Social closure, micro-class immobility and the intergenerational reproduction of the upper class: a comparative study

Abstract

This article assesses how processes of social closure enhance intergenerational immobility in the regulated professions and thus promote persistence at the top of the occupational hierarchy. We compare four European countries (Great Britain, Germany, Denmark and Sweden) that differ considerably in their degree of professional regulation and in their broader institutional arrangements. We run log-linear and logistic regression models on a cumulative dataset based on three large-scale surveys with detailed and highly comparable information at the level of unit occupations. Our analyses indicate that children of licensed professionals are far more likely to inherit the occupation of their parents and that this stronger micro-class immobility translates into higher chances of persistence in the upper class. These results support social closure theory and confirm the relevance of a micro-class approach for the explanation of social fluidity and of its cross-national variations. Moreover, we find that, when children of professionals do not reproduce the micro-class of their parents, they still display disproportionate chances of persistence in professional employment. Hence, on the one hand, processes of social closure erect barriers between professions and fuel micro-class immobility at the top. On the other hand, the cultural proximity of different professional groups drives intense intergenerational exchanges between them. Our analyses indicate that these micro- and meso-class rigidities work as complementary routes to immobility at the top.

Keywords: professional closure, social mobility, micro-classes, occupational inequalities,

Introduction

In western societies, professionals are the largest occupational group at the top of the occupational hierarchy, and their children display disproportionately high chances of persistence in the upper class. Understanding the processes behind this intergenerational reproduction is therefore of primary importance. In this article, we decompose these processes into three distinct mechanisms operating at different analytical levels (macro-, meso- and micro-class rigidities), and we assess how social closure affects intergenerational immobility in professional employment across four European countries (Great Britain, Germany, Denmark, Sweden).

Social mobility research has extensively described the pattern of association between class origins and destinations and its variations across countries and cohorts (Breen 2004). Despite its important contributions, this research tradition has often been criticized for being inherently descriptive (Sorensen and Grusky 1996; Hedström 2005), and social mobility researchers themselves have recently emphasised the importance of tracing the specific mechanisms that relate origins and destinations (Goldthorpe 2007). In the context of this debate, Grusky and associates have argued that these explanatory mechanisms should be searched at the level of specific occupations rather than at the level of the traditional 'big classes' of standard mobility research (Weeden and Grusky 2005). For instance, Grusky (2005) notes that occupational associations promoting licensing, certifications and apprenticeship systems do not seek to effect class-wide changes but rather operate to promote the particularistic interests of their members, often in competition with other professional categories belonging to the same big class. More generally, collective action, class identification and class cultures may look weak when assessed at the level of big classes, while micro-classes defined at the level of unit occupations display a stronger commonality of interests, attitudes and lifestyles (Grusky and Weeden 2001). Accordingly, the cultural, social and material resources most relevant for social reproduction are to be found at the level of unit occupations. In line with this argument, Jonsson et al. (2009) provide empirical

evidence that macro-class immobility is largely driven by micro-class immobility. However, the heuristic value of this approach has been questioned by Goldthorpe (2002:214), who argues that processes of social reproduction extend far beyond micro-class immobility (Birkelund 2002): 'We want to be able to explain, for example, not so much why doctors' children have a high propensity to become doctors […], but rather why those doctors' children (the majority) who do not become doctors are far more likely to move into other kinds of professional or managerial employment, instead of becoming manual wage workers'.

Our work provides a twofold contribution to this debate. First, we document that children of professionals display a strong propensity to reproduce the specific micro-class of their parents. However, when they do not follow in their parents' footsteps, as is often the case, they also display a particularly high propensity to move into other professional occupations (meso-class rigidities), rather than into the other fractions of the upper class (managerial and entrepreneurial employment) or into lower classes. Even if they leave the ranks of professional employment, they exhibit disproportionate chances of immobility at the top (macro-class rigidities). Their intergenerational persistence in the upper class is therefore jointly fuelled by three qualitatively distinct sets of mechanisms. We assess the importance of these mechanisms across four countries that notably differ in their social openness, institutional arrangements and degree of professional regulation. We argue that previous research has paid limited attention to meso-class rigidities: the intense exchanges occurring within professional employment are the key process of intergenerational reproduction at the top.

Second, we show how social closure at the level of specific occupations works as a mechanism of micro-class immobility, fuelling immobility in professional employment and thus macro-class immobility at the top of the social hierarchy. Empirical research on licensing in professional employment has mostly followed an economic approach that assesses its impact on the efficiency of markets for professional services. Following social closure theory (Parkin 1979; Murphy 1988), we argue that these regulations also have significant implications for inequality of occupational

opportunity, and we show that the children of regulated professions display higher chances of persistence in the upper class than those with parents in non-regulated professions.

Theoretical framework: mechanisms of social immobility

According to Grusky and Weeden (2001), professionals are an exemplar case of how intergenerational reproduction operates at the level of detailed occupations because it involves occupation-specific resources. In particular, they refer to occupation-specific skills, cultural resources and social networks, as well as to the direct transmission of the family's professional business.

First, professional families transmit specialised abilities that can be particularly beneficial in competing for specific professions. For instance, the daughter of an architect may be more frequently exposed to drawing skills, find that she has a comparative advantage in relevant subjects in school and enjoy more chances of participating in a summer internship in an architect's studio. Second, this skill dimension is part of a broader socialisation process in which parents inculcate occupation-specific cultural resources, tastes and preferences. Hence, children are exposed to different forms of cultural capital and develop specific personalities and proclivities that are rewarded by employers in the corresponding professional fields. For instance, the occupational culture of lawyers rests on the celebration of rhetoric, argumentation, and instrumental action, and children of lawyers may develop these attitudes to a greater extent and be socialised into appreciating the characteristics of this profession (Jonsson et al. 2009). Field of study choice is indeed tightly related to the specific occupations of the parents (van de Werfhorst and Luijkx 2010). Third, the professional networks of the parents provide sources of information and contacts that are particularly useful if their children pursue careers in the same occupation. Finally, children of professionals can inherit occupation-specific fixed resources (e.g., the dentistry practice) that facilitate micro-class immobility.

These four types of specialised resources (human, cultural, social and economic capital) operate as mechanisms of micro-class reproduction. If, following rational action theory (Breen and Goldthorpe 1997), educational and occupational choices primarily reflect the endeavour to avoid social demotion, then the safest strategy for children of professionals to ensure that objective is to rely on the competitive advantages related to the occupation-specific resources of the family of origin (Jonsson et al. 2009).

We argue that processes of social closure magnify the importance of these occupation-specific resources. Our starting point is closure theory (Murphy 1988; Parkin 1979, 1979; Collins 1979), which suggests that professional associations operate as interest organisations that monopolise the markets for professional services by closing off opportunities to outsiders. These actions, aimed at constructing and defending social and legal boundaries to the advantage of their members, operate at the level of specific occupations and can involve a high degree of conflict between professions.

In particular, research on the liberal professions (Larson 1977; Patterson et al. 2003) indicates that their closure strategies predominantly operate in five directions: a) the creation of an artificial monopoly on professional services in a market niche by means of collective actions directed at policy-makers; b) the imposition of access restrictions based on credential requirements (educational titles, licenses, selective entry examinations); c) competitive struggles with other professional associations over market niches; d) the codification of rules of conduct for their members in relation to advertising, prices, etc.; and e) the elaboration of a set of justifications that legitimise the professional monopoly. The first three elements in this list (i.e., entry market regulations) are most directly relevant to our analysis.

Empirical research consistently indicates that entry market regulations accrue the economic benefits of professional members (Patterson et al. 2003). However, they also act as mechanisms of micro-class reproduction. Indeed, these two aspects are related to the extent that, if regulated professions are particularly rewarding, they enhance the incentives for children from these professions to follow in their parents' footsteps. This first mechanism is reinforced considerably if

professional parents can transfer a family professional business to their children and, most importantly, a client portfolio. Second, stringent entry restrictions in the form of long university courses, compulsory practice and selective entry examinations make the investment in training for these professions both extremely costly and risky for outsiders. At the same time, these entry barriers enhance the competitive value of the skills and cultural resources acquired in the family of origin and of the social and information resources to successfully navigate these professional careers. Hence, we can expect that micro-class immobility is higher for regulated professions than for non-regulated professions and that the former therefore display a higher degree of immobility in the higher service class.

