways in which social class impacts life satisfaction differ for Western Europe and Eastern Europe: First, the self-employed classes in Eastern Europe enjoy similar levels of life satisfaction as the upper salariat. This is in contrast to Western Europe, where the self-employed report levels of life satisfaction closer to the intermediate occupations and higher blue-collar workers. This pattern is likely driven by the unusual composition of the self-employed in Eastern Europe. As noted earlier, many of them are likely former members of the state-bureaucracy (Slomczyński & Shabad, 1996). Moreover, it appears that rapid privatisation resulted in the creation of profitable and well-integrated small-scale businesses (Gerber, 2001; Hanley, 2000) that are different from the often precarious self-employment arrangements found in Western Europe.

Second, in Eastern Europe, descendants of the upper salariat, self-employed and farmers are significantly more satisfied, even after controlling for class destination. No such pattern can be found in Western Europe, where class origin appears to play little role. This difference is likely caused by lower levels of social fluidity, i.e. a stronger association between origin and destination class net of the distribution of class origin and destination, in Eastern compared to Western Europe (Gerber & Hout, 2004; Paskov & Bukodi, 2018). Such a stronger association implies that parents are better able to accrue benefits to their offspring – not all of which run via class destination and are thus observable as positive life satisfaction effects of class origin.

Furthermore, we find sizable evidence of an effect of intergenerational class mobility in both Eastern and Western Europe indicating the importance of internal norms. This is in contradiction to previous studies using diagonal reference models like those of Marshall & Firth (1999) or Zhao

et al. (2017). Upward mobility increases and downward mobility decreases life satisfaction. That upward mobility significantly improves life satisfaction directly disconfirms Sorokin “dissociative” hypothesis. The effect of own mobility is roughly 50% larger and more robust in Eastern than in Western Europe. This is in line with our expectations: As the relative advantageousness of social classes changed over time in the East, own mobility became more salient and thus more prone to produce life satisfaction effects.

Finally, for both groups of countries we find strong and robust negative effects of reference class mobility, but no effects of reference class position. Indeed, the magnitude of the negative reference mobility effect is similar or even larger than the magnitude of the positive own class mobility effect. This suggests that although an individual’s upward mobility results in an individual benefit, such mobility also produces harm by generating more demanding external norms for others. Hence, while mobility may increase an *individual’s* satisfaction with her life, there is no *societal* benefit to class mobility per se.

In conclusion, social class matters greatly to life satisfaction, and it matters in more complex ways than previously considered. One’s own class is not the only one that matters: It also matters in which class one was raised, whether one has been intergenerationally mobile, and where those with whom one shares a class destination originate from.

7. Reference

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Appendix / Supplementary Material

Table D1 List of countries and observed years

ESS wave (year)	1 (2002)	2 (2004)	3 (2006)	4 (2008)	5 (2010)
<i>Western Europe</i>					
Austria	x	x	x	x	
Belgium	x	x	x	x	x
Cyprus			x		x
Denmark	x	x	x	x	x
Finland	x		x	x	x
France		x	x	x	x
Germany	x	x	x	x	x
Greece	x	x		x	x
Iceland		x			
Ireland		x	x	x	x
Italy	x	x			
Luxemburg	x	x			
Netherlands	x	x	x	x	x
Norway	x	x	x	x	x
Portugal	x	x	x	x	
Spain	x	x	x	x	x
Sweden	x	x	x	x	x
Switzerland	x	x	x	x	x
United Kingdom	x	x	x	x	x
<i>Eastern Europe</i>					
Bulgaria			x		x
Croatia				x	x
Czech Republic	x	x		x	x
Estonia				x	x
Hungary		x		x	x
Latvia			x	x	
Lithuania				x	x
Poland	x	x	x	x	x
Romania				x	
Russia			x	x	x
Slovakia		x	x		x
Slovenia	x		x	x	x
Ukraine				x	x

Table D2 Number of observations and shares of class origin and destination combinations

		Destination							SEI	SEII	Total
		I	II	III	IV	V	VI	VII			
Origin	I	3229 3.4%	3946 3.8%	1314 1.3%	875 1.0%	925 1.1%	465 0.6%	883 1.0%	771 0.8%	26 0.0%	12434 12.9%
	II	3465 3.2%	5994 5.1%	2059 1.8%	1571 1.5%	1773 1.6%	1053 1.2%	1905 1.9%	1115 1.1%	80 0.1%	19015 17.4%
	III	974 0.8%	1789 1.5%	975 0.9%	524 0.5%	663 0.6%	370 0.3%	610 0.6%	425 0.4%	17 0.0%	6347 5.6%
	IV	857 0.8%	1928 1.8%	823 0.8%	1184 1.2%	913 0.9%	716 0.8%	1163 1.2%	528 0.6%	26 0.0%	8138 8.0%
	V	589 0.6%	1370 1.2%	756 0.7%	626 0.6%	967 1.0%	667 0.6%	1152 1.2%	348 0.3%	23 0.0%	6498 6.3%
	VI	1145 1.1%	2745 2.5%	1559 1.5%	1685 1.7%	2050 2.0%	2655 2.5%	4054 4.1%	917 0.9%	80 0.1%	16890 16.3%
	VII	1052 1.0%	2541 2.3%	1417 1.4%	1574 1.7%	2197 2.2%	2561 2.6%	5315 5.4%	912 0.9%	93 0.1%	17662 17.5%
	SEI	1280 1.0%	2324 1.8%	1125 0.9%	999 0.8%	1131 0.9%	702 0.6%	1393 1.3%	1392 1.2%	124 0.1%	10470 8.7%
	SEII	744 0.5%	1684 1.0%	718 0.5%	855 0.6%	978 0.6%	1149 0.9%	2108 1.6%	834 0.6%	1187 1.0%	10257 7.3%
	Total	13335 12.2%	24321 21.1%	10746 9.7%	9893 9.7%	11597 10.7%	10338 10.0%	18583 18.4%	7242 6.7%	1656 1.4%	107711 100%

