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# *The microclass approach to social mobility: An application to French data*

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Abstract. Most traditional quantitative sociology research has examined trends in social mobility using social class schemes or occupational classifications containing a limited number of categories—usually no more than ten. This article analyzes social mobility in France on the basis of microclasses, or occupations, using the Continuous Labor Force Survey data from 2013 to 2019. It first shows that, although the absolute value of micro-level reproduction seems to be low, when the size of different social groups is taken into account through social fluidity modeling and the use of odds ratios to measure associations, micro-level reproduction is at least as high as macro-level reproduction. The microclass approach also enables the different dimensions that underlie mobility flows between occupations and between social classes to be identified, allowing us to determine the respective contributions of economic sector, employment status, employer type, remuneration level, and qualification level to social reproduction and social mobility. We end by examining separately the impact of mothers' and fathers' occupations on men's and women's outcomes, highlighting an important structural effect: women are more likely to share their mother's social position than their father's, but, when the effect of the gendered segregation of the labor market is controlled for, the association between position of origin and social position is stronger with regard to the father's position than the mother's.

Keywords. Social mobility — Social fluidity — Social reproduction — Social class — Microclass

Trends in social mobility and social fluidity in a number of Western countries (Erikson and Goldthorpe 1992; Breen and Müller 2020), including France (Vallet 1999; 2017), have been closely examined by an extensive body of literature in the quantitative sociology of intergenerational social mobility. This research has investigated the impact of economic transformations and changes in access to education on social mobility and social fluidity. The research has been based on social class schemes or occupational classifications containing a limited number of categories—usually no more than ten—that can be described as macroclasses. As part of a more general research agenda that replaces the analysis of macroclasses with that of microclasses, or occupations (Weeden and Grusky 2005), Jan O. Jonsson et al. (2009) have argued that a macroclass approach to social mobility obscures a significant proportion of social reproduction—that which occurs within microclasses.[1]

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An initial argument for taking a microclass approach to social mobility is therefore that a substantial proportion of social class reproduction is in effect occupational reproduction. A second, very different argument can also be put forward, however: a microclass approach allows the significance of the variability of microclass reproduction within the same social class to be studied. This has been demonstrated in the research undertaken by Sam Friedman and Daniel Laurison (2019) in the United Kingdom and by Fabrizio Bernardi and Carlos J. Gil-Hernandez (2020) in Spain.

However, we will put forward a justification for microclass analysis using a third argument that is more methodological than sociological and that we believe is more fundamental than the first two. It is clear that mobility tables based on social class (or macroclass tables) are simply an aggregation of occupational mobility tables (or microclass tables). As a consequence, all that can be examined in macroclass mobility tables are the aggregated trends from mobility flows between occupations. By way of contrast, occupational mobility tables enable first-hand analysis of mobility flows, the wide range of flows, and their composition, in order to establish the aggregated results found in macroclass mobility tables. In effect, immobility within a macroclass aggregates different phenomena: microclass reproduction (having the same occupation as one's parents) and mobility within macroclasses (changing occupation while staying in the same aggregated category). This latter phenomenon, which we will call microclass mobility, can take different forms: within a macroclass, a person may appear to be mobile from one perspective while appearing to be immobile from another, for example if they stay in the same economic sector as their parents, or they retain their employment status (salaried or self-employed). These different movements can only be seen in microclass mobility tables.

A similar analysis can be conducted for mobility. With a macroclass approach, all movements from class A to class B are identical. However, a more detailed analysis can reveal differences between them, particularly where some involve partial mobility only: moving to a different class but remaining immobile with respect to other variables such as economic sector or employment status. With macroclass analysis, people may therefore appear to be slightly more mobile than they really are. Social mobility from one macroclass to another is therefore the result of different types of partial mobility that can be identified by a microclass analysis.

The main advantage of the theoretical approach taken by Kim Weeden and David Grusky (2005), and used by Jonsson et al. (2009), is its ability to highlight and explain microclass reproduction. In order to explain all of the mobility flows between microclasses, and therefore microclass and partial mobilities, we intend to combine their microclass approach with the mobility factor approach developed for social classes by Robert Erikson and John Goldthorpe in their core model of social fluidity. This approach is itself a special application of

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the method of levels models, also known as topological models, developed by Robert Hauser (1978). In their influential work *The Constant Flux* (1992), Erikson and Goldthorpe identify four factors to explain mobility flows between social classes: inheritance, hierarchy, sector, and affinity. These factors correspond to measures of the closeness or distance between social classes of origin and destination, where the effects on mobility flows between classes can be estimated. For example, inheritance measures individuals' greater likelihood of belonging to their class of origin, while hierarchy measures the reduced likelihood of moving between classes that are far apart in the hierarchy. To these two traditional factors, Erikson and Goldthorpe add two further factors—economic sector and affinity—which measure the closeness or distance between different classes based on non-hierarchical dimensions. Hence, affinity describes the closeness between classes based on a distinction between manual and non-manual work, while economic sector above all enables identification of people working in agricultural sectors (self-employed and salaried). Erikson and Goldthorpe believe that these four factors make up a core that can be found in the various mobility tables from the industrialized countries they study. This model has been used more recently, with very few modifications, by Erzsébet Bukodi and John Goldthorpe (2020) to describe social mobility in all of the European Union countries.

Erikson and Goldthorpe's mobility factor approach can easily be adapted to the study of microclasses. As Jonsson et al. (2009) point out, a microclass approach that uses a hundred occupations as opposed to ten classes means that there are many variations between the characteristics of occupations that can be exploited to gain a better understanding of the mobility flows between them. The theoretical framework used by Jonsson et al. (2009) means that their analysis mainly focused on occupational reproduction and therefore on the diagonal in the microclass mobility table. Taking a mobility factor approach, on the other hand, involves exploring the whole mobility table to identify the areas where mobility flows are greatest. In this respect, the mobility factors identified by Erikson and Goldthorpe (1992) and Bukodi and Goldthorpe (2020) are in fact separate dimensions of social stratification. It therefore follows that occupational mobility flows can be described as movements along these different dimensions of occupational hierarchy, economic sector, or employment status.

Microclass analysis therefore provides a promising approach to gaining a better understanding of intergenerational social mobility and the mechanisms underlying it, particularly in combination with the mobility factor approach. It has nevertheless rarely been used, probably for methodological reasons. There are two major problems associated with microclass analysis: first, taking measurements at this level of detail, and second, creating a database large enough to analyze a contingency table that can quickly reach tens of thousands, or even hundreds of thousands, of cells when microclass classification is at a very fine level of detail.

However, recent changes in the accessibility of the data from the "Enquête emploi en continu" (Continuous Labor Force Survey) have made an analysis of this kind possible in France. The survey has a particularly large sample. Most significantly, however, the data from 2013 to 2019 from the "Continuous Labor Force Survey," which can be accessed via the Centre d'accès sécurisé

aux données (CASD) (Secure Data Access Center), contains both parents' occupational positions at the most detailed level in the Professions et catégories socioprofessionnelles (PCS) (Occupations and Socio-occupational Categories) classification.

The PCS classification has the advantage of providing a standardized measure of occupational position at a number of levels of detail. Its most detailed levels have never been used in social mobility research. Most research is based on the first level, possibly supplemented by the second. The only research that has engaged directly with social mobility using detailed PCS levels was conducted by Cédric Hugrée (2016). He nevertheless used PCS level 2, which we will refer to as the mesoclass level. He investigated the children of skilled blue-collar workers and liberal professionals, demonstrating clearly how drilling down to this more detailed level enabled him to shed light on forms of mobility and immobility that could not be seen at higher levels.

The intention in this article is therefore to use the various PCS levels for two purposes: 1) to assess the magnitude of social reproduction at the different PCS levels, and 2) to identify the various dimensions that underlie mobility flows between occupations. The research presented in this article will therefore provide a synthesis of the microclass approach and the approach used by Erikson and Goldthorpe (1992) in their core model of fluidity.

## Theory and hypotheses

### *Social classes and socio-occupational groups*

Research into social classes has undergone a major revival in recent years, as can most clearly be seen in France with the publication of a number of themed issues on the subject (Penissat and Siblot 2017; Bouchet-Valat and Jayet 2019). This research is part of a wider context involving the development of new tools for measuring social position based on occupational status, including the new version of the PCS classification from 2020 and the European Union's European Socioeconomic Groups (EseG) classification adopted in 2014 by Eurostat. A similar revival in interest can also be seen in the United Kingdom; in 2001, the Office for National Statistics adopted the National Statistics Socio-economic Classification (NS-SEC), which was greatly influenced by the EGP (Erikson-Goldthorpe-Portocarero) scheme.

This research into social classes and occupational groups has been accompanied by a resurgence of research into income and wealth inequalities (Piketty [2014] 2013). The prominence of this latter research may call into question the relevance of the social class approach used by sociologists. This is particularly true with regard to social mobility, as there is a rapidly growing body of literature on the subject in economics that focuses on the relationship between parents' and children's incomes (Blanden 2013). In sociology, the dominant approach uses social class as a measure, representing what might be termed the paradigm of social mobility table analysis. This approach gradually superseded previous research that assigned occupations a score based on socioeconomic status or prestige (Ganzeboom et al. 1991). This latter research was based on a quantitative measure of social position and associated

statistical methods. Analysis in terms of social classes is based on a qualitative variable, which required the creation of specific statistical tools, the log-linear and log-multiplicative models developed by the statistician and sociologist Leo Goodman. Following Goodman's work, the research that played a key role in developing this paradigm was undertaken primarily by Hauser (1978), followed by Goldthorpe, with a number of co-authors (see Erikson and Goldthorpe 1992). The paradigm was disseminated further when Erikson and Goldthorpe developed a social class scheme, the EGP scheme, which they created to describe the social classes in various industrialized countries and to enable international comparisons to be made.

These authors understand social classes as aggregated categories inferred from measuring occupations and a number of their characteristics. The term "social class" was used and justified by Goldthorpe to differentiate his approach from those based on prestige or socioeconomic status. In the French context, the term "social class" generally has a very different meaning. In France, mentioning social class can be a powerful political marker, which, as Jean-Claude Passeron has pointed out, means that researchers may or may not be committed to using it for "philosophical or ethical" reasons (2006 [1992], 200).[2] In effect, the history of the term "social class" has strong theoretical and political connotations, which makes its use potentially divisive. Jean Porte, the main researcher responsible for designing the socio-occupational category classification in 1954, told Alain Desrosières in 1976 that he "didn't call them classes so as not to quarrel with those people who did consider them to be classes," but added "that they do have a background in Marxism and can be grouped together in a way that satisfies Marxists" (quoted in Amossé 2013, 1046).

It should be noted that the term "socio-occupational category" only corresponds to level 2 in the classification, a level that in reality is little used in the published research. The first, most commonly used level is known as "socio-occupational groups," a term that is mentioned much less frequently yet corresponds better to the class-based grouping of categories mentioned by Porte. Neither term has much theoretical resonance: they are not associated with any important debates within the discipline in the same way as the term "social class" is. Hence, the PCS presentation guide includes no theories that might justify the grouping of occupations into socio-occupational groups and categories, unlike, for example, the NS-SEC classification used by the ONS in the United Kingdom, which is explicitly and officially presented as being based on Goldthorpe's theory. Porte himself writes on the subject that "[the CSPs were not] related to any of the various conflicting theories on the basis of which sociologists from the different schools [had] wanted to define 'social classes'" (quoted in Amossé 2013, 1046).

Despite the claims that the sources of the classification were atheoretical, the 1982 revision was presented as having been influenced by the work of Pierre Bourdieu (Amossé 2013). Thomas Amossé states that "Bourdieu's sociology appears as a backdrop that guided the revision of the socio-occupational

2. **Translator's note:** Unless otherwise stated, all translations of cited foreign-language material in this article are our own.

classification" (2013, 1054). Invoking Desrosières, he argues that this influence was twofold: Bourdieu's sociology provided a "sociological framework for interpreting social inequalities" and called for "a reflective perspective with a view to denaturalizing the categories used by statisticians" (ibid.).

It is nevertheless possible partly to qualify Bourdieu's influence on the revision of the classification. It should first be noted that chapter 4 of Laurent Thévenot and Alain Desrosières's work presenting the PCS, which discusses the 1982 revision, contains no references to Bourdieu. More significantly, however, although the 1982 revision introduced some changes, it also retained the key principles of the 1954 classification. Hence, Desrosières and Thévenot note that the new classification "does not differ from the previous one in its overall structure" (1996 [1988], 29), an observation that Amossé also makes (2013, 1039). In effect, the 1982 classification retains the separation of salaried and non-salaried workers, the hierarchy among salaried workers, and the distinction between *employés* (lower-level white-collar workers) and *ouvriers* (blue-collar workers).