However, micro-class immobility is not the sole mechanism of social immobility at the top of the class hierarchy. Indeed, the effectiveness of micro-class socialisation should not be overemphasized. After all, not all children of doctors have the required skills to pursue this career, and perhaps most importantly, not all of them develop a preference for this profession. Indeed, as noted by Goldthorpe (2002) in the above quotation, most of them do *not* become doctors. Thus, alternative routes to immobility at the top become of critical importance. Indeed Jonsson et al. (2009:980) note that the above four types of family resources can also operate on a broader basis, that is, for the entire meso-class of professionals or even for the service class as a whole. For instance, they state that 'the culture of critical discourse, which may be understood as the reigning culture of the professional class, is transmitted to professional children because their parents practice and reward abstract argumentation […]'. More generally, there is abundant evidence that professionals as a whole differ from managers and entrepreneurs in terms of value orientations, political attitudes and lifestyles (Dalton and Klingemann 2007). Unsurprisingly, professionals associate more often with members of other professional groups (Lambert and Griffiths 2011), who can act as network resources for their children. If these skills and cultural and social resources shared within the meso-class of professionals affect access to professional employment, we can expect that children of professionals who leave their micro-class still enjoy facilitated access to

professional employment (meso-class rigidities), even relative to children of managers and entrepreneurs (and vice versa).

Finally, the above four types of resources can act also as a generalised means of intergenerational reproduction for individuals who cross the boundaries of their micro- and meso-classes of origin. This is the standard explanatory approach taken in social stratification research. For instance, children of professionals may enjoy higher chances of access to managerial employment (and vice versa) than the lower classes because they are endowed with higher cognitive skills, cultural resources and financial resources to support their educational and occupational careers. This kind of explanation focuses on the *amount* of resources relevant for a *broad* range of occupations, while the micro-class approach focuses on occupation-specific resources that are valued in a narrow set of occupations. These latter occupation specific resources ensure strong competitive advantages, but only if children are willing to follow in their parents' footsteps. Meso-class rigidities arise due to resources that are qualitatively differentiated but relevant in a broader set of occupations. Hence, rather than engaging in a 'contest' between micro- and big-class approaches, we see three distinct sets of mechanisms that work as complementary routes to social immobility.

Entry regulations across different professions and countries

We expect that the relevance of micro-class structuration for intergenerational reproduction at the top varies cross-nationally, reflecting differences between countries in the regulation of the relationship between education and the labour market. Let us briefly discuss the four countries that we have selected for our analyses.

The German educational system emphasizes occupational specificity to the highest degree. Access to occupations is tightly related to the possession of specific vocational certificates. This applies also to the liberal professions, which have a well-established tradition of professional associations that have managed to impose and preserve strict access. At the opposite extreme,

Sweden has a comprehensive educational system in which vocational training is underdeveloped. Industrial relations involve negotiations between centralised trade unions and employer federations, and even professionals have created a collective organization that represents them all at the central level. For most professions, entry regulations are absent or comparatively weak.

Denmark and Great Britain may be regarded as intermediate cases. Denmark has delayed tracking to the age of 16, but has a well-developed vocational system that involves more than 40% of upper secondary students. The British educational system is comprehensive until the age of 16, and vocational training is less developed than in Germany and Denmark. Professional regulation in Denmark and Great Britain is not as high as in Germany, but is more structured than in Sweden.

To measure the degree of entry market regulation, we use the index developed by the OECD for the following professions: engineers, architects, accountants, lawyers, and pharmacists (Patterson et al. 2003). The index is based on the following indicators for each profession[1]: *entry requirements*, which include duration of university courses or of other higher degrees needed to access the profession, duration of compulsory practice, number of professional exams, and number of entry routes to each profession; *licensing*: the number of exclusive and shared tasks in each professional field; and the existence of *quotas* for each profession. The weights of these three dimensions in the overall index score are 40 per cent, 40 per cent and 20 per cent, respectively. Hence, the OECD score reflects the number of access restrictions that are applied and the relative importance of these restrictions. The index ranges from 0 to 6, where 6 represents the highest level of regulation theoretically possible.

The index developed by the OECD does not cover some professional groups for various reasons. First, it does not consider the so-called new professions (social workers, nurses, etc.). These occupations belong to the lower service class of the Erikson and Goldthorpe (1992) schema and are therefore not relevant for our analysis, which focuses on immobility of the liberal professions in the higher service class. Second, doctors are not covered by the index because it is well-established that this profession displays a high degree of regulation Europe-wide. Access to

this profession always requires completion of long university courses that typically entail access restrictions and *numerus clausus*, as well as internship periods and additional certificates. We have reconstructed the value of the regulation index for this profession using the same indicators and definitions employed by the OECD for the other professions.[2] Finally, professions in the pure sciences (e.g., physicists) and in the social sciences (e.g., sociologists, communication experts) are not covered by the OECD index for the opposite reason; that is, legal regulation is virtually absent. For our analysis, we will impute to these two categories a value of zero, which we regard as an accurate approximation.[3]

Table I: *The index of entry-market regulations by country and profession (1998)*

	Engineers	Architects	Legal professionals	Accountants	Pharmacists	Doctors
Denmark	0.0	0.4*	3.0	1.9	2.3	3.5
Germany	2.7	4.1	5.2	5.8	1.6	3.7
G. Britain	0.0	1.5*	2.5	4.1	2.7	3.4
Sweden	0.0	0.0	0.0*	2.4	6.0	3.5

Source: OECD sector indicators of regulatory conditions in professional services, *see*: http://stats.oecd.org/

As table I shows, there are marked differences in the degree of regulation both between countries and between different professions within countries. For all professions but pharmacists, regulation is highest in Germany. Sweden consistently displays low values for all professions but pharmacists, and Denmark and Great Britain lie in between these two extremes.

Architects and engineers are the least regulated professions, while legal professionals, accountants and doctors are the most regulated groups. Following the arguments advanced in section 2, we expect that micro-class immobility varies accordingly across countries and across occupations. Before presenting our data and methods in the next section, we summarize the hypotheses that guide our analyses:

a) micro-class immobility is stronger in more regulated professions;

b) micro-class immobility is strongest in Germany and weakest in Sweden;

c) professional regulation enhances the immobility of children of professionals in the higher service class;

d) among children of professionals who leave their micro-classes of origin, immobility in the higher service class is further enhanced by strong meso-class rigidities.

Data, variables and methods

For the analyses, we use a cumulative dataset that pools three international surveys: the European Social Survey (five waves every other year from 2002 to 2010), the European Value Study (wave 2008) and the International Social Survey Programme (wave 2009). These surveys involve nationally representative samples of the populations of a large number of European countries.[4] We rely on a cumulative dataset in order to enlarge sample size for our detailed analyses of immobility within single occupations, and we select the only four countries that have large enough samples to run these analyses. Although country selection is driven by data constraints, we would note that these countries display substantial variability in terms of educational, labour market and welfare arrangements.

We have selected these surveys and these specific waves because they provide detailed measurements of origins and destinations, with four-digit ISCO titles for the occupation of the father[5] (when the respondent was 14) and of the respondent, as well as information on employment status and supervision tasks that can be used to build the Erikson-Goldthorpe class schema. The wording of the questions concerning social origins and occupational destinations is highly comparable across the three original surveys. Therefore, an additional advantage offered by this cumulative dataset over previous cross-national studies of macro- and micro-class mobility is the higher level of comparability. In preliminary analyses reported in the online appendix (part 2), we have used logistic regression models to assess whether the different surveys measure the influence of origins on access to higher service class positions differentially, but these three-way interactions are not statistically significant based on a likelihood ratio test. Similarly, due to sample size

constraints, we are forced to analyse the adult population as a whole, but we have controlled that social inequalities in access to the service class are highly stable across three birth cohorts (1930-45, 1946-60; 1961-80). [6]

After selecting respondents aged 25 to 74, the cumulative sample for these four countries comprises 35,443 cases with valid information for origins and destinations. We use the following version of the Erikson-Goldthorpe schema: higher service class (I), lower service class (II), skilled white collar (IIIa), routine non-manual workers (IIIb), self-employed workers (IVab), farmers (IVc), skilled manual workers, low-level supervisors and technicians (V-VI), and unskilled manual workers (VIIab). The higher service class is articulated into three meso-classes: entrepreneurs (with at least 10 employees), high-level managers and high-level professionals. The latter category is further disaggregated into the following micro-classes using the four-digit ISCO titles:

a) legal professionals (i.e., lawyers, notaries and judges);
b) accountants;
c) architects;
d) engineers;
e) medical science professionals (i.e., doctors, pharmacists and veterinarians);
f) other science professionals (e.g., physicists, mathematicians, biologists);
g) professionals in the social sciences (e.g., sociologists, communication experts)

Hence, the first five categories refer to regulated professions of the higher service class, while the last two comprise the non-regulated professions of the same class. These distinctions match with the same occupational categories of the OECD index of professional regulation, with two minor exceptions[7].