Note: Design and population weights are applied to shares.

Table D3 Number of observations and shares of class origin and destination combinations, Western Europe

		Destination							SEI	SEII	Total
		I	II	III	IV	V	VI	VII			
Origin	I	2428 3.1%	2897 3.6%	976 1.3%	635 0.9%	625 0.8%	235 0.3%	481 0.7%	556 0.9%	19 0.0%	8852 11.6%
	II	2667 3.3%	4602 5.4%	1580 2.0%	1202 1.7%	1250 1.5%	531 0.7%	1120 1.6%	851 1.2%	63 0.1%	13866 17.5%
	III	810 1.1%	1456 1.9%	809 1.2%	436 0.6%	532 0.7%	241 0.4%	435 0.7%	344 0.5%	15 0.0%	5078 7.1%
	IV	628 0.9%	1511 2.1%	676 1.0%	909 1.4%	714 1.0%	413 0.7%	790 1.2%	422 0.7%	15 0.0%	6078 9.0%
	V	423 0.5%	983 1.2%	567 0.8%	479 0.6%	666 0.9%	353 0.4%	656 1.0%	251 0.3%	17 0.0%	4395 5.8%
	VI	726 0.9%	1763 2.4%	1076 1.5%	1207 1.9%	1276 1.8%	1345 1.9%	2131 3.5%	635 0.9%	50 0.1%	10209 15.1%
	VII	657 0.8%	1605 2.0%	979 1.3%	1106 1.6%	1397 1.8%	1219 1.6%	2803 4.3%	684 1.0%	50 0.1%	10500 14.6%
	SEI	1179 1.4%	2158 2.4%	1054 1.3%	925 1.1%	1048 1.3%	584 0.7%	1228 1.7%	1326 1.7%	119 0.2%	9621 12.0%
	SEII	638 0.5%	1466 1.1%	616 0.5%	732 0.7%	821 0.6%	850 0.8%	1563 1.5%	760 0.8%	920 0.8%	8366 7.3%
	Total	10156 12.5%	18441 22.2%	8333 11.0%	5771 7.6%	11207 16.2%	7631 10.7%	8329 10.5%	5829 8.1%	1268 1.2%	76965 100%

Note: Design and population weights are applied to shares.

Table D4 Number of observations and shares of class origin and destination combinations, Eastern Europe

		Destination							SEI	SEII	Total
		I	II	III	IV	V	VI	VII			
Origin	I	801	1049	338	240	300	230	402	215	9	3584
		3.9%	4.1%	1.2%	1.2%	1.6%	1.0%	1.7%	0.7%	0.0%	15.4%
	II	798	1392	479	369	523	522	785	264	24	5156
		3.0%	4.5%	1.4%	1.1%	1.6%	2.1%	2.5%	0.8%	0.1%	17.2%
	III	164	333	166	88	131	129	175	81	4	1271
		0.3%	0.7%	0.3%	0.2%	0.3%	0.2%	0.4%	0.2%	0.0%	2.6%
	IV	229	417	147	275	199	303	373	108	14	2065
		0.7%	1.3%	0.4%	0.9%	0.5%	1.0%	1.0%	0.4%	0.0%	6.2%
	V	166	387	189	147	301	314	496	98	8	2106
		0.7%	1.3%	0.6%	0.7%	1.1%	1.0%	1.6%	0.2%	0.0%	7.2%
	VI	419	982	483	478	774	1311	1923	283	38	6691
		1.4%	2.8%	1.4%	1.2%	2.3%	3.7%	5.3%	0.7%	0.1%	18.8%
	VII	395	936	439	469	800	1342	2512	229	49	7171
		1.2%	2.9%	1.4%	1.8%	2.9%	4.4%	7.6%	0.7%	0.2%	23.1%
	SEI	101	166	71	74	83	118	165	66	7	851
		0.3%	0.4%	0.2%	0.2%	0.2%	0.3%	0.4%	0.2%	0.0%	2.2%
	SEII	106	218	102	123	157	299	545	74	289	1913
		0.4%	0.8%	0.4%	0.4%	0.6%	1.1%	1.9%	0.3%	1.5%	7.3%
	Total	3179	5880	2414	2263	3268	4568	7376	1418	442	30808
		11.8%	18.8%	7.3%	7.7%	11.1%	14.8%	22.5%	4.2%	1.9%	100%

Note: Design and population weights are applied to shares.