The criteria used to construct socio-occupational groups are also very similar to those used in the literature that lays claim to the term "social class," particularly the work of Goldthorpe, Weeden, and Grusky. The various classifications used in this research generally include a hierarchy of salaried workers that is similar to that found in the PCS, an employment status variable that enables identification of self-employed workers, and a means of distinguishing between manual and non-manual workers that is similar to the distinction between *employés* and *ouvriers* in the PCS. Consequently, it is relatively easy to convert the PCS to the EGP scheme, which is explicitly defined as a social class scheme. On a more theoretical level, it should also be noted that both classifications are underpinned by the same approach: measurement of position in the social hierarchy based on position in the labor market, and therefore in the relations of economic production, enabling this position subsequently to be viewed as a major lifestyle determinant in various areas of social life, including cultural practices, political opinions, and health.

Following on from the research undertaken by Goldthorpe, and by Weeden and Grusky, we will use the term "social class" to designate measurement of a group of occupations according to criteria based on the group's position in the relations of economic production (employment status, position in the hierarchy, and nature of tasks performed) that enable the social hierarchy to be described and differences in living standards to be explained. In order to achieve this, we will use the PCS at the aggregated level, i.e., socio-occupational groups, as a measure of social class. An important advantage of the PCS classification is that it includes several levels, making it particularly well suited to studying social mobility at different levels of detail in descriptions of social position. This will enable us to provide an empirical interpretation of Weeden and Grusky's (2005) microclass approach, where they foreground the analysis of occupations within the sociology of social stratification and social mobility.

## *Social mobility and occupations*

Occupations are rapidly disappearing in social mobility studies and are being replaced by broad social classes, socio-occupational categories, and

scores for prestige and socioeconomic status. However, occupations still play a crucial role in social mobility research, as the classifications used to measure social position are based on measures of people's occupations, which are then aggregated according to various criteria. For example, in the International Standard Classification of Occupations (ISCO), which was created under the auspices of the International Labour Organization and is frequently used to measure social class, occupation is the most detailed level, defined as "a set of jobs whose main tasks and duties are characterised by a high degree of similarity" (ILO 2007). These occupations are aggregated according to their skill level and specialization. Occupations are also the most detailed level in the PCS, coded using a set of ten variables, the most important of which are qualification level, employment status, economic sector, and employer type. These variables allow occupations to be aggregated into socio-occupational categories and groups.

The quantitative sociology of social mobility has therefore mainly focused on occupations as base units that can then be grouped and, to a certain extent, placed in a hierarchy. Hence, in this context, they are simply an indicator of a position in the economic structure. By way of contrast, the approach put forward by Weeden and Grusky involves foregrounding occupations within the sociology of social stratification and social mobility. Weeden and Grusky describe their approach as realist, in contrast to social class-based approaches, which they describe as nominalist. They believe social classes are abstract groups constructed by sociologists, whereas occupations have a concrete institutionalized existence in the form of trade unions, training provision, and, in some cases, the closed markets in which they operate. They believe that this institutionalized existence means that occupations must necessarily shape behavior, far more than class membership. Occupations should therefore be at the center of class-based analysis, as social determinism operates through them.

Within the sociology of social mobility, it is possible to argue for the importance of microclasses both from the perspective of rational choice theory and from a more deterministic point of view that emphasizes the shaping of tastes and aspirations (Jonsson et al. 2009). In a rational choice approach, macroclass reproduction is created by people endeavoring to reach the highest possible social position, or, according to Raymond Boudon (1973) and reference group theory, a position that is at least equivalent to the one occupied by their parents. Yet, depending on their social origin, people have very different resources at their disposal, impacting the extent to which they are able to achieve their objectives. A microclass approach is thus warranted if some of these resources are specific to an occupation: they may help an individual gain access to an occupation in a particular social class, but not to every occupation in that class. There is an assumption, for example, that having parents who are blue-collar workers in the steel industry is of less help in becoming a craft worker in the watchmaking or textile industries than having parents who work in those specific areas. Similarly, the resources required to become a lawyer or a commercial manager in a large company would not be precisely the same as those needed to become an engineer, even though these occupations are often considered to belong to the same class or socio-occupational group.

There are, of course, resources that are general enough to help people obtain positions in a number of different occupations in the same social class. This is the case with higher education, which is a major requirement for obtaining a position with high socioeconomic status. Economic capital, which is transferable, enables people to acquire higher positions. If the owner of a restaurant or a hair salon passes on their business, their descendants can convert it into other forms of capital, but that would probably not be the easiest or most straightforward use of this resource. In the same way, the network built up by a distinguished lawyer can help a descendant become a writer, but it is probably more effective to use it to become a lawyer too. From the perspective of rational choice theory, the best use of the resources passed on by parents is therefore to continue in the same occupation or to take up a similar occupation rather than to convert the resources to enter another occupation in the same social class. Therefore, while microclass reproduction may not account for macroclass reproduction in its entirety, it should be able to explain a substantial proportion of it.

The same reasoning can be applied to explain social reproduction in terms not just of disparities in initial resources but also the way tastes and aspirations are shaped. In this instance too, the microclass approach is justified if these tastes and aspirations are at least partly responsible for encouraging people to attempt to enter specific occupations and not simply any occupation in the same social class.

## *The sociology of social stratification, social mobility, and occupations*

While the sociology of social stratification and social mobility has tended to treat occupations simply as a measure, the sociology of occupations has taken a very different approach, using them as a subject for research (Dubar et al. 2015). Within the sociology of occupations, Andrew Abbott's (1988) theoretical work is probably closest to Weeden and Grusky's, and they refer to it on a number of occasions. Abbott's work provides a bridge between the sociology of occupations and the sociology of social stratification and social mobility. Abbott studies occupations as a system of interactions, with a focus on the competition and confrontation between them that helps establish them as monopolies. From a similar perspective, Weeden (2002) has shown, for example, that some occupations establish legal and institutional barriers to restrict access in order to enable them to secure higher remuneration. The approach taken by Weeden and Grusky and by Abbott enables a reexamination of social stratification and social class theories; within this framework, Abbott describes the system of occupations as an ecology. As a consequence, class struggle and social hierarchy, described using various interlinked criteria, such as employment status or qualification level, are replaced by a group of occupations that come into confrontation, create alliances, and become dominant, but also disappear or are replaced by others.

Some outcomes from the sociology of occupations make it difficult simply to transpose it into the sociology of social mobility, however. In this regard, probably the most important disputes are between functionalists and

interactionists. Traditionally, research in the sociology of occupations was focused on explaining the unique status of particular occupations as regulated occupations. The most typical disagreement was between, on the one hand, the functionalist paradigm, which justified this status on the basis of the high technical standards of the regulated occupations and their contribution to the common interest, and, on the other, the interactionist paradigm, which treated this unique status as the product of the struggle of the actors involved for their interests. In principle, this research in the sociology of occupations does not conflict with Weeden and Grusky's approach. On the contrary, via the study of professionalization, sociologists of occupations describe the mechanisms that underlie the institutionalization of certain occupations, a concept that plays a central role in Weeden and Grusky's approach, as we have seen.

The difficulty in combining the two approaches lies instead in the qualitative nature of the sociology of occupations and the quantitative nature of the sociology of social mobility. As was pointed out above, the classifications used to measure occupations are restricted to the most straightforward definitions of occupations as a set of jobs with similar duties and tasks. These measures do not take into account the different dimensions of professionalization studied in the sociology of occupations. A similar observation can be made with regard to research in the sociology of occupations that highlights the internal divisions and conflicts within occupations (Bucher and Strauss 1961). This research shows that occupations are not a straightforward starting point: far from being base units, they themselves are permeated by conflicts between their various segments.

With the data currently available, it is not possible to take into account the different levels of segmentation or professionalization of occupations. In more general terms, measures of occupation involving classifications do not reflect the debate in the French sociology of occupations on the use of the French term "*profession*" and the contrast in English between "occupation" and "profession." The English term "occupation" from the ISCO classification has been translated into French as "*profession*," for example. A comprehensive program that combines the sociology of occupations and Weeden and Grusky's approach cannot therefore be implemented at this stage. It is nevertheless possible to test Weeden and Grusky's proposition that determinism operates principally at the occupation level rather than at the social class level, and to identify distinct dimensions of social stratification that partly explain mobility flows between occupations as measured by the Institut national de la statistique et des études économiques (INSEE) (French National Institute of Statistics and Economic Studies). In the future, any results should justify the construction of measures based on findings from the qualitative sociology of occupations.

### *Hierarchical dimensions of social mobility: Economic status and qualification levels*

Earlier in this article, we suggested using the occupational (or microclass) mobility table as a starting point to identify what Bukodi and Goldthorpe (2020) have termed "mobility factors" in a reworking of Erikson and Goldthorpe's (1992) core model of fluidity. From a statistical point of view,

these factors are primarily variables that describe the relationship between social position and social origin (showing, for example, either that these are identical or that one occupies a higher position in the hierarchy than the other). These variables can then be introduced as explanatory variables in a statistical model that predicts the number of people with any given combination of social origin and social position—in other words, the count in each cell in the social mobility table. Weeden and Grusky's (2005) approach, which can also be found in Jonsson et al. (2009), mainly focuses on occupational reproduction. This approach enables significant reproduction to be predicted in the diagonal of the microclass mobility table, which is equivalent to considering the principal mobility factor to be what Erikson and Goldthorpe term the inheritance factor. In the core model of fluidity, Erikson and Goldthorpe also highlight other factors that they believe play an important role in explaining mobility flows. The second mobility factor, and probably the most obvious one, is the hierarchical factor: the further apart any two occupations are in the hierarchy, the lower the mobility between them. In the PCS, the hierarchical dimension is mainly used to describe salaried workers, principally at the socio-occupational group level. There are nevertheless some hierarchical distinctions at the socio-occupational category level, particularly between skilled and unskilled blue-collar workers. There is a hierarchy among self-employed workers based on the number of salaried workers in the "Craft workers, shopkeepers, and business owners" category and on the size of farms operated by farmers.

We will use the PCS's macroclass (group) and mesoclass (category) levels to measure this hierarchization and its effect on mobility flows. We will also attempt to explain the impact of hierarchy on social mobility using occupation-level measures. The PCS classification constructs the occupational hierarchy of salaried workers on the principle of qualifications recognized by collective agreements. Hence, in a number of situations, qualifications have the advantage of institutional recognition. Nevertheless, it can be assumed that these qualification levels only provide an imperfect reflection of the social hierarchy at the source of social reproduction. Occupations that have the same qualification level may in reality have significant differences in terms of remuneration, or may require varying qualification levels for access. Using occupations as a starting point should therefore enable us to gain a better understanding of the internal hierarchies of social classes and the fact that certain occupations may be considered more or less attractive and generate more or less social reproduction, or require more or less resources to access them. We will therefore attempt to explain reproduction at the PCS's macroclass and mesoclass levels by identifying the contributions to mobility flows between occupations made by other significant dimensions of the hierarchization of the social space. In this article, we will focus on the importance of remuneration and qualification level.

It may be assumed that the reproduction seen with the PCS is partly a consequence of the influence of social origin on individuals' qualification levels. Although there is not a strict correlation between occupation and qualification level (Desrosières and Thévenot 1996 [1988], 23), there is nevertheless substantial variability between occupations regarding either a high or specific level of qualification as an entry requirement. In order to measure this, we intend to define an average qualification level for members of an occupation, ranging from occupations where almost no one has a higher education qualification

to those where almost all members have one. It can be assumed that mobility flows between two occupations are greater when they have similar average qualification levels. This phenomenon should explain part of the reproduction that can be observed at the PCS's macroclass and mesoclass levels.

As discussed above, a number of economic studies have also highlighted the importance of income heritability (Blanden 2013). In light of the importance for most people's income of the remuneration earned from their primary occupation, this income reproduction inevitably encompasses both occupational remuneration and occupational heritability. We intend to take into account the unequal remuneration between occupations by measuring their average remuneration, which we will label their economic status. It can be assumed that an occupation's economic status is an important component of social reproduction, particularly because, as a minimum, people attempt to reproduce their parents' standard of living. Occupations with similar standards of living, and thus similar levels of remuneration, should therefore also have significant mobility flows between them.