Our analytical strategy proceeds in three steps. First, we decompose immobility in the higher service class into macro-, meso- and micro-level rigidities to assess the heuristic value of the three analytical approaches. We thus obtain net immobility estimates for the micro-classes, which, in a second step, we correlate with their degree of professional regulation. Finally, we use logistic

regression analyses to assess whether professional regulation affects immobility in the higher service class.

The first step involves the specification of a sequence of log-linear models that control for the marginal distributions of origins and destinations in order to estimate relative immobility propensities. These models are specified on the 16x16x2x4 cross-tabulation between origins, destinations, gender and country. The 16 categories for origins and destinations comprise the above seven micro-classes of professionals, the two other meso-classes of the higher service class (entrepreneurs and high-level managers) and the remaining seven macro-classes (II, IIIa, IIIb, IVab, IVc, V-VI, VII). This nested structure, with greater detail at the top of the class hierarchy, was used because our research questions focus on immobility in the higher service class of children of professionals.

For the same reason, we specify a sequence of log-linear models pertaining to the diagonal cells of the mobility table; that is, we model intergenerational immobility (*see* Xie 1992). These models incorporate macro-, meso- and micro-class rigidities alone and altogether. Macro-class rigidities are captured by a design matrix that specifies one different parameter for each cell that refers to immobility within a big class; all mobility cells are set to 0 (see section 1 of the online appendix). Meso-class rigidities are expressed by a second matrix that specifies one different parameter for each cell that refers to immobility within a meso-class, that is, either within entrepreneurs, within managers, or within professionals. Micro-class rigidities are described by a third matrix that specifies one different parameter for each cell that refers to immobility within each of the seven professional groups.

For each of these three matrices, we assess cross-national variations using three types of models. We illustrate them here with reference to the macro-class specification. We start with a model of *homogeneous quasi-perfect mobility* that incorporates the macro-class rigidity matrix and that does not interact it with country. Hence, this model does not allow for cross-national variations in social fluidity. The next model of *heterogeneous quasi-perfect mobility* freely interacts each

macro-rigidity parameter with country, thus allowing for different levels of macro-class immobility across countries in an unconstrained form. The third specification is a *log-multiplicative model of quasi-perfect mobility* that estimates a common basic pattern of immobility parameters for all countries and captures cross-national differences with one uniform association parameter (*unidiff*) per country that summarises the overall strength of social immobility in a given country. Hence, the comparison between models of homogeneous and heterogeneous quasi-perfect mobility informs us of the importance of country differences, and the comparison between the former and the log-multiplicative specification tells us whether country differences involve only the overall strength of immobility or its qualitative pattern as well. Following the same logic, these three types of models can be used to assess cross-country variations in meso- and micro-class rigidities.

Results: the contribution of micro-, meso- and macro-class rigidities to immobility in the higher service class

Table II reports the fit indices of the above-described sequence of log-linear models. For comparisons among nested models, we use likelihood ratio tests (column 3) that contrast models in terms of their fit (expressed by the deviance in column 1) and parsimony (degrees of freedom in column 2). The dissimilarity index (the percentage of cases misclassified by each model, column 4) can be used for comparisons among non-nested models, but it does not take parsimony into account.

The purpose of the first step of our analyses, reported in the upper panel A of table II, is to assess whether macro-, meso- and micro-class rigidities display independent influences on social immobility in the higher service class and whether these influences vary cross-nationally. In a second step (panel B), we assess whether these mechanisms are gendered by interacting the corresponding design matrices with gender.

Table II: *Fit indices of log-linear models of quasi perfect mobility with Macro, Meso and Micro-class rigidities*

Model description	L^2	d.f.	Significance	Δ
PANEL A			-	0.148
0.Conditional Independence Model	6677	1800		
Big-rigidities only				
1a. Homogeneous	4407	1792	0,000 (M.0)	0,113
1b. Heterogeneous	4345	1768	0,000 (M.1a)	0,110
1c. Log-multiplicative	4379	1789	0,000 (M.1a)	0,111
Big- and Meso-rigidities				
2a. Homogeneous	4179	1789	0,000 (M.1a)	0,111
2b. Heterogeneous	4113	1756	0,001 (M.2a) 0,000 (M 1b)	0,108
2c Log-multiplicative	4146	1783	0,000 (M.2a) 0,000 (M 1c)	0,109
Big- and Micro-rigidities				
3a. Homogeneous	4110	1785	0,000 (M.1a)	0,111
3b. Heterogeneous	4022	1740	0,001 (M.3a) 0,000 (M.1b)	0,108
3c. Log-multiplicative	4073	1779	0,000 (M.3a) 0,000 (M.1c)	0,109
Big-, Meso- and Micro-rigidities				
4a. Homogeneous	4005	1782	0,000 (M.2a) 0,000 (M.3a)	0,110
4b. Heterogeneous	3903	1728	0,001 (M.4a) 0,000 (M.2b) 0,000 (M.3b)	0,106
4c Log-multiplicative	3954	1773	0,000 (M.4a) 0,000 (M.2c) 0,000 (M.3c)	0,108
PANEL B : *Big-, Meso- and Micro-rigidities with gender interactions*				
Models of heterogeneous quasi-perfect mobility				
4dA Big-rigidities interacted with gender	3815	1696	0,000(M.4b)	0.103
4dB. Meso- rigidities with gender	3886	1716	0,000(M.4b)	0,106
4dC Micro- rigidities interacted with gender	3860	1700	0,000(M.4b)	0,106
4dD Big- and meso- rigidities interacted with gender	3798	1684	0,149 (M.4dA) 0,000 (M.4dB)	0,102
4dE. Big-, micro- rigidities interacted with gender	3770	1668	0,000 (M.4dA) 0,000 (M.4dC)	0,102
4dF Meso- and micro- rigidities interacted with gender	3837	1688	0,000 (M.4dB) 0,000 (M.4dC)	0,106
4dG. Big-, meso- and micro- rigidities interacted with gender	3748	1656	0,006 (M.4dD) 0,037 (M.4dE) 0,000 (M.4dF)	0,101

We start with a baseline model of *conditional independence* that unrealistically assumes that origins and destinations are unrelated. This model is used only as a yardstick for comparison with more realistic models. Models 1a to 1c add only macro-class rigidities to this model. As can be seen, they display huge improvements over the model of conditional independence, thus confirming the strength of social immobility in these four countries. For instance, model 1a adds eight macro-class immobility parameters that are kept constant across country and thus loses only eight degrees

of freedom relative to the conditional independence model, but it reduces the deviance by more than one third. However, models 1b and 1c, which allow for cross-national variations in macro-class rigidities, improve on model 1a, as indicated by the likelihood ratio tests.