Table D5 Variable descriptions

<i>Treated continuously</i>	Mean	SD	Min-Max
Life satisfaction	6.50	2.39	0-10
Own mobility	0.22	2.49	-6-6
Reference position	3.94	0.92	1-7
Reference mobility	0.20	1.49	-5.02-5.25
Age	45.94	12.28	25-74
Age squared	2,260.81	1,154.84	625-5,476
Years of education	12.96	3.74	0-56
Years of education squared	181.93	104.80	0-3,136
Household size	2.94	1.36	1-15
Household size squared	10.48	10.19	1-225
Ln real HH income	10.58	1.42	6.15-18.56
<i>Treated categorically</i>	Category	N	Share (%)
Unemployed	No	100,918	93.72
	Yes	6,855	6.28
Gender	Female	51,820	49.32
	Male	55,953	50.68
Ethnic minority	No	102,557	93.25
	Yes	5,216	6.75
Born in country	No	98,678	91.65
	Yes	9,095	8.35
Religious	No	44,584	41.51
	Yes	63,189	58.49
Married/Partnered	No	40,481	33.94
	Yes	64,789	65.36
	NA/No answer	2,503	0.70
Place of domicile	Big city	21,415	21.03
	Suburbs	13,470	11.38
	Town	33,336	34.70
	Country/Village	39,552	32.88
ESS round	2002	16,208	13.16
	2004	18,868	15.57
	2006	20,154	20.77
	2008	26,241	25.09
	2010	26,302	25.40
NUTS I Region	102 Separate region dummies		

Note: Overall N is 107,711. Mean, SD and shares are computed using population and design weights. Ns are unweighted. ESeC destination and origin class are described in Tables D2-D4.

Table A1 Own class mobility effects in Western Europe, weights conditional on class destination

	(1)	(2)	(3)	(4)
	Distance travelled with predetermined controls	Distance travelled with full controls	Distance travelled up and down with predetermined controls	Distance travelled up and down with full controls
Class=I	0.528*** (0.044)	0.214*** (0.048)	0.513*** (0.047)	0.202*** (0.046)
Class=II	0.369*** (0.041)	0.208*** (0.043)	0.357*** (0.044)	0.186*** (0.045)
Class=III	0.197*** (0.039)	0.119*** (0.035)	0.200*** (0.044)	0.121*** (0.036)
Class=IV	-0.116* (0.063)	-0.131* (0.079)	-0.098+ (0.074)	-0.128+ (0.083)
Class=V	-0.253*** (0.091)	-0.141+ (0.108)	-0.245** (0.118)	-0.112 (0.107)
Class=VI	-0.268*** (0.062)	-0.069 (0.068)	-0.225*** (0.079)	-0.031 (0.058)
Class=VII	-0.459*** (0.047)	-0.201*** (0.069)	-0.501*** (0.091)	-0.239*** (0.075)
p _I	0.806*** (0.118)	0.742*** (0.238)	0.802*** (0.270)	0.951*** (0.291)
p _{II}	0.741*** (0.124)	0.962*** (0.263)	0.719*** (0.127)	0.678** (0.287)
p _{III}	0.929*** (0.121)	1.000 (constr.)	0.747*** (0.130)	1.000 (constr.)
p _{IV}	0.658*** (0.141)	0.398+ (0.298)	0.467** (0.212)	0.180 (0.374)
p _V	0.649*** (0.162)	0.476+ (0.296)	0.420*** (0.217)	0.265 (0.378)
p _{VI}	1.000 (constr.)	1.000 (constr.)	0.695** (0.294)	0.743+ (0.557)
p _{VII}	1.000 (constr.)	0.998** (0.456)	0.641** (0.301)	0.530 (0.461)
#Classes moved	0.017 (0.014)	0.020+ (0.014)		
#Classes up			0.015 (0.041)	0.001 (0.017)
#Classes down			-0.075 (0.064)	-0.057** (0.026)
Fixed effects	YES	YES	YES	YES
Predet. demogr.	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demogr.	NO	YES	NO	YES
UE & income	NO	YES	NO	YES
Log likelihood	-114122	-112150	-114119	-112145
AIC	228436	224516	228437	224511
N	55006	55006	55006	55006

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Table A2 Origin-specific effects of reference mobility