We will describe an occupation's average qualification and remuneration levels as dimensions that underlie hierarchization of the PCS according to qualification level, and therefore as mobility factors. This will enable us to check both whether these measures are associated with specific mobility flows at the occupation level and whether they allow us significantly to account for the reproduction observed at the group and category levels in the PCS. With the same end in mind, we will now turn to the non-hierarchical dimensions that can also be assumed to be significant in explaining mobility flows between occupations.

### *Non-hierarchical dimensions of social mobility: Economic sector, employment status, and employer type*

One advantage of occupation- and social class-based approaches compared to approaches based on socioeconomic status or income is that they enable a less vertical description of social positions. In reality, there are a number of significant differences between very similar occupations in terms of remuneration. Several studies focusing on elite occupations have highlighted significant variability in social reproduction according to economic sector. Friedman and Laurison state that, in the United Kingdom, people from "upper-middle-class backgrounds, for example, are 12 times more likely to become doctors than those from working-class backgrounds, whereas they are only twice as likely to become engineers" (2019, 21). The authors also show that there is a pay gap between individuals based on their social origins and that this gap is particularly significant in certain fields, including finance, law, and medicine. Studies on social reproduction in elite occupations, including research into law firms, also show that there are very specific reproduction mechanisms in these occupations: people either adapt to elite occupations or fail to do so as a function of their social origins, their values, and their lifestyles (ibid.). This is the result of closure mechanisms that promote social interaction between people in the same occupation and help create specific occupational cultures (Weeden and Grusky 2005).

While this research has focused mainly on elite occupations, this variation in social reproduction by economic sector might be expected to extend beyond upper-class occupations. This has already been observed to a degree with farmers. Most research makes a distinction between farmers and other self-employed workers, and between agricultural workers and other blue-collar workers, largely because particularly high reproduction rates can be observed in these groups. In order to account for this, Erikson and Goldthorpe (1992) use a specific mobility factor that they call the sector factor. The small numbers employed in agriculture in the twenty-first century led Bukodi and Goldthorpe to omit this factor in their 2020 article. The reason they decided to omit economic sector is because the classification they use is located at the macroclass level and only considers agriculture as an occupational area within an economic sector. Working at the microclass level, however, enables a number of economic sectors to be identified. At that level, mobility flows can be measured between occupations in the health, education, commerce, or media sectors. All of these fields, whether they include lower-level white-collar workers, blue-collar workers, or members of the intermediate occupations, can also be characterized by specific cultures and values passed on in the family environment and subsequently reinforced in training programs. Hence, we will investigate the extent to which social reproduction varies according to economic sectors, and will do so in a non-hierarchical way by, for example, placing all health-related occupations in the same category. As will be seen in the methods section, we used the Familles professionnelles (FAP) (Occupational Groups) classification created by Dares, the statistical service of the French Ministry of Labor, for this purpose.

A second major non-hierarchical dimension of social stratification that we can assume makes a significant contribution to social reproduction is employment status, or the distinction between salaried workers and self-employed workers. Bernard Zarca's research on the subject highlighted the importance of the reproduction of self-employed status. He states that from childhood parents impart "a taste for autonomy" (1993, 279), combining both economic and cultural dimensions. It can therefore again be assumed that employment status is an important explanatory variable for mobility flows, as it creates a high degree of reproduction in self-employed occupations.

A final major non-hierarchical structuring principle in the PCS that should prove important in studying social mobility is employer type, i.e., whether people work for the state or in the private sector. The differences in lifestyles between "private sector people" and "public sector people" have been highlighted by research (Singly and Thélot 1989). Among other findings, this research, including that undertaken more recently by Sibylle Gollac (2005), has highlighted the importance of inheritance in employer type, as public sector workers' parents frequently also worked in the public sector. In more general terms, Hugrée et al. (2015) have underlined the importance of the division between the private and public sectors when analyzing social classes. They show that public sector workers are always characterized by specific cultural, trade union, and political practices. In this instance too, it is therefore possible to consider employer type as an important mobility factor in accounting for mobility flows in the occupational mobility table.

Economic sector, employment status, and employer type therefore provide us with three non-hierarchical mobility factors that help explain flows between

occupations. Although these variables were used to construct the PCS classification, they were not used systematically, especially the latter two: hence, the same occupations may include people with different employment statuses and different employer types. Therefore, in this instance too, we will need to use the same method as for qualification level: we will use the average characteristics of people in the occupations to describe the occupations' varying levels of closeness to different employment statuses or employer types.

## Methods and data

### *Data*

In most investigations, the variables measuring social origin are only available at an aggregated level. However, the "Continuous Labor Force Survey" data from 2013 to 2019, which can be accessed via the Secure Data Access Center, contains both parents' occupations at the most detailed PCS level. This is the data we have used.[3] The parents' occupations are described in the documentation as their occupations at the end of the respondents' initial phase of education. Unfortunately, the detailed level variable has a large number of values missing. We began with people between the ages of 31 and 64 years only, i.e., 660,756 people. By retaining only those people for whom the most detailed PCS level is available for both them and each of their parents, we were left with 231,983 people, corresponding to 114,939 men and 117,044 women.

It is clear that the problem of missing values is primarily due to the lack of information regarding mothers' occupations (Table 1). While this is in part linked to mothers who are not in work, this is not the only factor. Only 7% of the people with no response for this variable for their mothers have mothers who are not in work.

Table 1 – ***Non-response rate at the most detailed PCS level***

| | % |
|---|---|
| Respondents | 29.4 |
| Respondents' mothers | 48.8 |
| Respondents' fathers | 19.9 |

*Note*: The most detailed PCS value is missing for 29.4% of respondents.
*Source*: "Continuous Labor Force Survey," 2013–2019.

To assess the importance of this bias in sociodemographic terms, Table 2 shows the distribution by age, sex, and remuneration of the total sample (between the ages of 31 and 64), our sample (with non-responses therefore not included), and the sample including non-responses only. Compared to the total sample, our sample is slightly younger (median age of 45 compared to 48), slightly less female (50.5% compared to 52.3%), and slightly better paid

3. See the "Source" section and Table 12 in the Appendix.

(median remuneration of 1,800 euros compared to 1,700 euros). Despite these differences, removing the non-responses does not seem to create any significant sociodemographic bias.

TABLE 2 – ***Sociodemographic and socioeconomic characteristics of the sample***

| | Age | | | Women | Salary | | | n |
|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | % | Q1 | Q2 | Q3 | |
| Total sample | 40 | 48 | 56 | 52.3 | 1,300 | 1,700 | 2,300 | 660,756 |
| Sample used | 38 | 45 | 52 | 50.5 | 1,376 | 1,800 | 2,400 | 231,983 |
| Sample with social origin or social position missing | 42 | 51 | 58 | 53.2 | 1,250 | 1,600 | 2,200 | 428,773 |

*Note:* Q1, Q2, and Q3 are the different quartiles.
*Source*: "Continuous Labor Force Survey," 2013–2019.

There may be a significant bias if it is thought that people for whom no occupation is provided are either more or less likely than others to be in the same occupation as their parents. Nevertheless, it may be noted that, overall, measurement errors tend to be detrimental to microclass analysis. The large number of occupations means there is little chance of mistakenly assigning people to the same occupation as their parents. Microclass reproduction is therefore likely to be underestimated by the analysis.

## *The different levels of detail in the PCS*

The classification has a hierarchical structure with four levels that correspond to different levels of aggregation of the base level—level 4—which INSEE (2003) calls "Occupations." At the most aggregated level, the classes are called "Socio-occupational groups." We will call this version of the scheme PCS-6. At this macroclass level, we will also use a version of the PCS that combines the categories "*Ouvrier*" (blue-collar worker) and "*Employé*" (lower-level white-collar worker) (PCS-5). We will call the socio-occupational category level PCS-31, which we will consider to correspond to a mesoclass level. The third level, which uses three digits for coding, does not have a name in the PCS presentation guide but nevertheless introduces important distinctions that are explicitly mentioned and labeled in the guide. Level 3 is also described as a measure of occupation in the PCS-ESE guide, which provides a slightly more detailed version of the PCS for employers. For example, mesoclass 62 refers to skilled industrial blue-collar workers. The third level distinguishes between them by referring to their specialism: "Construction, public works, quarrying, and extraction," "Electrics and electronics," "Metalworking," etc. In category 43, "Intermediate health and social work occupations," level 3 enables a distinction to be made between nurses and midwives (431), physiotherapists (432), medical technicians (433), social workers (434), and "Sociocultural animation and recreation specialists" (435). This level includes 159 categories.

The fourth level, "Occupations," includes 486 categories. It introduces new distinctions that may match some of the criteria used at the more aggregated levels. For example, this level is where distinctions can be made between salaried and private nurses. The distinctions may correspond to fairly specialized differences in economic sector, such as between sales workers in the food (554a) and furniture, decoration, and household equipment (554b) sectors. In craft trades, level 4 distinguishes between bakers (215a) and butchers (215b), and between butchers and *charcutiers* (215c). For unskilled construction workers, level 4 helps distinguish between "heavy construction" workers (681a) and "light construction" workers (681b). In addition, secretaries (542a) can be distinguished from typists and shorthand typists (542b) at this level.

For our microclass analysis, we have chosen mainly to use level 3 of the PCS and to provide only a few general statistics in relation to level 4. There are several reasons for this. First, despite the relatively large number of people in our sample, it is still limited for application to analysis at level 4 of the PCS. The mobility table at this level includes 236,196 cells, i.e., for our sample, an average of far fewer than one person per cell if men and women are dealt with separately. The mobility table for PCS-159, on the other hand, has 25,281 cells, which still gives a fairly sparse matrix, but which nevertheless includes an average of more than one person per cell. Second, with around a hundred categories, this is the closest level of detail, in terms of the number of categories, to the classification used by Jonsson et al. (2009). This level of detail allows an approach to be used that will enable better assessment of the degree of similarity or difference in findings with respect to that study. Finally, as will be seen, there are more substantial social immobility statistics at this level than at level 4, although level 4 may also prove interesting by revealing significant social reproduction.

### *Mothers' and fathers' social origins and social positions*

There has been a great deal of theoretical and methodological controversy within the sociology of social mobility regarding the social class-based approach and the question as to whether the social position of both parents or just one parent should be used to describe social origin (Sorensen 1994; Vallet 2001). Various studies have shown that it is important to include both parents' social positions in order to explain the social destinations of both women and men (Vallet 1991; Beller 2009). We will therefore investigate mobility tables that include mothers' occupations and others that include fathers' occupations. We have nevertheless restricted ourselves to these four mobility tables (dealing separately with men and women) and will not be studying the three-dimensional contingency table that includes the occupations of respondents and both of their parents. If we did so, we would obtain a table with more than four million cells, which we again feel is too large to be processed with our sample size.

### *Mobility dimensions*

In the final part of the empirical work, we will identify the range of dimensions that underlie mobility flows between occupations. These should enable us to determine how the different characteristics of the classes and

microclasses contribute to reproduction at the various levels of the PCS. We have identified five main dimensions: an occupation's average qualification level, average remuneration or economic status, employment status, employer type, and economic sector.

The PCS uses a set of ten variables, the main ones being occupational qualification, employment status, economic sector, and employer type (public or private sector). These criteria allow occupations to be grouped together, but they are used in a very unsystematic way. The proportions of public sector salaried workers or self-employed workers may therefore vary considerably from one occupation to another or from one category to another, and the same may be true for qualification or remuneration levels. We have therefore systematically defined an average level for occupations for all mobility factors except economic sector. For example, we measured the average remuneration for each occupation in the "Continuous Labor Force Survey" between 2013 and 2019.[4] With respect to qualification level, we used only two variables to measure higher education level: the proportion of people in each occupation with a higher tertiary qualification and the proportion with a lower tertiary qualification. This is the differentiation between qualifications used by INSEE and corresponds to the DIP5 variable. We used similar methods to measure the proportion of public sector salaried workers[5] and self-employed workers in each occupation. We will be able to use the difference in proportions to measure the distance between two occupations with respect to each of these variables. This will enable us to use this distance as a variable and to estimate the effect on mobility flows using the assumption that the greater the distance between two occupations, the lower the mobility flows between them.

In order to measure economic sector, we used Dares's Familles professionnelles (FAP) (Occupational Groups) classification. The advantage of this classification is that it is completely non-hierarchical: for example, doctors are in the same group as nurses and healthcare assistants. Dares also provides a correspondence table for the PCS and the FAP. The difficult decision was made to use level 3 rather than level 4 of the PCS. In effect, a substantial number of level 3 categories (34 of 159) correspond to a number of possible FAPs in the correspondence table. In contrast with the previous variables, on this occasion we decided to assign the most common economic sector, as this was clear in the vast majority of cases. We accept that this represents a simplification, but we believe that it results in a limited loss of information, whereas proceeding in the same way as with the previous variables would have made the analysis far too complex and would have required the creation of as many variables as there are occupational groups in the FAP (i.e., 22 variables).