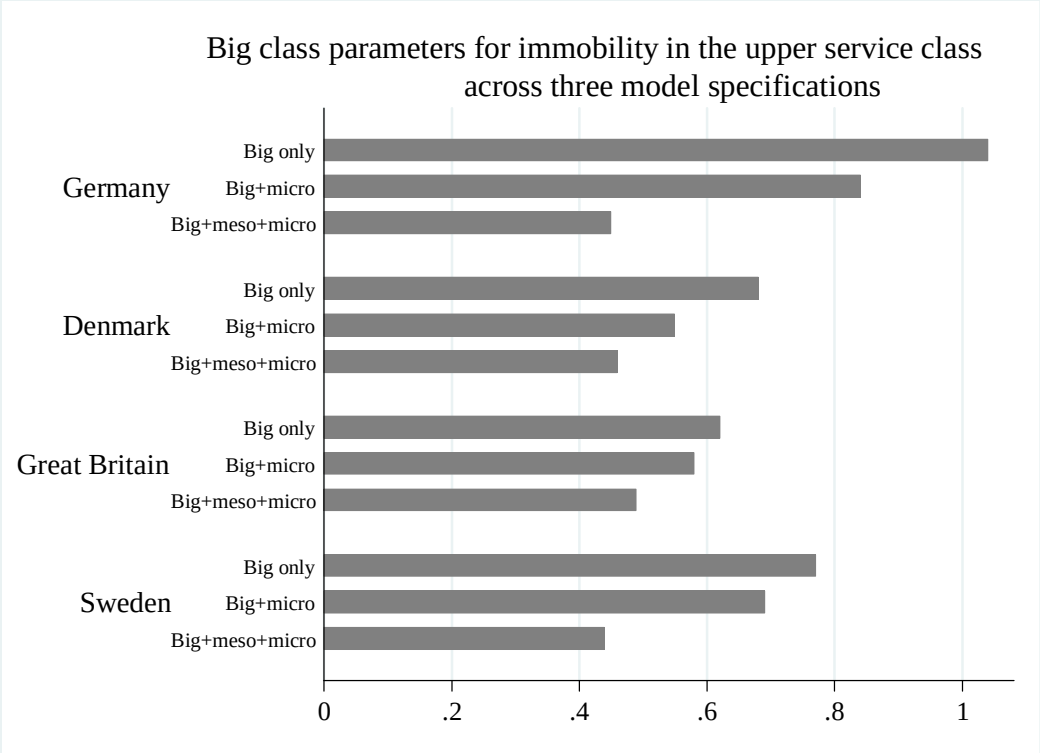
Models 2a to 2c add meso-class rigidities to macro-class rigidities, while models 3a to 3c add micro-class rigidities, and models 4a to 4c incorporate all three immobility mechanisms. If we contrast the homogeneous model specifications of these series of models, we can see that model 4a is unequivocally preferred over models 3a and 3b, which in turn are preferred over model 1a. The comparisons among the heterogeneous specifications, or among the log-multiplicative specifications, lead to the same conclusion. In other words, this evidence indicates that immobility in the higher service class is jointly produced by micro-, meso- and macro-class rigidities, in line with our hypotheses. Hence, the immobility of children of professionals reflects not only standard macro-class effects but also their disproportionate chances of following in their parents' footsteps or, at any rate, remaining within professional employment. [8]

Moreover, models 4b and 4c are preferred over model 4a, which indicates that these three rigidities vary cross-nationally. The corresponding comparisons among models 2a to 2c and among models 3a to 3c lead to the same conclusion. The heterogeneous specifications always display the best fit, also when looking at the dissimilarity index. In other words, there are indications that the qualitative pattern of these rigidities is not always the same across nations.

In figure I, we plot for each country the immobility parameter that refers to (big class) immobility in the higher service class across three heterogeneous model specifications. The first one incorporates only macro-class rigidities (model 1b) and therefore describes the overall level of immobility at the top. As can be seen, immobility is particularly strong in Germany. The second column plots the same parameter, but purged by micro-class effects (model 3b). [9] We can see that it is significantly reduced in Germany and Denmark, but much less so in Sweden and Great Britain. The third column shows that immobility in the higher service class is greatly reduced when purged by meso-class rigidities (model 4b), particularly in Germany and Sweden. Hence, immobility within the

professional class is a key driver of immobility at the top. Moreover, in all countries the immobility parameter purged by both meso- and micro-class rigidities is far from negligible, which indicates the strength of pure macro-*class* rigidities. Because these parameters are taken from nonlinear models, we should not over-interpret effect changes across models. However, it is quite clear that these results disconfirm the general claim that 'big class' immobility is largely driven by micro-class rigidities. These micro-class rigidities play a relevant role, at least in Germany and Denmark, but meso-class and macro-class rigidities are more important. It may be noted that also in the analysis by Jonsson et al. (2009) the strong immobility of the liberal professions is not predominantly mediated by micro-class rigidities. Interestingly, in the third specification, big class effects are not any stronger in Germany, which indicates that the greater immobility at the top in Germany is entirely attributable to the stronger micro- and meso-class rigidities in this country.

Figure I: Big class parameters for social immobility in the higher service class across three model specifications and across countries. Beta parameters extrapolated from models 1b, 3b, 4b.



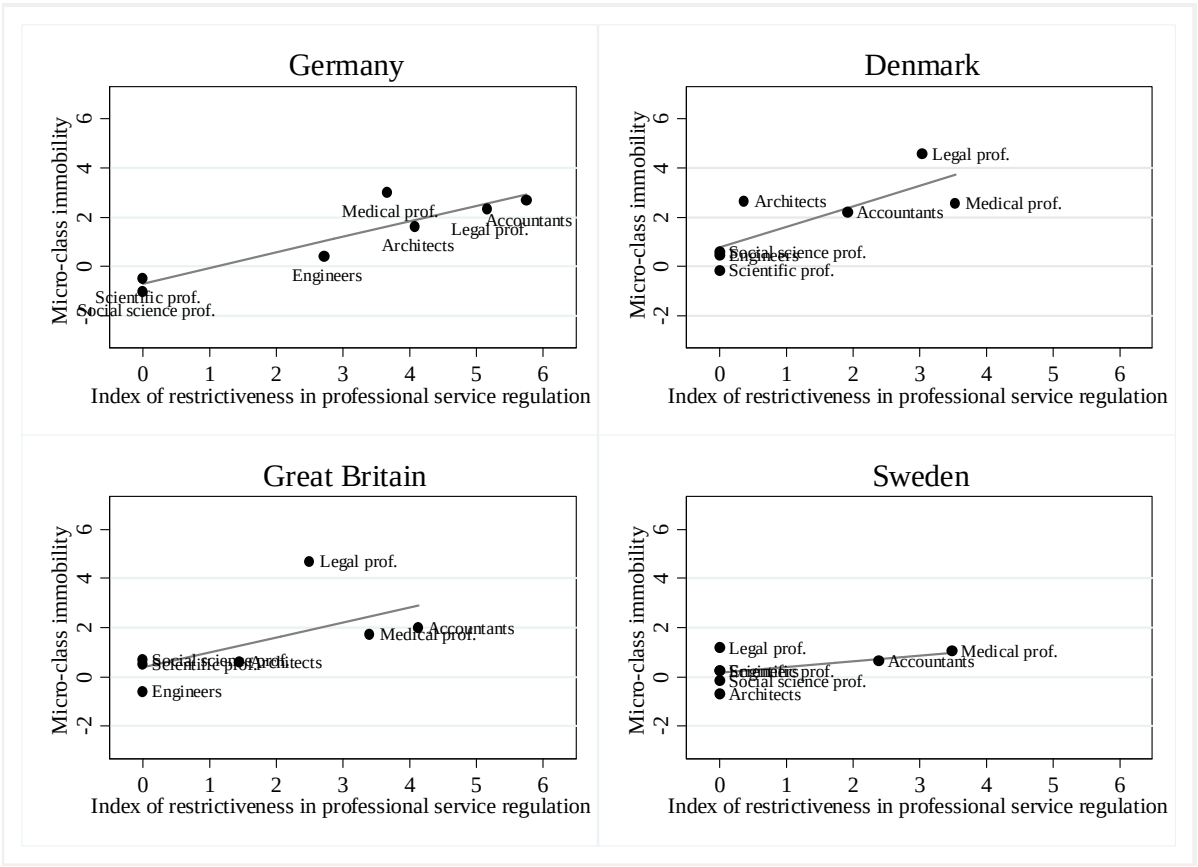
Panel B of table II assesses gender differences in immobility patterns. We take the previous model 4b as a starting point. This model jointly incorporates the three rigidities and allows them to freely vary across countries. Then, the models in panel B incorporate gender interactions with one design matrix by one, with couples of matrices and, finally, with all three matrices together. As seen, the last model is preferred, which implies that the influences of the macro-, meso- and micro-classes of origin are gendered. However, while the big class immobility parameters vary significantly across gender only in Great Britain (0.56 for women and 0.42 for men), gender differences are stronger and more systematic for meso- and micro-class rigidities. Immobility within professional employment is higher for women in Germany (1.10 versus 0.82 for men), Denmark (0.98 versus 0.29) and Great Britain (0.56 versus 0.23), and it is equally high in Sweden (0.79 versus 0.82). Conversely, as regards micro-class immobility in professional employment, we detect systematically stronger effects for men in regulated professions in all countries but Sweden. The magnitude of these differences is noticeable. The mean of these micro-class parameters in Germany is 2.02 for men and 1.28 for women, in Denmark 2.49 for men and 0.42 for women, in Great Britain 1.81 for men and 0.29 for women, while in Sweden we detect comparatively low values for both genders (0.50 and 0.95, respectively). On the whole, it is apparent that meso-class rigidities operate for both genders but in a stronger form for women, while micro-class immobility is strong for men and of limited importance for women. We will return to these unexpected gender differences in the concluding remarks. We now consider whether social closure explains the pattern of micro-class immobility parameters.