	(1)	(2)	(3)	(4)
	Western Europe with predetermined controls	Western Europe with full controls	Eastern Europe with predetermined controls	Western Europe with full controls
Class=I	0.552*** (0.077)	0.313*** (0.074)	0.922*** (0.097)	0.654*** (0.105)
Class=II	0.384*** (0.063)	0.258*** (0.059)	0.479*** (0.094)	0.282*** (0.083)
Class=III	0.237*** (0.089)	0.206*** (0.057)	0.204* (0.110)	0.085 (0.173)
Class=IV	-0.072 (0.058)	-0.061 (0.062)	-0.068 (0.111)	-0.063 (0.152)
Class=V	-0.215*** (0.069)	-0.147** (0.065)	-0.324** (0.156)	-0.218+ (0.168)
Class=VI	-0.292** (0.126)	-0.159+ (0.110)	-0.633*** (0.080)	-0.435*** (0.076)
Class=VII	-0.594*** (0.109)	-0.410*** (0.090)	-0.580*** (0.155)	-0.305*** (0.115)
p	0.692 (0.609)	0.712* (0.367)	0.600*** (0.133)	0.463*** (0.177)
#Classes moved	0.063 (0.117)	0.041 (0.046)	0.111*** (0.037)	0.093*** (0.033)
Ref. class position	-0.046+ (0.033)	-0.013 (0.032)	-0.069* (0.039)	0.004 (0.039)
Ref. class mobility (Orig.=I)	-0.028 (0.040)	-0.058+ (0.039)	-0.124*** (0.039)	-0.105*** (0.039)
Ref. class mobility (Orig.=II)	-0.037 (0.036)	-0.064* (0.033)	-0.174*** (0.038)	-0.143*** (0.040)
Ref. class mobility (Orig.=III)	0.000 (0.040)	-0.034 (0.038)	-0.135** (0.068)	-0.116+ (0.077)
Ref. class mobility (Orig.=IV)	-0.062+ (0.042)	-0.081* (0.042)	-0.123** (0.058)	-0.088+ (0.060)
Ref. class mobility (Orig.=V)	-0.065 (0.051)	-0.098** (0.048)	-0.146** (0.064)	-0.120** (0.057)
Ref. class mobility (Orig.=VI)	-0.085** (0.036)	-0.106*** (0.035)	-0.131*** (0.046)	-0.089** (0.043)
Ref. class mobility (Orig.=VII)	-0.072+ (0.046)	-0.107** (0.043)	-0.152*** (0.054)	-0.131*** (0.048)
Fixed effects	YES	YES	YES	YES
Predet. demogr.	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demogr.	NO	YES	NO	YES
UE & income	NO	YES	NO	YES
Log likelihood	-114087	-112114	-72628	-71909
AIC	228375	224453	145354	143940
N	54990	54990	26607	26607

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Table A3 Reference class effects in Western Europe, weights conditional on class destination

	(1)	(2)	(3)	(4)
	Distances, with predetermined controls	Distances, with full controls	Distances in either direction, with predetermined controls	Distances in either direction, with full controls
Class=I	0.563*** (0.081)	0.329*** (0.079)	0.464*** (0.102)	0.240*** (0.070)
Class=II	0.399*** (0.057)	0.292*** (0.057)	0.340*** (0.081)	0.219*** (0.071)
Class=III	0.215*** (0.047)	0.171*** (0.046)	0.199*** (0.059)	0.144*** (0.052)
Class=IV	-0.101+ (0.062)	-0.104+ (0.074)	-0.046 (0.080)	-0.076 (0.091)
Class=V	-0.272*** (0.093)	-0.191** (0.095)	-0.220* (0.120)	-0.116 (0.113)
Class=VI	-0.293*** (0.078)	-0.149* (0.082)	-0.198* (0.110)	-0.065 (0.077)
Class=VII	-0.512*** (0.082)	-0.348*** (0.088)	-0.540*** (0.108)	-0.346*** (0.087)
pI	0.817*** (0.114)	0.745*** (0.207)	0.929*** (0.293)	1.000 (constr.)
pII	0.749*** (0.116)	0.584*** (0.175)	0.790*** (0.150)	0.736*** (0.176)
pIII	0.923*** (0.113)	0.889*** (0.184)	0.887*** (0.159)	0.972*** (0.206)
pIV	0.681*** (0.132)	0.475** (0.204)	0.443+ (0.298)	0.186 (0.361)
pV	0.666*** (0.150)	0.564*** (0.201)	0.413+ (0.295)	0.346+ (0.267)
pVI	0.997*** (0.166)	1.000 (constr.)	0.694** (0.294)	0.769** (0.319)
pVII	1.000 (constr.)	0.942*** (0.233)	0.605** (0.283)	0.600** (0.242)
#Classes moved	0.036* (0.021)	0.039* (0.023)		
Ref. class position	-0.051+ (0.032)	-0.019 (0.031)		
Ref. class mobility	-0.053+ (0.033)	-0.084*** (0.032)		
#Classes moved up			0.045 (0.043)	0.035+ (0.021)
#Classes moved down			-0.076* (0.043)	-0.052* (0.028)
Ref. class position (resp. is worse)			-0.068* (0.041)	-0.037 (0.036)
Ref. class position (resp. is better)			-0.054+ (0.033)	-0.020 (0.032)
Ref. class mobility (resp. is worse)			-0.008 (0.039)	-0.038 (0.034)
Ref. class mobility (resp. is better)			-0.083** (0.038)	-0.110*** (0.037)
Fixed effects	YES	YES	YES	YES
Predet. demographics	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demographics	NO	YES	NO	YES
Unemployment & income	NO	YES	NO	YES
Log likelihood	-114082	-112108	-114073	-112097
AIC	228363	224438	228352	224422
N	54990	54990	54990	54990