4. We used the SALMEE variable, which measures total monthly remuneration in euros from primary occupations.

5. Here, we grouped together those who work for the government, state-owned enterprises, local authorities, public hospitals, and social security and welfare departments.

Table 3 – ***Dares's occupational groups***

| | |
|---|---|
| Agriculture and fisheries | Information technology and telecommunications |
| Construction and public works | Research |
| Electrics and electronics | Public administration, legal occupations, army, and police |
| Mechanical engineering and metalworking | Banking and insurance |
| Process industries | Retail trade |
| Flexible materials, wood, and graphics industries | Hotels, restaurants, and food |
| Maintenance | Services to individuals and communities |
| Industrial engineers and managers | Communication, information, arts, and entertainment |
| Transport, logistics, and tourism | Health, and social, cultural, and sporting activities |
| Craft occupations | Education and training |
| Business management and administration | Politics and religion |

## *Extended models of quasi-perfect mobility*

To analyze the social mobility tables constructed with PCS-159, we will use log-linear models on contingency tables. Various versions of these models were developed by Goodman (1979) to study social mobility.[6] For a mobility table with $i$ rows and $j$ columns, the simplest log-linear model can be written as follows:

$$M1 : ln(\mu_{ij}) = \alpha + \beta_i + \gamma_j$$

This first model is called the perfect mobility model: $\mu_{ij}$ is the expected count in cell $ij$, $\alpha$ is the main effect, and $\beta_i$ and $\beta_j$ are the marginal effects of the rows and columns respectively. Hence, the number of people in each cell in the table is explained only by the marginal distribution of each of the variables, i.e., in this instance, the size of the different social groups for the respondents and their parents. As a result, the predicted counts are the same as would be found in the independence table in a chi-square test, for example.

Starting with this model of perfect mobility, we can add different parameters to account for macroclass, mesoclass, and microclass immobility.

6. For a general presentation of log-linear models for contingency tables, see Alan Agresti (2003). For a presentation of the models used more specifically in the analysis of social mobility tables, see Goodman (1979) and Michael Hout (1983).

Hence, we will estimate the following models:

$$M2 : ln(\mu_{ij}) = \alpha + \beta_i + \gamma_j + \delta_{ij}^{ma}$$

$$M3 : ln(\mu_{ij}) = \alpha + \beta_i + \gamma_j + \delta_{ij}^{mi}$$

$$M4 : ln(\mu_{ij}) = \alpha + \beta_i + \gamma_j + \delta_{ij}^{ma} + \delta_{ij}^{ms}$$

$$M5 : ln(\mu_{ij}) = \alpha + \beta_i + \gamma_j + \delta_{ij}^{ma} + \delta_{ij}^{ms} + \delta_{ij}^{mi}$$

Model 2 adds a parameter to describe immobility within macroclasses ($\delta_{ij}^{ma}$), model 3 adds a parameter to describe immobility within microclasses ($\delta_{ij}^{mi}$), model 4 accounts for immobility within macroclasses and mesoclasses ($\delta_{ij}^{ms}$), and, lastly, model 5 adds all three parameters (macroclass, mesoclass, and microclass). In all of these models, the three parameters are constrained to take the value 0 when they describe social mobility from the perspective of the level of aggregation under consideration (all the cells not on the diagonal for the microclass parameter, or when *i* and *j* are not the same).

The additional parameters enable adjustments to be made to the prediction from the perfect mobility model, increasing the expected number of people in the cells corresponding to social reproduction. The coefficients obtained in this way will serve as a measure of social reproduction. These coefficients are functions of the mobility table's odds ratios. Goodman (1979) shows that log-linear models describe either the counts in the contingency table or its odds ratios. As in logistic regression, the coefficients of a log-linear model correspond to the logarithms of the odds ratios.

We will estimate two versions of these models: a constrained and an unconstrained version. In the constrained version, we will estimate a single reproduction parameter for each level (macroclass, mesoclass, and microclass). We will call these models constrained and extended models of quasi-perfect mobility. As they will only be used to estimate a social reproduction coefficient at a given level of detail in the PCS, these models will make it easier to compare reproduction at the different levels (macroclass, mesoclass, and microclass). These single coefficients for PCS levels will be referred to as macroclass, mesoclass, and microclass reproduction coefficients respectively. As noted above, these coefficients depend on the odds ratios of the mobility table estimated by the model. Hence, they are equal to twice the logarithm of an odds ratio that describes reproduction in the diagonal. This odds ratio is equal to the ratio between the following pair of odds: 1) the odds of someone with category of origin A having category A as opposed to category B as their category of destination, and 2) the odds of someone with category of origin B having category A as opposed to category B as their category of destination.

In the second version of these models, some of the constraints on these coefficients will be relaxed. A specific coefficient will then be estimated for each reproduction situation and therefore for each occupational area in the macroclass, mesoclass, and microclass classifications. This is a modified version of Goodman's model of quasi-perfect mobility designed to take into account reproduction at the different levels of detail in the classification (and therefore not only in the table's diagonal). They are referred to as extended models of quasi-perfect mobility.

### *Social stratification models*

In order to describe the different mobility flows within the PCS-159 mobility table, we will use models that take into account reproduction in relation to different dimensions of social stratification. They can be described formally as follows:

$$M6\text{: } ln\left(\mu_{ij}\right) = \alpha + \beta_i + \gamma_j + \delta_{ij}^{ma} + \delta_{ij}^{ms} + \delta_{ij}^{mi} + \beta_1 * \left(\left|ln\left(\frac{\zeta_i^{ec\_s}}{\zeta_j^{ec\_s}}\right)\right|\right)$$

$$M7\text{: } ln\left(\mu_{ij}\right) = \alpha + \beta_i + \gamma_j + \delta_{ij}^{ma} + \delta_{ij}^{ms} + \delta_{ij}^{mi} + \beta_2 * \left(\left|\zeta_i^{htq} - \zeta_j^{htq}\right|\right) + \beta_3 * \left(\left|\zeta_i^{ltq} - \zeta_j^{ltq}\right|\right)$$

$$M8\text{: } ln\left(\mu_{ij}\right) = \alpha + \beta_i + \gamma_j + \delta_{ij}^{ma} + \delta_{ij}^{ms} + \delta_{ij}^{mi} + \beta_1 * \left(\left|ln\left(\frac{\zeta_i^{ec\_s}}{\zeta_j^{ec\_s}}\right)\right|\right) + \beta_2 * \left(\left|\zeta_i^{htq} - \zeta_j^{htq}\right|\right) + \beta_3 * \left(\left|\zeta_i^{ltq} - \zeta_j^{ltq}\right|\right)$$

$$M9\text{: } ln\left(\mu_{ij}\right) = \alpha + \beta_i + \gamma_j + \delta_{ij}^{ma} + \delta_{ij}^{ms} + \delta_{ij}^{mi} + \beta_1 * \left(\left|ln\left(\frac{\zeta_i^{ec\_s}}{\zeta_j^{ec\_s}}\right)\right|\right) + \beta_2 * \left(\left|\zeta_i^{htq} - \zeta_j^{htq}\right|\right) + \beta_3 * \left(\left|\zeta_i^{ltq} - \zeta_j^{ltq}\right|\right) + \beta_4 * \left(\left|\zeta_i^{se} - \zeta_j^{se}\right|\right) + \beta_5 * \left(\left|\zeta_i^{pub} - \zeta_j^{pub}\right|\right)$$

$$M10\text{: } ln\left(\mu_{ij}\right) = \alpha + \beta_i + \gamma_j + \delta_{ij}^{ma} + \delta_{ij}^{ms} + \delta_{ij}^{mi} + \beta_1 * \left(\left|ln\left(\frac{\zeta_i^{ec\_s}}{\zeta_j^{ec\_s}}\right)\right| + \beta_2 * \left(\left|\zeta_i^{htq} - \zeta_j^{htq}\right|\right) + \beta_3 * \left(\left|\zeta_i^{ltq} - \zeta_j^{ltq}\right|\right) + \beta_4 * \left(\left|\zeta_i^{se} - \zeta_j^{se}\right|\right) + \beta_5 * \left(\left|\zeta_i^{pub} - \zeta_j^{pub}\right|\right) + \zeta_{ij}^{sa}$$

We will only use the constrained versions of these models in this research, i.e., the versions where the different reproduction parameters at the same level (macroclass, mesoclass, and microclass) are constrained so that they are identical. Step by step, the models add the various dimensions to the constrained version of model 5 above: economic status, higher education qualification level, employment status, employer type, and economic sector. In order to measure the impact of economic status, we will estimate the effect of the difference between the logarithms of average remuneration for the categories of origin $\zeta_i^{ec\_s}$ and destination ($\zeta_j^{ec\_s}$), which is equivalent to the logarithm of the ratio of the two remuneration figures. To measure the influence of qualification level, we will estimate the effect of the difference in the proportion of people with a higher tertiary qualification in the categories of origin ($\zeta_i^{htq}$) and destination ($\zeta_j^{htq}$). We will do the same for the proportions of people with a lower tertiary qualification ($\zeta_i^{ltq}$ and $\zeta_j^{ltq}$), and the proportions of self-employed workers ($\zeta_i^{se}$ and $\zeta_j^{se}$) and people working in the public sector ($\zeta_i^{pub}$ and $\zeta_j^{pub}$). All these different mobility factors will therefore be measured as distances between categories of origin and destination, and the effect of this distance on the expected count in a cell in the mobility table will be estimated and denoted by the coefficients $\beta_1$ to $\beta_5$. Negative effects can be expected in each case: the further apart the categories of origin and destination for these different criteria, the lower the mobility flow between them should be. For economic sector ($\zeta_{ij}^{sa}$), we will use the same method as for macroclass, mesoclass, and microclass reproduction in the constrained and extended models of quasi-perfect mobility: we will estimate a single coefficient to represent reproduction of economic sector. The parameter will therefore take a value of 0 if the respondent belongs to a different economic sector to their parents and a unique value if they belong to the same sector.

# Results

## *Strength and variation of social immobility*

### *Social immobility rates*

Table 4 shows the immobility rates at different PCS levels: macroclass (PCS-6 and PCS-5), mesoclass (PCS-31), and microclass (PCS-159 and PCS-486). Any comparisons between these rates should be made with caution. It should first be noted that the way the classes are constructed means that the more detailed the analysis undertaken, the weaker the immobility becomes. There are two reasons for this. First, people who are in the same microclass as their parents are necessarily also in the same macroclass, whereas the converse is not true. Second, even if there were no relationship between social origin and social position, social immobility is greater when there are fewer categories. If people chose their social position free of influence from their origin (so-called perfect mobility) and there are only five or six different social positions, they have a much higher probability of having the same social position as their mother or father than if there are a hundred different social positions, for example.

In fact, it should be noted that immobility is quite significant when the classification has a limited number of categories. The immobility rate for women in relation to their fathers is 40.3% for PCS-5, 22.6% for PCS-6, 6% for PCS-31, 2.5% for PCS-159, and 1.2% for PCS-486. The large difference in women's immobility rates between PCS-5 and PCS-6 is easily explained. PCS-5 combines lower-level white-collar workers and blue-collar workers, categories that are mainly made up of women and men respectively. Women's significantly higher immobility rate for PCS-5 compared to PCS-6 shows that large numbers of daughters of blue-collar workers become lower-level white-collar workers. A similar pattern can be seen for men when mothers' occupations are used instead of fathers': a much higher immobility rate for PCS-5 (39.6%) compared to PCS-6 (24.7%).

TABLE 4 – ***Immobility rate (%)***

| | | Women | | | Men | | |
|---|---|---|---|---|---|---|---|
| | | Mothers | Fathers | Mothers or Fathers | Mothers | Fathers | Mothers or Fathers |
| Macroclass | PCS-5 | 43.57 | 40.33 | 55.10 | 39.59 | 41.34 | 51.37 |
| Macroclass | PCS-6 | 33.86 | 22.59 | 46.20 | 24.72 | 34.65 | 45.60 |
| Mesoclass | PCS-31 | 11.87 | 6.00 | 15.80 | 6.80 | 11.73 | 15.70 |
| Microclass | PCS-159 | 6.38 | 2.46 | 7.90 | 3.26 | 6.24 | 7.80 |
| *Microclass* | *PCS-486* | *3.38* | *1.20* | *4.20* | *1.50* | *3.57* | *4.50* |

*Note*: 43.57% of women are in the same PCS as their mothers in the five-category classification, 33.86% in the six-category classification, 11.87% in the 31-category classification, 6.38% in the 159-category classification, and 3.38% in the 486-category classification.