Results: social closure and micro-class immobility in comparative perspective

Figure II plots for each country the relationship between the micro-class immobility parameters for men (taken from our preferred model 4dG in table II) and the scores of the index of professional regulation. First, the large size of these immobility parameters is noteworthy. For instance, a value of 3.02 for medical professions in Germany indicates that children of this profession enjoy

$e^{3.02}$=20.5 higher chances of gaining access to the same occupation as their parents than of leaving it. Overall, relative micro-class immobility propensities are huge. Moreover, in Germany, Denmark and Great Britain, we detect a positive relationship between professional closure and immobility. Immobility is systematically the lowest for the two fields of science and social science, where regulation is virtually absent, and highest among doctors, legal professionals and accountants; architects and engineers are located in an intermediate position. Differences between micro-classes appear particularly strong in Germany and Denmark. In Sweden, professional closure occurs to a very limited extent, and it is evident that differences between micro-classes are much more compressed. These results confirm our hypotheses, but only for men, as the line representing the relationship between social closure and immobility for women is virtually flat. [10]

Figure II: The relationship between entry market regulations in professional occupations and immobility parameters for each micro-class.



A limitation of this analysis is that the index of professional regulation refers to the late '90s, while the occupational careers of our respondents have developed between the late '50s and 2010. Unfortunately, no index of professional regulation is available before 1998. We have therefore rerun the analyses only for individuals aged 25 to 45 to reduce this time discrepancy, and results are virtually identical (*see* figure AI in the online appendix). This stability is unsurprising, because regulations of the traditional liberal professions have been enforced at least since the mid-20th century and have remained largely untouched until the '90s (Patterson et al. 2003).

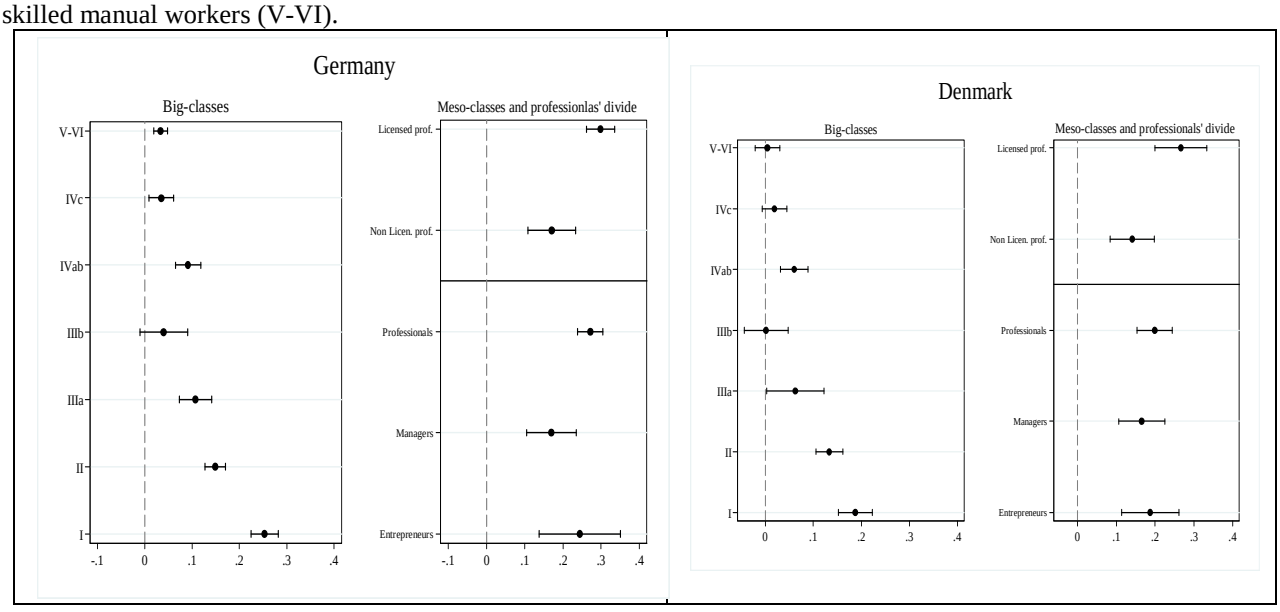
Hence, regulated professions display a much higher degree of micro-class immobility than unregulated professions. We next consider to what extent this tendency affects chances of intergenerational persistence at the top of the occupational hierarchy. In particular, we present the results of a model of binomial logistic regression for the total effect of social origins on the probability of gaining access to the higher service class. We compare the eight big classes, the three meso-classes, and we incorporate the distinction between licensed and non-licensed professionals. We run the models separately for each country, and we control for socio-demo variables (cohort and gender), for survey effects and for their two-way interactions. [11]

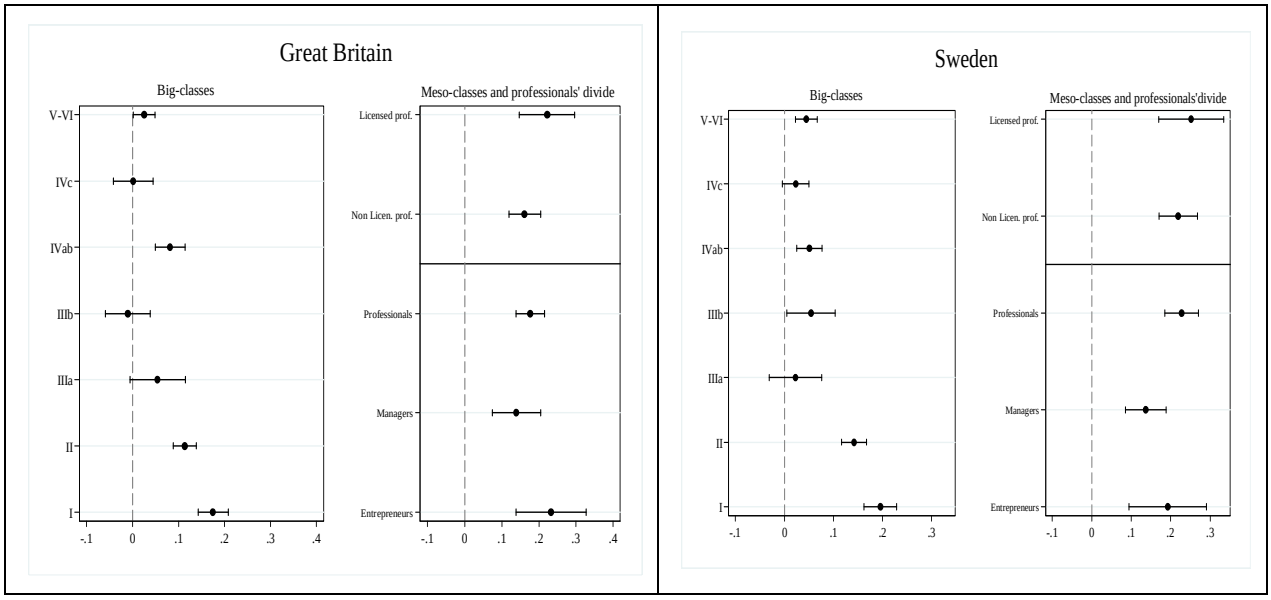
Figure III displays the average marginal effects for the influence of family background. Class VIIab of unskilled manual workers (VII) is the reference category. For each country, the panel on the left refers to differences between big classes of origin. As seen, in all countries children of skilled manual workers (V-VI), farmers (IVc) and routine non-manual workers (IIIb) enjoy similar probabilities of upward mobility to the higher service class as the reference category, whereas children of the urban petty bourgeoisie (IVab) and of skilled white collars (IIIa) enjoy a competitive advantage of approximately 10 percentage points in all countries but Sweden, where the advantage is smaller. Children of the lower and of the higher service classes exhibit much higher chances of access to the top of the class hierarchy in all countries. The influence of the big class of origin looks more pronounced in Germany, particularly as regards white collars and the higher service class, and

looks weaker in Sweden, in line with previous comparative research on social mobility (Breen 2004).