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Table A4 Reference class effects in Western Europe, weights conditional on class origin

	(1)	(2)	(3)	(4)
	Distances, with predetermined controls	Distances, with full controls	Distances in either direction, with predetermined controls	Distances in either direction, with full controls
Class=I	0.556*** (0.082)	0.305*** (0.072)	0.546*** (0.084)	0.294*** (0.094)
Class=II	0.380*** (0.062)	0.245*** (0.059)	0.375*** (0.068)	0.224** (0.098)
Class=III	0.252*** (0.062)	0.236*** (0.057)	0.257*** (0.063)	0.239*** (0.061)
Class=IV	-0.086+ (0.061)	-0.082+ (0.060)	-0.063 (0.069)	-0.064 (0.076)
Class=V	-0.235*** (0.085)	-0.167** (0.084)	-0.234** (0.094)	-0.189+ (0.127)
Class=VI	-0.268*** (0.082)	-0.138* (0.079)	-0.274*** (0.101)	-0.120 (0.138)
Class=VII	-0.600*** (0.093)	-0.398*** (0.083)	-0.606*** (0.101)	-0.385*** (0.140)
pI	0.640** (0.250)	0.604** (0.248)	0.658** (0.380)	0.419 (0.538)
pII	0.639*** (0.125)	0.652*** (0.198)	0.631*** (0.128)	0.445** (0.214)
pIII	0.858*** (0.187)	1.000*** (0.248)	0.857*** (0.190)	0.869* (0.448)
pIV	0.552*** (0.147)	0.618** (0.259)	0.597*** (0.181)	0.646+ (0.481)
pV	0.612*** (0.168)	0.618** (0.300)	0.539** (0.250)	0.750 (0.686)
pVI	0.455*** (0.143)	0.425** (0.214)	0.534*** (0.199)	0.530 (0.424)
pVII	0.554*** (0.117)	0.527** (0.212)	0.587*** (0.203)	0.580 (0.509)
#Classes moved	0.081* (0.047)	0.055*** (0.021)		
Ref. class position	-0.054+ (0.033)	-0.023 (0.032)		
Ref. class mobility	-0.055* (0.032)	-0.080** (0.031)		
#Classes moved up			0.090+ (0.059)	0.059** (0.029)
#Classes moved down			-0.063 (0.076)	-0.062 (0.053)
Ref. class position (resp. is worse)			-0.048+ (0.036)	-0.020 (0.040)
Ref. class position (resp. is better)			-0.049+ (0.033)	-0.020 (0.037)
Ref. class mobility (resp. is worse)			-0.024 (0.035)	-0.046 (0.038)
Ref. class mobility (resp. is better)			-0.085** (0.040)	-0.107** (0.045)
Fixed effects	YES	YES	YES	YES
Predet. demographics	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demographics	NO	YES	NO	YES
Unemployment & income	NO	YES	NO	YES
Log likelihood	-114086	-112112	-114081	-112105
AIC	228372	224447	228369	224441
N	54990	54990	54990	54990

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Table A5 Reference effects in Western Europe, OLS results

	(1)	(2)	(3)	(4)
	Distances, with predetermined controls	Distances, with full controls	Distances in either direction, with predetermined controls	Distances in either direction, with full controls
Dest.=II	-0.190*** (0.041)	-0.087** (0.040)	-0.184*** (0.041)	-0.082** (0.040)
Dest.=III	-0.331*** (0.060)	-0.146** (0.060)	-0.325*** (0.060)	-0.141** (0.060)
Dest.=IV	-0.648*** (0.077)	-0.403*** (0.076)	-0.645*** (0.080)	-0.402*** (0.080)
Dest.=V	-0.798*** (0.106)	-0.508*** (0.103)	-0.802*** (0.115)	-0.516*** (0.113)
Dest.=VI	-0.928*** (0.121)	-0.573*** (0.120)	-0.942*** (0.136)	-0.590*** (0.135)
Dest.=VII	-1.149*** (0.141)	-0.747*** (0.134)	-1.167*** (0.152)	-0.768*** (0.147)
Orig.=II	0.008 (0.040)	0.018 (0.040)	0.013 (0.040)	0.023 (0.040)
Orig.=III	-0.033 (0.058)	-0.017 (0.053)	-0.017 (0.058)	-0.001 (0.054)
Orig.=IV	0.000 (0.062)	-0.012 (0.061)	0.035 (0.065)	0.022 (0.064)
Orig.=V	0.021 (0.078)	0.038 (0.073)	0.048 (0.080)	0.064 (0.075)
Orig.=VI	0.071 (0.080)	0.083 (0.078)	0.090 (0.082)	0.101 (0.080)
Orig.=VII	-0.002 (0.085)	0.012 (0.082)	0.012 (0.086)	0.026 (0.083)
Ref. class position	-0.055* (0.033)	-0.022 (0.033)		
Ref. class mobility	-0.052+ (0.033)	-0.081*** (0.031)		
Ref. class position (resp. is worse)			-0.048+ (0.034)	-0.014 (0.033)
Ref. class position (resp. is better)			-0.051+ (0.033)	-0.018 (0.033)
Ref. class mobility (resp. is worse)			-0.023 (0.033)	-0.053* (0.031)
Ref. class mobility (resp. is better)			-0.080** (0.036)	-0.109*** (0.035)
Fixed effects	YES	YES	YES	YES
Predet. demogr.	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demogr.	NO	YES	NO	YES
UE & income	NO	YES	NO	YES
Log likelihood	-117043	-115018	-117033	-115007
AIC	234281	230255	234264	230237
N	54990	54990	54990	54990