*Source*: "Continuous Labor Force Survey," 2013–2019.

At the mesoclass and microclass levels, the differences in immobility rates in relation to mothers and fathers are quite significant. For PCS-159, women's immobility rate in relation to their mothers is 6.4%, whereas immobility in relation to their fathers is 2.5%. For men, immobility in relation to their mothers is 3.3%, and 6.2% in relation to their fathers. Therefore, women more frequently reproduce their mothers' occupations, and men their fathers'. This may be because women follow their mothers' example and men their fathers', or because the gendered segregation of the labor market means that, broadly speaking, people are more likely to have the same occupation as other people of the same sex as them.

To enable comparisons of these different levels of reproduction to be made, we have calculated an immobility indicator for perfect mobility: the proportion of people who would be immobile even if there were no statistical relationship between social origin and social position. It should be noted that, in the sociology of social mobility, perfect mobility is not equivalent to mobility for all individuals, but to statistical independence, i.e., a situation where knowledge of a respondent's social origin does not provide any information about their social position. In the case of total mobility, on the other hand, it would not be possible for respondents to have the same social position as their parents, and there would therefore be a statistical relationship between origin and position, which can be thought of as a form of social determinism: people cannot have the same social position as their parents. Perfect mobility is therefore equivalent to independence and, from a statistical point of view, results from the product of the marginal distributions of all of the variables. From a more sociological perspective, it provides us with information about a structural phenomenon: the proportion of immobile people that may be expected as a result of the size of the different social groups for the respondents and their parents.

Tables 5a and 5b show that the much higher immobility rates obtained with the less detailed classifications can be explained by the structural phenomenon mentioned above: the fewer categories there are, the more likely people are to find themselves in the same category as their parents. These tables compare social immobility and immobility in the case of perfect mobility. Hence, if there were perfect mobility, 34.2% of women would be in the same social position as their mothers for PCS-5, 25.6% for PCS-6, 6.7% for PCS-31, 2.9% for PCS-159, and 1.2% for PCS-486. If immobility in the case of perfect mobility is divided by social immobility, it can be seen that the former represents 79% of women's immobility in relation to their mothers at the macroclass level (PCS-5), compared to just 46% at the microclass level (PCS-159). In more general terms, it can be seen that, the more detailed the level, the lower the level of immobility in the case of perfect mobility compared to social immobility. It therefore seems that the high social immobility rate obtained with the aggregated levels is largely explained by the marginal distributions of social origin and social position, i.e., the numbers and sizes of the different classes for the respondents and their parents.

TABLE 5A – ***Social immobility and immobility in the case of perfect mobility (women)***

| | | Women Mothers | | Women Fathers | |
|---|---|---|---|---|---|
| | | Perfect immobility | Perfect immobility/ Social immobility | Perfect immobility | Perfect immobility/ Social immobility |
| Macroclass | PCS-5 | 34.24 | 78.58 | 28.85 | 71.53 |
| Macroclass | PCS-6 | 25.60 | 75.62 | 14.77 | 65.39 |
| Mesoclass | PCS-31 | 6.74 | 56.73 | 2.77 | 46.18 |
| Microclass | PCS-159 | 2.91 | 45.54 | 0.73 | 29.66 |
| Microclass | PCS-486 | 1.17 | 34.71 | 0.26 | 21.85 |

TABLE 5B – ***Social immobility and immobility in the case of perfect mobility (men)***

| | | Men Mothers | | Men Fathers | |
|---|---|---|---|---|---|
| | | Perfect immobility | Perfect immobility/ Social immobility | Perfect immobility | Perfect immobility/ Social immobility |
| Macroclass | PCS-5 | 28.86 | 72.90 | 25.70 | 62.17 |
| Macroclass | PCS-6 | 15.49 | 62.68 | 19.34 | 55.81 |
| Mesoclass | PCS-31 | 2.79 | 41.10 | 4.23 | 36.04 |
| Microclass | PCS-159 | 0.80 | 24.67 | 1.23 | 19.65 |
| Microclass | PCS-486 | 0.29 | 19.34 | 0.43 | 12.15 |

*Note. Tables 5a and 5b*: Perfect immobility refers to rates of immobility in the case of perfect mobility. It is calculated as the percentage of people who would be immobile if social origin and social position were statistically independent. In columns 2 and 4, the rate of immobility in the case of perfect mobility is divided by the immobility rate in Table 4. If social origin and social position were statistically independent, 34.24% of women would be in the same PCS-5 category as their mothers. This represents 78.58% of the corresponding social immobility observed.
*Source*: "Continuous Labor Force Survey," 2013–2019.

There therefore appears to be considerable social immobility at the PCS-159 level, although this is relatively low compared to macroclass immobility: approximately 8% of men and women are in the same occupations as their mothers or fathers if PCS-159 is used, or 4.2% of women and 4.5% of men if PCS-486 is used. Although this microclass immobility rate is lower in absolute terms, it seems far less explicable in terms of margin sizes, i.e., the sizes of the different classes. We will now use log-linear models to confirm these results: we will examine social fluidity and therefore the importance of immobility within microclasses when margin sizes are controlled for.

*The strength of social reproduction*

Table 6 provides the fit indices for the various constrained and extended models of quasi-perfect mobility (see "Methods and data" section). These models enable social reproduction to be measured by separating the effects of marginal distributions from the association between social origin and social position. The dissimilarity indices are relatively high compared to many social fluidity models. It should be noted, however, that we have had to take into account much larger tables. As the number of classes increases, the number of cells and therefore the number of degrees of freedom increase much more rapidly than the number of parameters. More specifically, the numbers of cells and degrees of freedom increase quadratically, whereas the number of parameters increases linearly. Hence, a mobility table with ten categories has a hundred cells and therefore slightly fewer than a hundred degrees of freedom. The mobility table for PCS-159 has 25,281 cells and over twenty thousand degrees of freedom.

Table 6 – ***Constrained and extended models of quasi-perfect mobility, fit indices***

| | | | Women | | Men | |
|---|---|---|---|---|---|---|
| Model | Description | Index | Mothers | Fathers | Mothers | Fathers |
| M1 | O+D | d | 23.88 | 24.97 | 27.04 | 31.19 |
| M1 | O+D | $L^2$ | 56,682 | 61,432 | 68,816 | 89,026 |
| M1 | O+D | BIC | 86,955 | 100,252 | 104,436 | 135,916 |
| M1 | O+D | ddl | 24,964 | 24,964 | 24,964 | 24,964 |
| M2 | O+D+Macro | d | 22.97 | 23.76 | 26.02 | 28.65 |
| M2 | O+D+Macro | $L^2$ | 51,317 | 55,266 | 60,970 | 72,511 |
| M2 | O+D+Macro | BIC | 81,602 | 94,097 | 96,602 | 119,413 |
| M2 | O+D+Macro | ddl | 24,963 | 24,963 | 24,963 | 24,963 |
| M3 | O+D+Micro | d | 23.09 | 24.63 | 26.45 | 29.73 |
| M3 | O+D+Micro | $L^2$ | 52,509 | 58,306 | 63,541 | 76,324 |
| M3 | O+D+Micro | BIC | 82,794 | 97,138 | 99,173 | 123,225 |
| M3 | O+D+Micro | ddl | 24,963 | 24,963 | 24,963 | 24,963 |
| M4 | O+D+Macro+Meso | d | 22.34 | 23.59 | 25.67 | 28.09 |
| M4 | O+D+Macro+Meso | $L^2$ | 49,751 | 54,308 | 59,443 | 69,706 |

*(Table 6 continued)*

| | | | | | | |
|---|---|---|---|---|---|---|
| M4 | O+D+Macro+Meso | BIC | 80,048 | 93,151 | 95,087 | 116,619 |
| M4 | O+D+Macro+Meso | ddl | 24,962 | 24,962 | 24,962 | 24,962 |
| M5 | O+D+Macro+Meso+Micro | d | 22.2 | 23.48 | 25.37 | 27.29 |
| M5 | O+D+Macro+Meso+Micro | $L^2$ | 48,996 | 53,597 | 58,106 | 66,181 |
| M5 | O+D+Macro+Meso+Micro | BIC | 79,304 | 92,451 | 93,762 | 113,106 |
| M5 | O+D+Macro+Meso+Micro | ddl | 24,961 | 24,961 | 24,961 | 24,961 |

*Note*: O refers to position of origin, D to social position or position of destination. Macro, Meso, and Micro refer to the macroclass, mesoclass, and microclass reproduction coefficients respectively. The macroclass, mesoclass, and microclass levels have 6, 31, and 159 separate occupational areas respectively. As the models are constrained, there is only one coefficient for each level. d is the dissimilarity index, and $L^2$ the chi-square of the likelihood ratio between the observed mobility table and the theoretical table estimated by the model.
The lower the three indices (d, $L^2$, and BIC), the better the fit of the model prediction to the observed table. The BIC adds a penalty according to the complexity of the model.
*Source*: "Continuous Labor Force Survey," 2013–2019.

First, it should be noted that the dissimilarity index varies relatively little when the various parameters measuring the association in the diagonal are added. The $L^2$ fit index shows greater variations, however. This fit index corresponds to the chi-square of the likelihood ratio between the observed mobility table and the theoretical table estimated by the model. This index is minimized by the maximum likelihood estimation method and is therefore the most important index and the one we will comment on to assess the models' fit (Vallet 1991). For the Women-Mothers and Men-Fathers mobility tables, adding the macroclass reproduction coefficient rather than just the microclass reproduction coefficient provides a better fit. Compared to the model of perfect mobility, the $L^2$ index in the Women-Mothers table decreases by 9% when the macroclass coefficient is added and by 7% when the microclass coefficient alone is added. For the Men-Fathers table, the $L^2$ index decreases by 19% and 14% respectively. In all cases, subsequent addition of the mesoclass and microclass coefficients enables the models to be improved. Compared to the model that contains the macroclass coefficient alone, the $L^2$ index for the Women-Mothers table decreases by 3% when the mesoclass coefficient is added and by 4.5% when the mesoclass and microclass coefficients are added. The same decreases are 3.9% and 8.7% respectively for the Men-Fathers table. Greater improvements are therefore obtained in this final example.

The Bayesian information criterion (BIC), which takes the models' parsimony into account, also decreases when the mesoclass and microclass reproduction coefficients are added to the models that only include the macroclass coefficient. The improvement in the models' fit enabled by the addition of these coefficients is therefore justified despite the greater complexity of the models. Taking these more detailed levels into account therefore enables part of the social immobility that is not described using a macroclass-only approach to be taken into account. Table 7, which gives the coefficients estimated in the

models, confirms this finding and enables the relative strength of microclass reproduction to be noted.

Table 7 – ***Constrained and extended models of quasi-perfect mobility, diagonal coefficients***

| | | Women | | Men | |
|---|---|---|---|---|---|
| Model | Description | Mothers | Fathers | Mothers | Fathers |
| M2 | Macroclass immobility | 0.54*** (0.007) | 0.65*** (0.008) | 0.71*** (0.008) | 0.89*** (0.007) |
| M3 | Microclass immobility | 0.92*** (0.013) | 1.3*** (0.02) | 1.55*** (0.018) | 1.78*** (0.013) |
| M4 | Macroclass immobility | 0.41*** (0.008) | 0.54*** (0.009) | 0.58*** (0.009) | 0.71*** (0.008) |
| M4 | Mesoclass immobility | 0.44*** (0.011) | 0.46*** (0.009) | 0.57*** (0.014) | 0.60*** (0.011) |
| M5 | Macroclass immobility | 0.41*** (0.01) | 0.54*** (0.01) | 0.57*** (0.01) | 0.71*** (0.01) |
| M5 | Mesoclass immobility | 0.20*** (0.01) | 0.24*** (0.02) | 0.24*** (0.02) | 0.17*** (0.01) |
| M5 | Microclass immobility | 0.49*** (0.02) | 0.69*** (0.03) | 0.89*** (0.02) | 1.08*** (0.02) |

*Note*: *p < .05, **p <.01, ***p <.001.
Estimated coefficients for four log-linear models on four different mobility tables. Only the coefficients that measure social reproduction at the different PCS aggregation levels are shown. The coefficients are equal to twice the logarithms of the odds ratios for the mobility table estimated by the model. The odds ratios were obtained by calculating the ratio of the following odds: 1) the odds of someone from category of origin A having category A rather than category B as their category of destination, and 2) the odds of someone from category of origin B having category A rather than category B as their category of destination.
The numbers in parentheses are the standard errors associated with the coefficients.
*Source*: "Continuous Labor Force Survey," 2013–2019.