The bottom panel on the right for each nation refers to meso-class differences between entrepreneurs, managers and professionals of the higher service class. As seen, children of managers enjoy less favourable prospects than those of professionals and entrepreneurs, but the confidence intervals for these three social groups overlap for all countries except Germany. However, the top panel on the left of figure III indicates that professionals are not a homogeneous category with respect to their chances of immobility at the top. In line with our hypotheses, regulated professions enjoy higher immobility prospects, and their advantage looks particularly strong in Germany (+30.3 per cent over class VIIab of unskilled workers) and in Denmark (+26.9 per cent), where it is also statistically significant relative to non-regulated professions, despite the small numbers. As expected, in Sweden we do not detect any difference between regulated and unregulated professions. Overall, there is evidence that variations between and within countries in the degree of social closure are consequential for immobility at the top.

Figure III: Average marginal effects for the probability of being in the higher service class according to the big class, the meso-class and micro-class of origin (ref. cat. unskilled working class). Legend: higher service class (I); lower service class (II); white collars (IIIa), routine non–manual workers (IIIb); petite bourgeoisie (IVab); farmers (IVc); skilled manual workers (V-VI).





To control whether differences between regulated and unregulated professions are simply driven by differential success in Higher Education, we have rerun the analyses presented in figure III with an additional dummy variable that refers to the attainment of tertiary degrees (categories 5 and 6 of the ISCED classification). We thus estimate the direct effects of social origins. We briefly comment on these results (available in table AVII of the online appendix). As expected, the overall influence of family background is considerably reduced after we control for education. This reduction is stronger for Germany, where education is a stronger mediator of the total effect of family background for both professionals and managers, in line with previous research on German credentialism (Bol and Weeden 2014). Most importantly for our hypotheses, in Germany and Denmark, we still detect a marked advantage for children of licensed professionals over those of non-licensed professionals, while this is not the case in Great Britain and Sweden. Indeed, in the former countries no social group enjoys better prospects of persistence at the top than the regulated professions.

Concluding remarks

Our analyses indicate that sons of licensed professionals display a particularly strong relative propensity to inherit the specific occupation of their fathers and that this stronger micro-class immobility translates into higher chances of persistence in the higher service class. Variations among countries and among professions in the degree of regulation of professional services are systematically related to micro-class rigidities. Our interpretation is that, on the one hand, social closure enhances the economic profitability of professions and thus accrues incentives to follow in parents' footsteps. On the other hand, access barriers to regulated professions, such as long university studies, professional practice and selective entry examinations, increase the costs and risks of failure for outsiders.

Of course, these results are only suggestive of genuine causal relationships. Given the small number of professions and of countries that we were able to compare, we could detect only bivariate correlations between the index of professional closure and the immobility parameters. Nevertheless, these results corroborate the predictions of social closure theory. To our knowledge, this is the first study based on nationally representative samples that provides systematic evidence relating direct measures of professional closure with social immobility in a wide range of professions. Previous qualitative and quantitative studies of the liberal professions provided rich in-depth descriptions of the functioning of social closure (Checchi 2010). However, because these studies were largely based on case studies of single professions, they could not systematically relate social closure and intergenerational reproduction. These results also contribute to social mobility research and to its growing quest for explanatory mechanisms of intergenerational reproduction. Finally, these findings illustrate the fruitfulness of the micro-class approach, as social closure is a typical instance of an explanatory mechanism operating at the level of specific occupations but with macro-level consequences for the broader processes of social immobility. The few previous studies

based on this approach have mapped micro-class immobility across the occupational ladder rather than directly testing specific micro-class mechanisms.

However, our results suggest that micro-class reproduction fuelled by social closure works predominantly for men (in all countries but Germany), while for women it appears to be of limited importance. This gendered pattern was unexpected, though it may be noted that Jonsson et al. (2009) reported a similarly attenuated micro-class pattern for women. We stress again that in our analyses we could consider only the father's occupation and that the mother's occupation may be more relevant for daughters. Selection into employment is another potential limitation of the analyses concerning women. However, this gendered pattern may have a more substantive interpretation. The economic profitability of regulated professions is considerably reduced if sons and daughters have to share the family professional business and the client portfolio, and if parents have to choose, boys may be privileged. Moreover, men attach high importance to economic rewards, prestige and career opportunities that make liberal professions particularly attractive to them, while women are less instrumental and more sensitive to intrinsic rewards (Barone 2011). As already noted, we should not take for granted the willingness of children to pursue the same career as their parents, particularly if their family resources provide access to many other attractive options. An important advantage of meso-class reproduction is that it works for a broad variety of occupations. Indeed, we have found that in addition to micro- and macro-class rigidities, children of professionals display a strong propensity to move into other professional occupations rather than into the ranks of managerial and entrepreneurial employment. This tendency is stronger for women. We have argued that professionals share a set of skills, cultural resources and social networks that differentiate them substantially from the managerial cultures of the other two fractions of the service class.

Hence, on the one hand, processes of social closure erect barriers between professions and fuel micro-class immobility at the top. On the other hand, the cultural proximity of different professional groups drives intense intergenerational exchanges between them. Our analyses indicate that these

two mechanisms are complementary, as they jointly contribute to the immobility of professional children in the upper class.

Notes

1. The compilation of the original indicators draws on multiple sources, including data provided by national statistical offices, questionnaires to professional bodies and texts of national laws (Patterson et al. 2003).

2. Doctors have the full monopoly on medical tasks in our four countries (Rowe, Garcia-Barbero 2005). Hence, their value for the number of exclusive tasks is always 2.4. In contrast, entry requirements vary cross-nationally. We exploit the following data sources to recover the values of the corresponding indicators: Garoupa (2006) and Rowe, Garcia-Barbero (2005). The third dimension (quotas) applies only to pharmacists and notaries (Patterson et al. 2003) and therefore takes a value of zero for doctors.

3. Some professions in these two categories display some form of regulation, but these are minor exceptions. In particular, using the data provided by the European Commission (*see* ec.europa.eu/internal_market.html), we have found that, in the category of unregulated professions in the social sciences, only psychologists have some form of regulation, but they account for less than 10% of this category (Bednar et al. 2004). As regards scientific unregulated professions, only actuaries in Great Britain and Denmark (2% of the scientific professions) and chemists in Great Britain (8%) display some form of regulation.

4. We do not report the information on the sampling designs and data collection methods, as they vary across surveys, waves and countries. However, this information is easily accessible online. In

particular, for the ESS refer to http://www.europeansocialsurvey.org/methodology/; for EVS, see http://www.europeanvaluesstudy.eu; and for ISSP, see http://zacat.gesis.org .

5. Unfortunately, not all surveys have information on mother's employment, a limitation that could be particularly harmful for the analysis of women's occupational attainment.

6. In Germany and Great Britain, the likelihood ratio test prefers models of constant association over models incorporating the interactions among cohorts, origins and destinations. The former are marginally preferred (p-value: 0.12) also in Sweden, and only in Denmark do the latter display a better fit. Even in Denmark and Sweden cross-cohort variations in the role of origin for access to the upper class are quite limited. Therefore, aggregating cohorts does not make too much torture to the data.

7. Ideally, we may want to differentiate the single detailed occupations of legal and medical science professionals, but there are not enough cases for this kind of analysis. These additional distinctions are of little significance for our results because: a) doctors account for about 90% of medical science professionals in all countries; b) lawyers account for at least 70% of legal professionals (and notaries exist only in Germany). We impute to these two professional groups the scores of the OECD index for their modal occupations (doctors and lawyers).

8. Similarly, children of managers (entrepreneurs) enjoy disproportionate chances of becoming managers (entrepreneurs) on top of their higher chances of persistence in the higher service class. In other words, meso-class rigidities operate also for the two other fractions of this class.

9. By definition, micro-class rigidities enhance immobility at the top only through immobility in professional employment. Therefore, when looking at changes of big class effects across models, micro-class rigidities must be fitted first; otherwise, by construction, they cannot further reduce big class effects.

10. However, in Germany, the most regulated country, we detect a clear positive relationship also for women. In Sweden, the most unregulated country, it is unsurprising that we do not find any relationship either for men or for women. Denmark and Great Britain are the true exceptions.

11. These logistic regression models are less parsimonious than the log-linear models; therefore, we contrast regulated professions altogether versus non-regulated professions to save statistical power. Moreover, gender interactions with origins are unexpectedly non-significant, and we do not incorporate them. However, given the previous pattern of results, we suspect that this lack of significant is largely a matter of statistical power.