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Table A6 Own class mobility effects in Eastern Europe, weights conditional on class destination

	(1)	(2)	(3)	(4)
	Distance travelled with predetermined controls	Distance travelled with full controls	Distance travelled up and down with predetermined controls	Distance travelled up and down with full controls
Class=I	0.807*** (0.071)	0.459*** (0.085)	0.832*** (0.097)	0.466*** (0.099)
Class=II	0.316*** (0.073)	0.136** (0.068)	0.309*** (0.083)	0.133* (0.072)
Class=III	0.050 (0.096)	-0.012 (0.113)	0.038 (0.081)	-0.017 (0.098)
Class=IV	-0.055 (0.088)	-0.047 (0.089)	-0.066 (0.086)	-0.048 (0.091)
Class=V	-0.242+ (0.147)	-0.132 (0.211)	-0.250* (0.134)	-0.129 (0.200)
Class=VI	-0.498*** (0.044)	-0.319*** (0.049)	-0.483*** (0.046)	-0.317*** (0.045)
Class=VII	-0.378*** (0.112)	-0.085 (0.105)	-0.381*** (0.100)	-0.088 (0.102)
p _I	0.462*** (0.164)	0.333 (0.341)	0.430*** (0.160)	0.305 (0.312)
p _{II}	0.655*** (0.170)	0.569 (0.272)	0.634*** (0.173)	0.537** (0.272)
p _{III}	0.984*** (0.245)	1.000 (0.341)	0.990*** (0.233)	1.000 (0.312)
p _{IV}	0.763*** (0.145)	0.783 (0.386)	0.818*** (0.203)	0.798** (0.348)
p _V	0.660*** (0.202)	0.416 (0.512)	0.758*** (0.211)	0.457 (0.413)
p _{VI}	0.725*** (0.205)	0.503 (0.375)	0.845*** (0.300)	0.632* (0.356)
p _{VII}	0.531*** (0.176)	0.276 (0.336)	0.688* (0.397)	0.331 (0.537)
#Classes moved	0.054** (0.022)	0.049*** (0.016)		
#Classes up			0.066* (0.040)	0.056** (0.028)
#Classes down			-0.023 (0.055)	-0.042+ (0.033)
Fixed effects	YES	YES	YES	YES
Predet. demogr.	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demogr.	NO	YES	NO	YES
UE & income	NO	YES	NO	YES
Log likelihood	-72664	-71941	-72663	-71941
AIC	145423	143999	145423	144001
N	26620	26620	26620	26620

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Table A7 Own class mobility effects in Eastern Europe, weights conditional on class origin

	(1)	(2)	(3)	(4)
	Distance travelled with predetermined controls	Distance travelled with full controls	Distance travelled up and down with predetermined controls	Distance travelled up and down with full controls
Class=I	0.754*** (0.103)	0.531*** (0.101)	0.860*** (0.109)	0.550*** (0.107)
Class=II	0.308*** (0.097)	0.144* (0.085)	0.325*** (0.105)	0.137+ (0.100)
Class=III	0.022 (0.241)	-0.355+ (0.223)	-0.198 (0.265)	-0.304+ (0.214)
Class=IV	-0.041 (0.126)	-0.064 (0.192)	-0.057 (0.199)	-0.051 (0.168)
Class=V	-0.252+ (0.185)	-0.100 (0.184)	-0.236 (0.191)	-0.110 (0.158)
Class=VI	-0.481*** (0.078)	-0.147*** (0.048)	-0.360*** (0.075)	-0.175*** (0.043)
Class=VII	-0.311*** (0.105)	-0.010 (0.076)	-0.332*** (0.084)	-0.047 (0.072)
p _I	0.588*** (0.129)	0.486*** (0.137)	0.613*** (0.156)	0.614*** (0.141)
p _{II}	0.520*** (0.111)	0.455** (0.255)	0.511*** (0.167)	0.564** (0.289)
p _{III}	0.755*** (0.235)	0.833*** (0.310)	0.690*** (0.246)	0.765** (0.307)
p _{IV}	0.932*** (0.241)	1.000 (constr.)	0.726** (0.332)	1.000 (constr.)
p _V	0.579** (0.272)	0.479 (0.518)	0.269 (0.241)	0.356 (0.408)
p _{VI}	0.555** (0.241)	0.000 (constr.)	0.093 (0.175)	0.000 (constr.)
p _{VII}	0.450+ (0.282)	0.000 (constr.)	0.000 (constr.)	0.000 (constr.)
#Classes moved	0.066* (0.034)	0.056*** (0.016)		
#Classes up			0.149*** (0.032)	0.081*** (0.026)
#Classes down			-0.049 (0.045)	-0.025 (0.028)
Fixed effects	YES	YES	YES	YES
Predet. demogr.	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demogr.	NO	YES	NO	YES
UE & income	NO	YES	NO	YES
Log likelihood	-72672	-71939	-72665	-71933
AIC	145440	143990	145424	143983
N	26620	26620	26620	26620