The results for all four social mobility tables are fairly similar. When the microclass reproduction coefficient alone is introduced, it is always greater than the macroclass reproduction coefficient. If the mesoclass coefficient is subsequently introduced into a model that only includes the macroclass coefficient, a substantial, but not total, decrease can be observed in the macroclass coefficient. When the microclass coefficient is introduced, the mesoclass coefficient decreases sharply, but not the macroclass coefficient. Mesoclass reproduction therefore seems largely to be explained by microclass reproduction.

Hence, the coefficients show that microclass immobility appears to be stronger than macroclass immobility when the margin sizes are taken into account. A second important result is that the macroclass coefficient decreases only slightly when the mesoclass and microclass coefficients are added. In the

Women-Mothers table, for example, the coefficient falls from 0.54 to 0.41, a decrease of 24%. This result therefore shows that microclass and macroclass reproduction are two important but partly distinct phenomena.

Finally, a third important result is that, for women, their fathers' macroclass, mesoclass, and microclass reproduction coefficients are consistently higher than their mothers' reproduction coefficients. The greater reproduction of mothers' positions that we observed with social immobility rates could therefore be explained by the marginal effects and therefore by the gendered segmentation of the labor market. This means that women are more likely to be in the same occupations as their mothers not because they are more influenced by their mothers, but because they are the same sex and therefore have access to similar occupations in the labor market.

The models above are constrained models: they have a single parameter for each type of reproduction (macroclass, mesoclass, and microclass). They allow easy comparison of the amount of reproduction at each level. This approach is very limited, however, because it does not take into account the significance of the variability in social reproduction across categories at the same level. This is what we will now examine, using unconstrained models.

### *Variations in occupational mobility*

The fit indices for the unconstrained models are shown in Table 8. In this case too, the decrease in the dissimilarity indices is relatively small, but is greater for the $L^2$ index. For example, adding the mesoclass and microclass reproduction coefficients reduces $L^2$ by 7% for the Women-Mothers table and by 12% for the Men-Fathers table (compared to the model that only includes the macroclass reproduction coefficients). The BIC also decreases consistently when these coefficients are added, despite the large number of them. It does not, however, decrease in every case where the microclass reproduction coefficients are added to the model that already includes the macroclass and mesoclass reproduction coefficients. There are a large number of microclass coefficients (159), which essentially makes the models largely unparsimonious. The decrease in $L^2$ between models 4 and 5 is therefore not sufficient to compensate for the model's lack of parsimony, which suggests that, while the microclass level is important, this is probably not the case for all of the occupations that must have quite variable reproduction levels. This can be seen with the coefficients.

TABLE 8 – ***Extended models of quasi-perfect mobility, fit indices***

| | | | Women | | Men | |
|---|---|---|---|---|---|---|
| Model | Description | Index | Mothers | Fathers | Mothers | Fathers |
| M1 | O+D | d | 23.88 | 24.97 | 27.04 | 31.19 |
| M1 | O+D | $L^2$ | 56,682 | 61,432 | 68,816 | 89,026 |
| M1 | O+D | BIC | 86,955 | 100,252 | 104,436 | 135,916 |
| M1 | O+D | ddl | 24,964 | 24,964 | 24,964 | 24,964 |

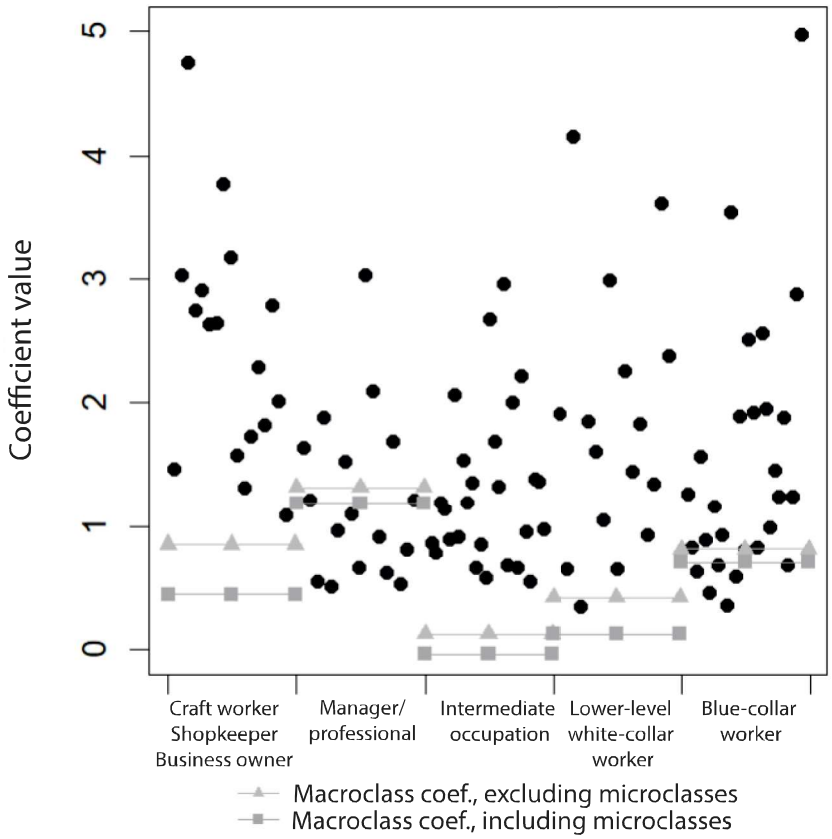
*(Table 8 continued)*

| | | | | | | |
|---|---|---|---|---|---|---|
| M2 | O+D+Macro | d | 21.68 | 22.22 | 22.77 | 25.36 |
| M2 | O+D+Macro | $L^2$ | 47,449 | 51,071 | 50,639 | 62,280 |
| M2 | O+D+Macro | BIC | 77,793 | 89,960 | 86,330 | 109,239 |
| M2 | O+D+Macro | ddl | 24,958 | 24,958 | 24,958 | 24,958 |
| M3 | O+D+Micro | d | 21.72 | 23.74 | 24.97 | 27.57 |
| M3 | O+D+Micro | $L^2$ | 50,349 | 56,692 | 60,799 | 72,731 |
| M3 | O+D+Micro | BIC | 82,478 | 97,368 | 98,272 | 121,473 |
| M3 | O+D+Micro | ddl | 24,805 | 24,805 | 24,805 | 24,805 |
| M4 | O+D+Macro+Meso | d | 20.67 | 21.70 | 22.31 | 24.58 |
| M4 | O+D+Macro+Meso | $L^2$ | 45,119 | 49,530 | 48,999 | 58,595 |
| M4 | O+D+Macro+Meso | BIC | 75,824 | 88,782 | 85,051 | 105,916 |
| M4 | O+D+Macro+Meso | ddl | 24,927 | 24,927 | 24,927 | 24,927 |
| M5 | O+D+Macro+Meso+Micro | d | 19.90 | 21.28 | 21.84 | 23.07 |
| M5 | O+D+Macro+Meso+Micro | $L^2$ | 43,928 | 48,472 | 47,932 | 54,797 |
| M5 | O+D+Macro+Meso+Micro | BIC | 76,488 | 89,579 | 85,836 | 103,970 |
| M5 | O+D+Macro+Meso+Micro | ddl | 24,768 | 24,768 | 24,768 | 24,768 |

*Note*: O refers to position of origin, D to social position or position of destination. Macro, Meso, and Micro refer to the macroclass, mesoclass, and microclass reproduction coefficients respectively. d is the dissimilarity index, and $L^2$ the chi-square of the likelihood ratio between the observed mobility table and the theoretical table estimated by the model.
The lower the three indices (d, $L^2$, and BIC), the better the fit of the model prediction to the observed table. The BIC adds a penalty according to the complexity of the model.
*Source*: "Continuous Labor Force Survey," 2013–2019.

In order to examine the coefficients, we have chosen to represent them graphically and to restrict the graph to the mobility table with the most significant microclass reproduction coefficient, i.e., men in relation to their fathers. The results were similar in the other cases. Figure 1 shows the macroclass and microclass reproduction coefficients obtained in model 5 (in its unconstrained version) for the Men-Fathers table. It shows very significant variability in microclass reproduction within macroclasses: the points do not form a clear pattern to show grouping for any of the macroclasses. There is therefore no pattern of reproduction that could really be said to be characteristic of a macroclass. This means that, when we assess the strength of reproduction in a given macroclass, we are combining very significant differences in reproduction from the different occupations. Hence, for some occupations, microclass reproduction coefficients can be observed that are much higher than the macroclass coefficients, but this is by no means the case for all of them.

FIGURE 1 – ***Extended models of quasi-perfect mobility (Men-Fathers), diagonal coefficients***




*Note*: The graph shows the estimated microclass reproduction coefficients from the unconstrained version of model 5 for the Men-Fathers table. The lines correspond to the macroclass coefficients estimated in the unconstrained version of model 2 (microclasses therefore not included) and model 5 (microclasses included). Only coefficients that are statistically significant at the .05 level are shown. Farmers are not included because the coefficients associated with their microclasses were not statistically significant.
*Source*: "Continuous Labor Force Survey," 2013–2019.

The wide variation in these coefficients shows that a better understanding is needed as to why some occupations have much higher levels of reproduction than others. Our approach, which seeks to identify different dimensions of social mobility, should help with this.

### *The different dimensions of social mobility*

The findings above highlight both the importance of microclass immobility when measuring social fluidity and its variability between occupations. As mentioned above, taking a microclass approach has the twin advantage of allowing occupational reproduction to be measured and of providing a better understanding of all mobility flows through the identification of a range of mobility factors, which we have also described as different dimensions of mobility. It is essential to identify the specific characteristics of occupations that may increase immobility or explain the mobility flows between them. We identified five factors above: an occupation's average remuneration, average qualification level, employment status, employer type, and economic sector. We will use two strategies to highlight the contribution of each of these factors. We will begin by exploring some sections of the mobility tables at the mesoclass level. We will then estimate, on the basis of microclass mobility tables (PCS-159), log-linear models that take these different factors into account.

### *Mesoclasses and mesoclass mobility*

The mesoclass mobility table is a contingency table with 961 cells, making it difficult to investigate, especially if there were four such tables. We will therefore restrict ourselves to two subtables that will illustrate the contribution of the different dimensions. We have decided to present just two combinations of respondents' and parents' sex, selecting those with the highest level of immobility: women in relation to their mothers and men in relation to their fathers. We will also restrict ourselves to two options for study: first, mesoclass reproduction for women in relation to their mothers for managers/professionals only; second, mobility toward manager/professional level for men with fathers in intermediate or lower-level white-collar occupations. This will enable us to illustrate the contributions made by the different social stratification dimensions before going on to examine them more broadly at the microclass level using log-linear models.

Table 9 shows mesoclass reproduction for women in the manager/professional category. The diagonal shows that women who reproduce their mothers' manager/professional position are also more likely to remain in the same mesoclass. Immobility also appears to be particularly strong in some mesoclasses. For example, 29.4% of female managers/professionals whose mothers are managers/professionals in the liberal professions also belong to this subcategory, compared to 15.5% of this subpopulation as a whole and only 8.5% of female managers/professionals whose mothers are managers/professionals in the engineering sector. Reproduction is particularly strong in the "Information, arts, and entertainment occupations" category: 29.4% of female managers/professionals whose mothers belong to this mesoclass also belong to it, compared to 8.5% of the entire subpopulation.