Bibliography

Barone, C. 2011 'Some things never change: gender segregation in Higher Education across eight countries and three decades', *Sociology of education* 84(2):157-176.

Bednar, W., Lanske, P. and Schaffenberger, E. 2004 *Regulation of the professions of psychotherapist, clinical psychologists, health psychologists in the Member States of the EEA and the Swiss Confederation*, Report Commissioned by the Austrian Federal Ministry for Health and Women, http://www.pce-europe.org/file/Infos/Publ-EEA-Regulations.pdf

Breen, R. 2004 *Social mobility in Europe*, Oxford, Oxford University Press.

Breen, R. and Goldthorpe. J. H. 1997 'Explaining Educational Differentials. Towards a Formal Rational Action Theory', *Rationality and Society* 9(3):275-305.

Bol T. and Weeden K. 2014 'Occupational Closure and Wage Inequality in Germany and the United Kingdom', *European Sociological Review* 30(6): 1-16.

Checchi, D. 2010 *Immobilità diffusa. Perché la mobilità intergenerazionale è così bassa in Italia*, Bologna: Il Mulino.

Collins, R. 1979 *The Credential Society: An Historical Sociology of Education and Stratification*, Orlando, Academic Press.

Dalton R.J. and Klingemann H.D. 2007 *The Oxford Handbook of Political Behaviour*, Oxford: Oxford University Press.

Garoupa, N. 2006 'Regulation of Legal and Medical Professions in the US and Europe: A Comparative analysis', Working paper 2006-11, http://www.fedea.net/documentos/pubs/dt/2006/dt-2006-11.pdf.

Goldthorpe, J. H. 2002 'Occupational Sociology, Yes: Class Analysis, No: Comment on Grusky and Weeden's "Research Agenda"' *Acta Sociologica* 45(3): 211-217.

Grusky, D. B. 2005 'Foundations of a Neo-Durkheimian Class Analysis', in *Approaches to Class Analysis*, (ed.) E. O., Wright Cambridge, Cambridge University Press.

Grusky, D. B. and Sørensen, J. B. 1998 'Can Class Analysis Be Salvaged? ' *American Journal of Sociology* 103(5): 1187–1234.

Grusky, D. B. and Sørensen, J. B. 2001 *Are There Big Social Classes?* in *Social Stratification: Class, Race, and Gender*, (eds.) D. B. Grusky, Boulder, Westview Press.

Grusky, D. B. and Weeden, K. A. 2001 'Decomposition without Death: A Research Agenda for a New Class Analysis', *Acta Sociologica* 44(3): 203–218.

Hedström, P. 2005 *Dissecting the Social: On the Principles of Analytical Sociology*, Cambridge: Cambridge University Press,

Jonsson, J. O., Grusky D. B., Di Carlo M., Pollak R. and Brinton, M. C. 2009 'Microclass Mobility: Social Reproduction in Four Countries', *American Journal of Sociology* 114(4):977-1036.

Lambert, P. and Griffiths, D. 2011 *Dimensions and Boundaries: Comparative analysis of occupational structures using social network and social interaction distance analysis*, www.socresonline.org.uk

Larson, M. S. 1977 *The Rise of Professionalism*, Berkeley, University of California Press.

Murphy, R. 1988 *Social Closure: The Theory of Monopolization and Exclusion*, Oxford, Clarendon Press.

Parkin, F. 1979 *Marxism and Class Theory: A Bourgeois Critique*, New York, Columbia University Press.

Patterson, I., Fink, M. and Ogus, A. 2003 *The economic impact of regulation in the field of liberal professions in different Member States*, Regulation of Professional Services. Study for the European Commission, DG Competition, www.ec.europa.eu.

Pellizzari, M., and Pica, G. 2011 'Liberalizing professional services: Evidence from Italian lawyers' IGIER Working Paper 372.

Rowe A. and García-Barbero M. 2005 *Regulation and licensing of physicians in the WHO European Region*, World Health Organization, report n. EUR/05/5051794C, http://www.aemh.org.

Sørensen, A. B. 1996 'The structural basis of social inequality', *American Journal of Sociology* 101(5)1333–1365.

Van de Werfhorst, H. G. and Luijkx, R. 2010 'Educational Field of Study and Social Mobility: Disaggregating Social Origin and Education', *Sociology* 44(4): 695 - 715.

Weeden, K. A. and Grusky D. B. 2005 'The Case for a New Class Map', *American Journal of Sociology* 111(1): 141-212.

Xie, Y. 1992 'The Log-Multiplicative Layer Effect Model for Comparing Mobility Tables', *American Journal of Sociology* 101(6): 950-992.

ONLINE APPENDIX

Appendix –Section 1: Design matrices for the Big-, Meso- and Micro-class rigidities

Table AI: Design Matrix for the Big-class rigidities

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.Entrepreneurs	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	0	0	0	0	0	0	0
2.Managers	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	0	0	0	0	0	0	0
3.Legal prof.	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	0	0	0	0	0	0	0
4.Architects	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	0	0	0	0	0	0	0
5.Engineers	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	0	0	0	0	0	0	0
6.Accountants	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	0	0	0	0	0	0	0
7.Health prof.	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	0	0	0	0	0	0	0
8.Unreg. social sc.	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	0	0	0	0	0	0	0
9.Unreg. scientific	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	0	0	0	0	0	0	0
10.II	0	0	0	0	0	0	0	0	0	**2**	0	0	0	0	0	0
11.IIIa	0	0	0	0	0	0	0	0	0		**3**	0	0	0	0	0
12.IIIb	0	0	0	0	0	0	0	0	0	0	0	**4**	0	0	0	0
13.IVab	0	0	0	0	0	0	0	0	0	0	0	0	**5**	0	0	0
14.IVc	0	0	0	0	0	0	0	0	0	0	0	0	0	**6**	0	0
15.V-VI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**7**	0
16.VIIab	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**8**

Legend: II: lower service class; IIIa: skilled white collars; IIIb: routine non-manual workers ; IVab: self-employed workers, IVc: farmers; V-VI: skilled manual workers, low-level supervisors and technicians; VIIab: unskilled manual workers.

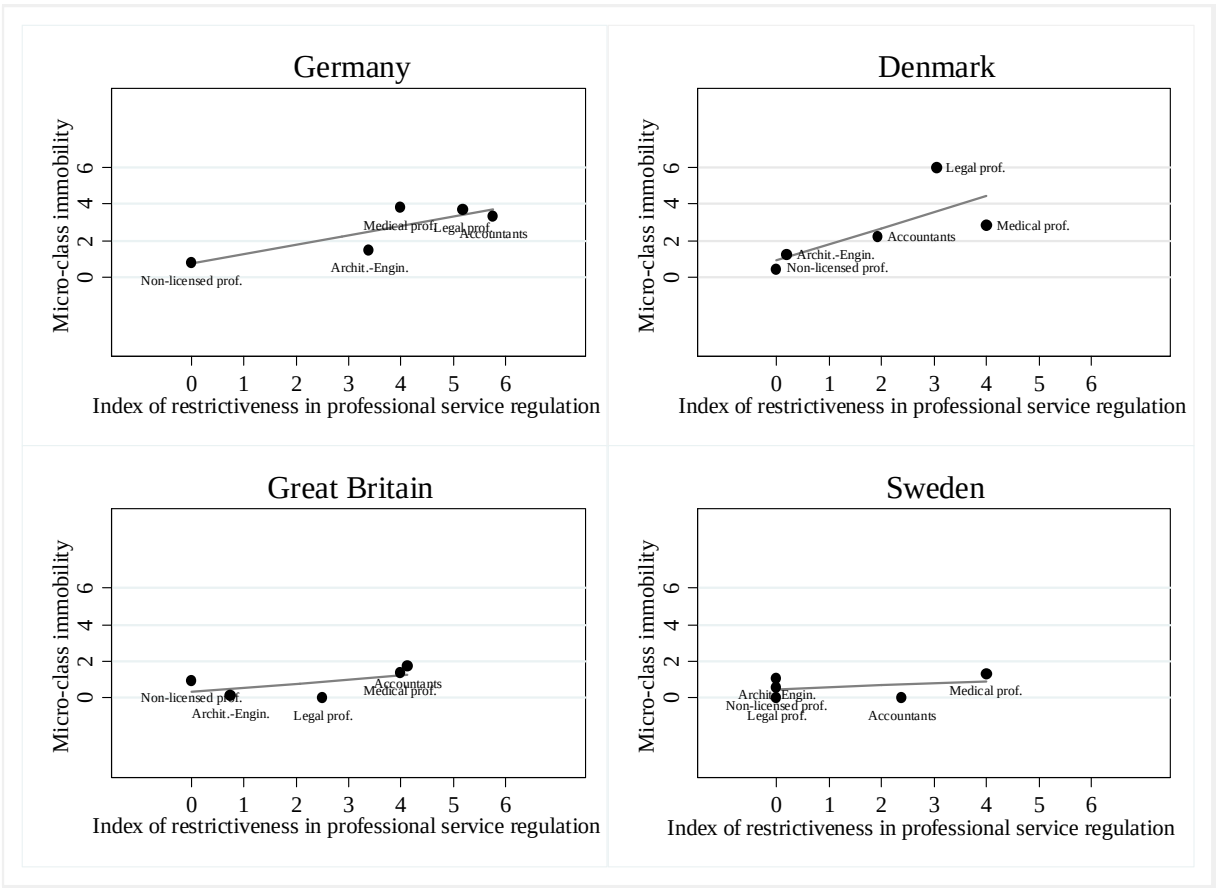
Table AII: Design Matrix for the Meso-class rigidities