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Table A8 Reference class effects in Eastern Europe, weights conditional on class destination

	(1)	(2)	(3)	(4)
	Distances, with predetermined controls	Distances, with full controls	Distances in either direction, with predetermined controls	Distances in either direction, with full controls
Class=I	1.043*** (0.131)	0.738*** (0.122)	1.117*** (0.153)	0.422*** (0.106)
Class=II	0.490*** (0.092)	0.314*** (0.069)	0.516*** (0.141)	0.093 (0.133)
Class=III	0.153* (0.090)	0.070 (0.116)	0.156*** (0.060)	-0.054 (0.087)
Class=IV	-0.056 (0.081)	-0.045 (0.100)	-0.079 (0.076)	0.235** (0.111)
Class=V	-0.317** (0.148)	-0.208 (0.177)	-0.348** (0.137)	-0.277 (0.275)
Class=VI	-0.660*** (0.082)	-0.492*** (0.072)	-0.677*** (0.122)	-0.256** (0.115)
Class=VII	-0.653*** (0.169)	-0.376*** (0.136)	-0.684*** (0.193)	-0.163 (0.222)
p _I	0.455*** (0.140)	0.317+ (0.211)	0.453*** (0.117)	0.255 (0.409)
p _{II}	0.610*** (0.126)	0.491*** (0.177)	0.626*** (0.124)	0.452 (0.385)
p _{III}	0.866*** (0.164)	0.856*** (0.251)	0.908*** (0.153)	1.000 (constr.)
p _{IV}	0.706*** (0.105)	0.653*** (0.170)	0.831*** (0.151)	0.000 (constr.)
p _V	0.617*** (0.139)	0.450* (0.261)	0.782*** (0.158)	0.314 (0.727)
p _{VI}	0.647*** (0.155)	0.502** (0.231)	0.831*** (0.241)	1.000 (constr.)
p _{VII}	0.521*** (0.136)	0.337+ (0.236)	0.756** (0.307)	0.607 (0.475)
#Classes moved	0.117*** (0.031)	0.101*** (0.030)		
Ref. class position	-0.064+ (0.041)	0.011 (0.042)		
Ref. class mobility	-0.156*** (0.036)	-0.132*** (0.032)		
#Classes moved up			0.121*** (0.033)	0.082+ (0.052)
#Classes moved down			-0.061 (0.072)	-0.043* (0.025)
Ref. class position (resp. is worse)			-0.054 (0.049)	-0.052 (0.058)
Ref. class position (resp. is better)			-0.065+ (0.040)	-0.018 (0.043)
Ref. class mobility (resp. is worse)			-0.172*** (0.038)	-0.073** (0.035)
Ref. class mobility (resp. is better)			-0.149*** (0.043)	-0.084+ (0.055)
Fixed effects	YES	YES	YES	YES
Predet. demogr.	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demogr.	NO	YES	NO	YES
UE & income	NO	YES	NO	YES
Log likelihood	-72616	-71898	-72614	-71909
AIC	145330	143923	145332	143940
N	26607	26607	26607	26607

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Table A9 Reference class effects in Eastern Europe, weights conditional on class origin