TABLE 9 – ***Mesoclass social mobility table, Managerial/Professional Occupations-Managerial/Professional Occupations (Women-Mothers)***

| | Liberal professions | Public sector managers/ professionals | Academic and scientific occupations | Information, arts, and entertainment occupations | Corporate administrative and commercial managers/ professionals | Engineers | Total |
|---|---|---|---|---|---|---|---|
| Liberal professions | 29.36 | 7.34 | 26.24 | 4.40 | 23.12 | 9.54 | 100 |
| Public sector managers/ professionals | 14.65 | 10.30 | 25.86 | 8.01 | 28.60 | 12.59 | 100 |
| Academic and scientific occupations | 13.73 | 9.02 | 35.76 | 8.08 | 19.84 | 13.57 | 100 |
| Information, arts, and entertainment occupations | 13.90 | 7.49 | 21.93 | 29.41 | 17.65 | 9.63 | 100 |
| Corporate administrative and commercial managers/ professionals | 10.86 | 7.46 | 16.62 | 7.07 | 41.75 | 16.23 | 100 |
| Engineers | 8.54 | 10.98 | 21.34 | 9.15 | 26.83 | 23.17 | 100 |
| Total | 15.48 | 8.57 | 27.14 | 8.48 | 26.69 | 13.64 | 100 |

*Note*: Of the women who, like their mothers, belong to the category "Managers and higher intellectual occupations," 29.36% of those whose mothers are in the category "Liberal professions" also belong to this category.
*Total count*: 3,372 people.
*Source*: "Continuous Labor Force Survey," 2013–2019.

In addition to immobility within mesoclasses, the table shows that, even when women move within a macroclass, they do not move randomly. For example, the mesoclass "Corporate administrative and commercial managers/ professionals" has a reproduction rate of 41.8%. The women who are least likely to belong to this mesoclass are those whose mothers are in the categories "Information, arts, and entertainment occupations" (17.7%) or "Academic and scientific occupations" (19.8%). However, 26.8% of female managers/ professionals whose mothers are engineers and 28.6% of those whose mothers belong to the "Public sector managers/professionals" category are members of this mesoclass. The female managers/professionals who are least likely to be in the "Academic and scientific occupations" category are those whose mothers belong to the "Corporate administrative and commercial managers/ professionals" category (16.6%), whereas 26.2% of those whose mothers are in the liberal professions are in this category.

The table confirms that immobility within macroclasses aggregates reproduction within mesoclasses and different types of mesoclass mobility.

We will now endeavor to examine different types of social mobility between macroclasses. Tables 10a and 10b are smaller mobility tables containing only socially mobile men who belong to the "Managers and higher intellectual occupations" class. The mobility tables enable the conclusion to be drawn that social mobility does not necessarily imply that people leave their backgrounds behind entirely. The differences are not always very marked, but some are substantial and highlight different types of mobility. For example, male managers/professionals whose fathers are members of the "High school and elementary school teachers and similar occupations" category are almost twice as likely to be members of the "Academic and scientific occupations" category (21.9%) than male managers/professionals whose fathers belong to the "Forepersons" category (12.2%). They are also the least likely to be members of the "Corporate administrative and commercial managers/professionals" category (17% compared to 24.4% of this subpopulation). It should also be noted that the sons of technicians and forepersons are the most likely to become engineers.

Table 10A – ***Mesoclass social mobility table, Intellectual Occupations-Managerial/Professional Occupations (Men-Fathers)***

| | Liberal professions | Public sector managers/ professionals | Academic and scientific occupations | Information, arts, and entertainment occupations | Corporate administrative and commercial managers/ professionals | Engineers | Total |
|---|---|---|---|---|---|---|---|
| High school and elementary school teachers | 9.07 | 11.07 | 21.91 | 7.15 | 16.99 | 33.82 | 100 |
| Intermediate health and social work occupations | 12.02 | 12.02 | 13.09 | 7.08 | 25.54 | 30.26 | 100 |
| Public sector intermediate administrative occupations | 5.19 | 16.98 | 15.80 | 5.42 | 21.70 | 34.91 | 100 |
| Corporate intermediate administrative and commercial occupations | 5.82 | 9.59 | 11.64 | 6.97 | 29.43 | 36.56 | 100 |
| Technicians | 5.74 | 7.89 | 13.25 | 5.36 | 25.27 | 42.50 | 100 |
| Forepersons | 5.01 | 10.42 | 12.22 | 4.07 | 26.70 | 41.58 | 100 |
| Total | 6.81 | 10.40 | 14.78 | 5.96 | 24.36 | 37.69 | 100 |

*Note*: Of the men whose category of origin is "Intermediate occupations" and whose category of destination is "Managers and higher intellectual occupations," 9.07% of those whose fathers are in the "High school and elementary school teachers" category belong to the "Liberal professions" category.
*Total count*: 6,009 people.
*Source*: "Continuous Labor Force Survey," 2013–2019.

TABLE 10B – ***Mesoclass social mobility table, Lower-level white-collar workers-Managerial/Professional Occupations (Men-Fathers)***

| | Liberal professions | Public sector managers/ professionals | Academic and scientific occupations | Information, arts, and entertainment occupations | Corporate administrative and commercial managers/ professionals | Engineers | Total |
|---|---|---|---|---|---|---|---|
| Public sector clerical and service workers | 7.46 | 14.35 | 15.21 | 4.73 | 25.97 | 32.28 | 100 |
| Police officers and armed forces personnel | 8.26 | 17.51 | 10.11 | 5.80 | 24.54 | 33.79 | 100 |
| Corporate administrative workers | 9.63 | 8.47 | 12.46 | 5.98 | 27.24 | 36.21 | 100 |
| Retail workers | 9.03 | 5.56 | 13.19 | 1.39 | 30.56 | 40.28 | 100 |
| Service workers | 5.43 | 4.35 | 21.74 | 7.61 | 30.43 | 30.43 | 100 |
| Total | 8.31 | 13.00 | 12.87 | 5.33 | 26.26 | 34.23 | 100 |

*Note*: Of the men whose category of origin is "Lower-level white-collar workers" and whose category of destination is "Managers and higher intellectual occupations," 7.46% of those whose fathers are in the category "Public sector clerical and service workers" belong to the "Liberal professions" category.
*Total count*: 2,346 people.
*Source*: "Continuous Labor Force Survey," 2013–2019.

The results also indicate the importance of employer type. The male managers/professionals whose fathers belong to the "Public sector intermediate administrative occupations" category are much more likely to become "Public sector managers/professionals" (17%) than those whose fathers belong to the "Corporate intermediate administrative and commercial occupations" (9.6%) or "Technicians" (7.9%) categories. These differences are also found among the sons of lower-level white-collar workers. In this mobile subpopulation, 14.4% of male managers/professionals whose fathers are "Public sector clerical and service workers" are "Public sector managers/professionals," compared to 5.6% of the sons of retail workers or 4.4% of the sons of service workers. Men with these social origins who are mobile frequently become "Corporate administrative and commercial managers/professionals": 30.6% and 30.4% from the two categories respectively. By way of contrast, 26% of this mobile subpopulation of male managers/professionals whose fathers are "Public sector clerical and service workers" are "Corporate administrative and commercial managers/professionals."

Hence, even when people change class, they do not cast off their social origins. This mesoclass analysis shows that the various dimensions of mobility

that we have identified play an important role in determining the category to which people move. Analyses of the microclass mobility table will allow this finding to be confirmed.

### *The multidimensionality of social mobility*

The log-linear models used in this paper so far only account for social reproduction as defined as having the same position as one's parents at the different levels of the PCS. The results of the mesoclass analysis show that it is also important to analyze mobility flows between occupations at different positions in the aggregated PCS categories. This is how different types of social mobility and immobility can be identified.

In order to provide a more extensive description of the mobility flows within the PCS-159 mobility table, we will use the models that take reproduction into account for different social stratification dimensions (see the "Social stratification models" subsection in the "Methods and data" section). Tables 11a and 11b show the estimated coefficients and the fit indices for women and men respectively. The constrained and extended quasi-perfect mobility model with macroclass, mesoclass, and microclass reproduction coefficients (model 5) is also included in the table for comparison purposes. Model 6 adds economic status to model 5. As expected, the negative effect shows that the greater the difference between average remuneration for two microclasses, the lower the mobility flows between them. This effect is more significant for women than for men. In addition, adding this parameter for women reduces more significantly the macroclass coefficient that measures reproduction within social classes. The macroclass coefficient for the Women-Mothers and Women-Fathers tables decreases by 39% and 37% respectively. By contrast, economic status seems less decisive for men when explaining reproduction within macroclasses. Hence, adding economic status reduces the macroclass reproduction coefficient in the Men-Mothers table by 14% and in the Men-Fathers table by 15%.

The microclass coefficient, which measures social reproduction within microclasses, also decreases more significantly for women. Hence, in the Women-Mothers and Women-Fathers tables, it decreases by 38% and 20% respectively. The coefficient decreases by 10% in the Men-Mothers table and by 8% in the Men-Fathers table.

TABLE 11A – ***Multidimensional models, women, coefficients***

| | Mothers | | | | | | Fathers | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 |
| Macroclass immobility | 0.41*** | 0.25*** | 0.18*** | 0.15*** | 0.11*** | 0.12*** | 0.54*** | 0.34*** | 0.22*** | 0.16*** | 0.12*** | 0.12*** |
| Mesoclass immobility | 0.20*** | 0.17*** | 0.13*** | 0.13*** | 0.03* | -0.03 | 0.24*** | 0.19*** | 0.14*** | 0.13*** | 0.02 | -0.02 |
| Microclass immobility | 0.49*** | 0.30*** | 0.29*** | 0.25*** | 0.20*** | 0.05** | 0.69*** | 0.55*** | 0.42*** | 0.39*** | 0.30*** | 0.16*** |
| Salary distance | - | -0.69*** | - | -0.22*** | -0.27*** | -0.28*** | - | -0.81*** | | -0.38*** | -0.42*** | -0.43*** |
| Higher tertiary qualification distance | - | - | -0.03*** | -0.03*** | -0.03*** | -0.03*** | - | - | -0.03*** | -0.03*** | -0.03*** | -0.03*** |
| Lower tertiary qualification distance | - | - | -0.01*** | -0.01*** | -0.009*** | -0.006*** | - | - | -0.01*** | -0.01*** | -0.02*** | -0.01*** |
| Self-employment distance | - | - | - | - | -0.004*** | -0.004*** | - | - | - | - | -0.003*** | -0.003*** |
| Public sector distance | - | - | - | - | -0.002*** | -0.002*** | - | - | - | - | -0.002*** | -0.002*** |
| Economic sector immobility | - | - | - | - | - | 0.29*** | - | - | - | - | - | 0.23*** |
| Dissimilarity | 22.20 | 21.29 | 19.08 | 18.97 | 18.50 | 18.39 | 23.48 | 21.63 | 20.27 | 19.80 | 19.40 | 19.42 |
| $L^2$ | 48,996 | 46,496 | 41,435 | 41,247 | 40,075 | 39,330 | 53,597 | 49,729 | 45,097 | 44,451 | 43,292 | 42,990 |
| BIC | 79,304 | 76,816 | 71,767 | 71,591 | 70,441 | 69,708 | 92,451 | 88,596 | 83,975 | 83,340 | 82,205 | 81,915 |
| ddl | 24,961 | 24,960 | 24,959 | 24,958 | 24,956 | 24,955 | 24,961 | 24,960 | 24,959 | 24,958 | 24,956 | 24,955 |

*Note*: *p < .05, **p <.01, ***p <.001. Estimated coefficients for six log-linear models on two different mobility tables. Only the coefficients that measure social reproduction at the different PCS aggregation levels and those associated with the different mobility factors are shown. The lower the three indices (d, $L^2$, and BIC), the better the fit of the model prediction to the observed table. The BIC adds a penalty according to the complexity of the model.

*Source*: "Continuous Labor Force Survey," 2013–2019.