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.Entrepreneurs	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.Managers	0	**2**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.Legal prof.	0	0	**3**	**3**	**3**	**3**	**3**	**3**	**3**	0	0	0	0	0	0	0
4.Architects	0	0	**3**	**3**	**3**	**3**	**3**	**3**	**3**	0	0	0	0	0	0	0
5.Engineers	0	0	**3**	**3**	**3**	**3**	**3**	**3**	**3**	0	0	0	0	0	0	0
6.Accountants	0	0	**3**	**3**	**3**	**3**	**3**	**3**	**3**	0	0	0	0	0	0	0
7.Health prof.	0	0	**3**	**3**	**3**	**3**	**3**	**3**	**3**	0	0	0	0	0	0	0
8.Unreg. social sc.	0	0	**3**	**3**	**3**	**3**	**3**	**3**	**3**	0	0	0	0	0	0	0
9.Unreg. scientific	0	0	**3**	**3**	**3**	**3**	**3**	**3**	**3**	0	0	0	0	0	0	0
10.II	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11.IIIa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12.IIIb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13.IVab	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.IVc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15.V-VI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16.VIIab	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table AIII: Design Matrix for the Micro-class rigidities

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.Entrepreneurs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.Managers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.Legal prof.	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0
4.Architects	0	0	0	**2**	0	0	0	0	0	0	0	0	0	0	0	0
5.Engineers	0	0	0	0	**3**	0	0	0	0	0	0	0	0	0	0	0
6.Accountants	0	0	0	0	0	**4**	0	0	0	0	0	0	0	0	0	0
7.Health prof.	0	0	0	0	0	0	**5**	0	0	0	0	0	0	0	0	0
8.Unreg. social sc.	0	0	0	0	0	0	0	**6**	0	0	0	0	0	0	0	0
9.Unreg. scientific	0	0	0	0	0	0	0	0	**7**	0	0	0	0	0	0	0
10.II	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11.IIIa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12.IIIb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13.IVab	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.IVc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15.V-VI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16.VIIab	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure AI: The relationship between entry market regulations in professional occupations and immobility parameters for each micro-class, considering 25-45 years old respondents .



Appendix –Section 2: Binomial logistic regressions

Table AIV: Likelihood-ratio test: the significance of interactions using a *big-class approach* to model OD association.

Country	M2: Sig. int. Origin*Survey	M2: Sig. int. Origin*cohort
Germany	0.26	0.26
Denmark	0.23	0.01*
Great Britain	0.41	0.55
Sweden	0.95	0.13

Table AV: Likelihood-ratio test: the significance of interactions using a *meso-class approach* to model the OD association.

Country	M2: Sig. int. Origin*Survey	M2: Sig. int. Origin*cohort
Germany	0.13	0.35
Denmark	0.40	0.01
Great Britain	0.58	0.69
Sweden	0.93	0.16

Table AVI: Likelihood-ratio test: the significance of interactions using a *distinction between licensed and non-licensed professionals* to model OD association.

Country	M2: Sig. int. Origin*Survey	M2: Sig. int. Origin*cohort
Germany	0.20	0.46
Denmark	0.50	0.0*
Great Britain	0.72	0.73
Sweden	0.93	0.23

Table AVII: Likelihood-ratio test: the significance of interactions using a *big-class approach* to model OED association.

Country	M2: Sig. int. Origin*Survey	M2: Sig. int. Origin*cohort
Germany	0.87	0.81
Denmark	0.35	0.01
Great Britain	0.16	0.63
Sweden	0.88	0.20

Table AVIII Likelihood-ratio test: the significance of interactions using a *meso-class approach* to model OED association.

Country	M2: Sig. int. Origin*Survey	M2: Sig. int. Origin*cohort
Germany	0.8144	0.9291
Denmark	0.5601	0.0594
Great Britain	0.4797	0.8061
Sweden	0.8956	0.3691

Likelihood-ratio test: the significance of interactions using a *meso-class approach and the distinction between licensed and non-licensed professionals* to model OED association.

Country	M2: Sig. int. Origin*Survey	M2: Sig. int. Origin*cohort
Germany	0.20	0.46
Denmark	0.49	0.01
Great Britain	0.72	0.73
Sweden	0.93	0.24

Table AVII: *Binomial logistic regression models predicting the probability of being in the Higher Service Class. Average Marginal Effect of having a father in same big-class (Mode1), in the same meso-class (Model 2), in the same licensed or non licensed professional group (Model 3), considering the OED association in each country. Reference category: working class (VIIab)*

Country	Big-class: higher service class	Meso-classes	Average marginal effects	Professionals	Average marginal effects
Germany	0.10***	H. Entrep.	0.12*	Non-licensed	0.04
	(0.01)		(0.04)		(0.02)
		H. Man.	0.05	Licensed	0.13***
			(0.02)		(0.02)
		Profession.	0.10***		
			(0.01)		
Denmark	0.09***	H. Entrep.	0.11**	Non-licensed	0.05
	(0.02)		(0.04)		(0.02)
		H. Man.	0.08**	Licensed	0.15***
			(0.03)		(0.03)
		Profession.	0.9***		
			(0.02)		
Great Britain	0.10***	H. Entrep.	0.17***	Non-licensed	0.09***
	(0.02)		(0.05)		(0.02)
		H. Man.	0.08	Licensed	0.11***
			(0.03)		(0.03)
		Profession.	0.09***		
			(0.02)		
Sweden	0.09***	H. Entrep.	0.12*	Non-licensed	0.11***
	(0.02)		(0.05)		(0.02)
		H. Man.	0.06**	Licensed	0.10**
			(0.02)		(0.03)
		Profession.	0.11***		
			(0.02)		

Significance: *** p<0.01, ** p<0.05, * p<0.1 – Standard errors in parentheses.

Table A1. Distribution of frequencies of Field of Study in four European countries

Fields of Study	Great Britain	Germany %	Denmark %	Sweden %

	%			
Humanities	29.4	21.2	28.6	29.0
Technical, engineering	16.6	30.8	14.8	15.2
Medical field	12.6	8.1	17.2	17.7
Math.,science,computing	14.1	11.3	8.5	10.3
Economics	13.7	12.0	18.6	12.3
Social studies	6.6	8.4	6.8	10.6
Law	2.5	2.3	1.7	2.5
Person. service, public safety, telecomun. Transport.	4.5	5.9	3.8	2.4
Total (N)	100 (2.028)	100 (1.959)	100 (1.725)	100 (1.337)

Source: ESS (2004,2006,2008)

Table A2. Distribution of frequencies of Fathers' professional categories (EGP I) in eight -European countries

Fathers' professional categories	Great Britain %	Germany %	Denmark %	Sweden %
Prof. in Humanities	28.2	30.5	33.4	39.0
Architects - engineers	33.5	36.8	6.0	28.1
Medical professionals	8.7	9.8	11.7	11.6
Prof in Math.,science,computing	19.1	6.7	21.4	7.0
Accountants	5.4	3.7	9.7	4.4
Prof. in Social studies	4.4	6.6	15.4	5.1
Legal professionals	0.8	6.0	2.3	4.8
Total (N)	100 (483)	100 (672)	100 (350)	100 (413)

Source: ESS (2004,2006,2008)