	(1)	(2)	(3)	(4)
	Distances, with predetermined controls	Distances, with full controls	Distances in either direction, with predetermined controls	Distances in either direction, with full controls
Class=I	0.947*** (0.117)	0.662*** (0.237)	1.029*** (0.112)	0.670*** (0.241)
Class=II	0.442*** (0.109)	0.237 (0.210)	0.419*** (0.131)	0.193 (0.250)
Class=III	0.170 (0.191)	-0.072 (1.234)	-0.123 (0.239)	-0.288 (0.389)
Class=IV	-0.046 (0.107)	-0.015 (0.226)	-0.086 (0.179)	0.001 (0.343)
Class=V	-0.325* (0.179)	-0.203 (0.266)	-0.294* (0.175)	-0.145 (0.236)
Class=VI	-0.629*** (0.092)	-0.382 (0.712)	-0.457*** (0.090)	-0.259+ (0.183)
Class=VII	-0.559*** (0.170)	-0.227 (0.569)	-0.488*** (0.108)	-0.172 (0.173)
p _I	0.540*** (0.141)	0.435*** (0.145)	0.549*** (0.115)	0.566*** (0.117)
p _{II}	0.457*** (0.078)	0.307** (0.176)	0.425*** (0.113)	0.466** (0.198)
p _{III}	0.668*** (0.180)	0.538 (1.016)	0.591** (0.232)	0.426 (0.365)
p _{IV}	0.769*** (0.157)	0.908 (0.714)	0.580*** (0.223)	0.152 (0.861)
p _V	0.508*** (0.201)	0.370 (0.397)	0.195 (0.163)	0.201 (0.357)
p _{VI}	0.527*** (0.161)	0.335 (1.028)	0.062 (0.116)	0.006 (0.294)
p _{VII}	0.467*** (0.181)	0.158 (1.220)	0.000 (0.115)	0.000 (0.117)
#Classes moved	0.133*** (0.048)	0.102*** (0.031)		
Ref. class position	-0.071* (0.040)	-0.004 (0.097)		
Ref. class mobility	-0.143*** (0.034)	-0.099 (0.164)		
#Classes moved up			0.210*** (0.028)	0.115** (0.053)
#Classes moved down			-0.129*** (0.041)	-0.062* (0.032)
Ref. class position (resp. is worse)			-0.104*** (0.038)	-0.035 (0.052)
Ref. class position (resp. is better)			-0.074* (0.039)	-0.005 (0.040)
Ref. class mobility (resp. is worse)			-0.167*** (0.039)	-0.111+ (0.068)
Ref. class mobility (resp. is better)			-0.131*** (0.031)	-0.098** (0.046)
Fixed effects	YES	YES	YES	YES
Predet. demogr.	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demogr.	NO	YES	NO	YES
UE & income	NO	YES	NO	YES
Log likelihood	-72625	-71904	-72614	-71893
AIC	145351	143931	145331	143916
N	26607	26607	26607	26607

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.

Table A10 Reference effects in Eastern Europe, OLS results

	(1)	(2)	(3)	(4)
	Distances, with predetermined controls	Distances, with full controls	Distances in either direction, with predetermined controls	Distances in either direction, with full controls
Dest.=II	-0.352*** (0.051)	-0.254*** (0.071)	-0.357*** (0.054)	-0.258*** (0.075)
Dest.=III	-0.614*** (0.101)	-0.417*** (0.106)	-0.617*** (0.095)	-0.419*** (0.103)
Dest.=IV	-0.920*** (0.095)	-0.631*** (0.107)	-0.904*** (0.106)	-0.612*** (0.115)
Dest.=V	-1.168*** (0.141)	-0.743*** (0.173)	-1.127*** (0.166)	-0.696*** (0.181)
Dest.=VI	-1.498*** (0.124)	-0.990*** (0.117)	-1.433*** (0.178)	-0.915*** (0.145)
Dest.=VII	-1.556*** (0.184)	-1.003*** (0.143)	-1.488*** (0.234)	-0.926*** (0.180)
Orig.=II	-0.121 (0.098)	-0.130+ (0.088)	-0.123 (0.098)	-0.132+ (0.088)
Orig.=III	-0.180+ (0.137)	-0.183+ (0.128)	-0.184+ (0.135)	-0.188+ (0.126)
Orig.=IV	-0.082 (0.171)	-0.086 (0.159)	-0.089 (0.181)	-0.093 (0.168)
Orig.=V	-0.109 (0.108)	-0.141+ (0.107)	-0.113 (0.109)	-0.146+ (0.106)
Orig.=VI	-0.081 (0.094)	-0.127+ (0.086)	-0.080 (0.093)	-0.125+ (0.085)
Orig.=VII	0.031 (0.103)	0.035 (0.091)	0.033 (0.102)	0.037 (0.091)
Ref. position (distance)	-0.068* (0.040)	0.004 (0.039)		
Ref. mobility (distance)	-0.146*** (0.039)	-0.119*** (0.035)		
Ref. position (of above)			-0.087* (0.046)	-0.017 (0.044)
Ref. position (of below)			-0.070* (0.040)	0.002 (0.039)
Ref. upward mobility			-0.157*** (0.032)	-0.130*** (0.032)
Ref. downward mobility			-0.140*** (0.049)	-0.113** (0.044)
Fixed effects	YES	YES	YES	YES
Predet. demogr.	YES	YES	YES	YES
Education	NO	YES	NO	YES
More demogr.	NO	YES	NO	YES
UE & income	NO	YES	NO	YES
Log likelihood	-60600	-60001	-60599	-60000
AIC	121293	120119	121295	120120
N	26607	26607	26607	26607

+ p<0.20, * p<0.10, ** p<0.05, *** p<0.01. Region- and wave-clustered standard errors in parentheses.