TABLE 11B – ***Multidimensional models, men, coefficients***

| | Mère | | | | | | Père | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 |
| Macroclass immobility | 0.57*** | 0.49*** | 0.38*** | 0.39*** | 0.26*** | 0.23*** | 0.71*** | 0.60*** | 0.44*** | 0.43*** | 0.28*** | 0.26*** |
| Mesoclass immobility | 0.24*** | 0.23*** | 0.16*** | 0.16*** | 0.05** | 0.0002 | 0.17*** | 0.13*** | 0.13*** | 0.13*** | 0.04** | -0.02 |
| Microclass immobility | 0.89*** | 0.80*** | 0.69*** | 0.71*** | 0.60*** | 0.28*** | 1.08*** | 0.99*** | 0.99*** | 0.98*** | 0.87*** | 0.48*** |
| Salary distance | - | -0.47*** | | 0.11*** | 0.06*** | 0.02 | - | -0.51*** | - | -0.11*** | -0.18*** | -0.21*** |
| Higher tertiary qualification distance | - | - | -0.03*** | -0.03*** | -0.03*** | -0.03*** | - | - | -0.03*** | -0.03*** | -0.03*** | -0.03*** |
| Lower tertiary qualification distance | - | - | -0.01*** | -0.01*** | -0.01*** | -0.008*** | - | - | -0.004*** | -0.004** | -0.01*** | -0.01*** |
| Self-employment distance | - | - | - | - | -0.005*** | -0.005*** | - | - | - | - | -0.004*** | -0.004*** |
| Public sector distance | - | - | - | - | -0.002*** | -0.001*** | - | - | - | - | -0.003*** | 0.002*** |
| Economic sector immobility | - | - | - | - | | 0.54*** | - | - | - | - | - | 0.55*** |
| Dissimilarity | 25.37 | 25.01 | 22.45 | 22.45 | 21.92 | 21.57 | 27.29 | 26.53 | 25.27 | 25.19 | 24.68 | 24.42 |
| $L^2$ | 58,106 | 57,201 | 50,844 | 50,805 | 48,201 | 46,155 | 66,18 | 64,794 | 60,574 | 60,520 | 58,123 | 55,671 |
| BIC | 93,762 | 92,868 | 86,523 | 86,495 | 83,915 | 81,880 | 113,106 | 111,730 | 107,522 | 107,480 | 105,107 | 102,666 |
| ddl | 24,961 | 24,960 | 24,959 | 24,958 | 24,956 | 24,955 | 24,961 | 24,960 | 24,959 | 24,958 | 24,956 | 24,955 |

*Note*: *p < .05, **p <.01, ***p <.001. Estimated coefficients for six log-linear models on two different mobility tables. Only the coefficients that measure social reproduction at the different PCS aggregation levels and those associated with the different mobility factors are shown. The lower the three indices (d, $L^2$, and BIC), the better the fit of the model prediction to the observed table. The BIC adds a penalty according to the complexity of the model.
*Source*: "Continuous Labor Force Survey," 2013–2019.

Model 7 uses two variables to add qualification level: the differences in the proportions of people with higher and lower tertiary qualifications between their categories of origin and destination. The results are in line with expectations: the further apart the categories are in terms of average qualification level, the lower the mobility flows between them. This effect is more significant than the economic status effect in explaining macroclass and mesoclass reproduction, as the coefficients measuring immobility in these two cases are consistently lower than in the previous model. In addition, the results from model 8, which on this occasion includes average remuneration and average qualification level, are very similar to the results from model 7, which means that, once qualification level is taken into account, economic status adds very little, whereas the converse is not the case.

Model 9 adds employment status (self-employed) and employer type (public sector), again as the distance between the categories of origin and destination. For both men and women, the addition of these variables makes the mesoclass reproduction coefficient almost zero, which shows that the reproduction of socio-occupational categories that was not explained by microclass reproduction or the previous variables can mainly be explained by these two variables. The macroclass coefficient also decreases significantly: by 27% and 25% in the Women-Mothers and Women-Fathers tables respectively, and by 33% and 35% in the Men-Mothers and Men-Fathers tables. Hence, self-employed status and employer type account for a substantial proportion of the macroclass reproduction that was not explained by the previous variables.

Finally, model 10 adds reproduction by economic sector. This only slightly reduces the macroclass reproduction coefficient and makes the mesoclass coefficients, which were already very low, almost zero. The microclass reproduction coefficient, which had remained relatively high compared to the macroclass and mesoclass coefficients, decreases sharply on this occasion. The value of this coefficient in the Women-Mothers table was 0.20 in model 9, but has fallen to 0.05 here, a quarter of its previous value. The introduction of economic sector reproduction has almost halved the microclass coefficient in the Women-Fathers table (from 0.30 to 0.16). For men, it decreases by 53% in the Men-Mothers table and by 43% in the Men-Fathers table. A large proportion of the occupational heredity measured with the microclass coefficient can therefore be explained by economic sector inheritance as measured by Dares's occupational group classification.

In almost all of the models, the different mobility factors are important in explaining mobility flows and social reproduction at different levels of detail in the PCS. Mesoclass reproduction almost disappeared in the later models, indicating that it could be adequately explained by inclusion of the microclass level and the different mobility factors. When all of the dimensions were included, macroclass reproduction decreased sharply, but it did not disappear. It seems, therefore, that there is more to this separation at the aggregated level of the PCS than the range of variables we have included. The institutionalization of these differences in France, as measured by the PCS, and their inclusion in standard depictions (Deauvieau et al. 2014) may help account for the strength of the divisions between classes. In all cases, microclass reproduction is more significant than macroclass reproduction when all of the mobility factors are included, except for with women in relation to their mothers. Microclass

reproduction therefore appears to be important, with the final model showing that it is largely explained by economic sector reproduction. Finally, it should be noted that we obtained the expected results for the different mobility factors. Although reproduction of self-employed status and employer type had been highlighted in earlier research, the importance of economic sector reproduction had been ignored until now, except in relation to farmers.

*
* *

This article has shown how microclass analysis can enhance our understanding of social mobility. At a more theoretical level, the article combined the microclass approach developed by Weeden and Grusky with the mobility factor approach developed by Erikson and Goldthorpe. This meant changing the perspective on microclasses. Instead of following Weeden and Grusky in viewing microclasses as the principal social determinant, the microclass approach was considered primarily as a methodological approach: the occupational mobility table was used as a starting point to examine mobility flows that combine to form the aggregated results that can be seen in the macroclass table. It is then possible, using Weeden and Grusky's approach, to study occupational reproduction, and, using Erikson and Goldthorpe's framework, to identify different dimensions that underlie all of the mobility flows in the microclass table. As a consequence, we were able to examine the strength of occupational reproduction and to account for variability in it using mobility factors.

The article's first finding is the significance of occupational reproduction: people are not only more likely to remain in the same social class as their parents, but they are also more likely to work in the same occupation. At first glance, this occupational reproduction may seem much less significant than social class reproduction. However, we have shown that this is largely an artifact: the large number of occupations means that people are much less likely to share their parents' occupation than to belong to the same social class as them. Nevertheless, when log-linear models are used and marginal effects, i.e., the size of the different groups, are controlled for, occupational reproduction appears to be more significant than social class reproduction.

Our findings are only partly consistent with those obtained by Weeden and Grusky (2005) and Jonsson et al. (2009), however: they clearly demonstrate the significance of occupational reproduction, but they do not show that microclasses can fully replace macroclasses. In all of the models, the macroclass result was still substantial after mesoclass and microclass reproduction had been accounted for. Hence, significant social reproduction clearly occurs at the macroclass level, which cannot be explained solely by reproduction at more disaggregated levels.

A second important finding is that occupational reproduction is highly variable between occupations. This is another advantage of the microclass approach: the ability to examine this variability in occupational reproduction in order to understand which characteristics of occupations account for the mobility flows between them. This is what we did when we highlighted the different dimensions of social mobility: reproduction of qualification level, economic status, employment status, employer type, and economic sector.

All of these variables proved to be important, but at different levels of the PCS. Hence, economic sector accounts for a large proportion of reproduction between microclasses, while economic status and qualification level explain reproduction at the more aggregated PCS levels. They show that social reproduction at the aggregated level is largely the product of reproduction across the different dimensions.

The final set of findings highlighting the contribution of mobility factors comes from applying Erikson and Goldthorpe's approach to the microclass mobility table. In order to account for mobility flows between occupations, we used standard variables from the sociology of social stratification and social mobility. One important extension of this research would involve making greater use of the sociology of occupations, both for measuring occupations and their characteristics and for developing hypotheses about the mobility flows between them. This would undoubtedly enable better explanations to be found for variations in occupational reproduction by allowing the institutionalization and professionalization processes explored by the sociology of occupations to be taken into account. Hence, we hope that the findings of this research show that greater merging of the sociology of social stratification and the sociology of occupations will in the future lead to improved understanding of the processes underlying social mobility.

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## Appendix

Source

Table 12 – ***Digital object identifiers (DOI)***

| Survey name | Year | DOI |
|---|---|---|
| "Continuous Labor Force Survey" | 2013 | 10.34724/CASD.8.1110.V1 |
| "Continuous Labor Force Survey" | 2014 | 10.34724/CASD.8.1207.V1 |
| "Continuous Labor Force Survey" | 2015 | 10.34724/CASD.8.1859.V2 |
| "Continuous Labor Force Survey" | 2016 | 10.34724/CASD.8.2397.V2 |
| "Continuous Labor Force Survey" | 2017 | 10.34724/CASD.8.2740.V2 |
| "Continuous Labor Force Survey" | 2018 | 10.34724/CASD.8.3060.V2 |
| "Continuous Labor Force Survey" | 2019 | 10.34724/CASD.8.3572.V1 |

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## Résumé

### L'approche de la mobilité sociale par les microclasses : une application sur données françaises

La plupart des recherches classiques en sociologie quantitative ont examiné l'évolution de la mobilité sociale au moyen de schémas de classes sociales ou de nomenclatures professionnelles contenant un nombre limité de catégories, généralement au plus une dizaine. Cet article propose d'analyser la mobilité sociale en France en partant des microclasses, ou professions. Il mobilise les données de l'« Enquête emploi en continu » entre 2013 et 2019. Il montre d'abord que si la reproduction professionnelle apparait comme faible en valeur absolue, elle est en réalité au moins aussi importante que la reproduction des classes sociales lorsque l'on tient compte de la taille des différents groupes sociaux en modélisant la fluidité sociale et en mesurant ainsi l'association par les odds ratios. L'approche en microclasses permet en outre d'identifier les différentes dimensions qui sous-tendent les flux de mobilité entre professions et entre classes sociales. Nous identifions ainsi les rôles respectifs du secteur d'activité, du statut d'emploi, du type d'employeur, des niveaux de rémunération et de diplôme dans la reproduction et la mobilité sociales. Enfin, en examinant séparément l'impact de la profession de la mère et du père sur les destinées des femmes et des hommes, on met en évidence un important effet de structure : les femmes ont une plus grande chance d'avoir la position sociale de leur mère que d'avoir celle de leur père, mais une fois contrôlé l'effet de la ségrégation genrée du marché du travail, l'association entre position d'origine et position sociale est plus forte avec la position du père qu'avec celle de la mère.


**Mots-clés.** Mobilité sociale – Fluidité sociale – Reproduction sociale – Classe sociale – Microclasse


## Zusammenfassung

### Soziale Mobilität durch die Mikroklassen: eine Anwendung auf französische

Daten Die meisten klassischen Forschungen der quantitativen Soziologie haben die Entwicklung der sozialen Mobilität anhand eines Schemas der sozialen Klassen und der Berufsnomenklaturen untersucht, in dem die Anzahl der Kategorien begrenzt war und zehn nicht überschritt. Dieser Artikel möchte die soziale Mobilität in Frankreich analysieren, ausgehend von den Mikroklassen oder Berufen. Er nutzt die Daten der Beschäftigungsumfrage „Emploi en continu" zwischen 2013 und 2019. Damit wird zunächst deutlich, dass zwar die Mikroreproduktion eine wertmässig absolut schwache Aussage liefert, sie jedoch auf dem Makroniveau mindestens genauso wichtig ist, wenn man die Grösse der verschiedenen Sozialgruppen berücksichtigt und die soziale Fluidität modellisiert, mit der die Assoziation der odd ratios gemessen wird. Die methodologische Verwendung der Mikroklassen gestattet darüber hinaus, die verschiedenen Dimensionen zu identifizieren, die den Mobilitätsbewegungen innerhalb der Berufe und zwischen den Sozialklassen zugrunde liegen. Somit identifizieren wir die jeweilige Rolle des Aktivitätsbereichs, des Beschäftigungsstatus, des Arbeitgebertyps, der mittleren Lohn- und Diplomniveaus in der sozialen Reproduktion und Mobilität. Indem wir getrennt die Auswirkung des Berufs von Vater und Mutter auf die Schicksale der Frauen und Männer prüfen, können wir zudem einen wichtigen Struktureffekt hervorheben: die Frauen haben grössere Chancen, die soziale Stellung ihrer Mutter zu erreichen, als die des Vaters; wenn aber die Auswirkung der Gendersegregation im Arbeitsmarkt unter Kontrolle ist, reproduzieren sie öfter die soziale Stellung des Vaters.


**Schlagwörter.** Soziale mobilität – Soziale fluidität – Soziale reproduktion – Soziale klasse – Mikroklasse

**Resumen**

**Abordar la movilidad social mediante las microclases: una aplicación a datos franceses**

La mayoría de las investigaciones clásicas en sociología cuantitativa han examinado la evolución de la movilidad social mediante esquemas de clases sociales o nomenclaturas profesionales que abarcaban un número limitado de categorías, unas diez en general. Este artículo pretende analizar la movilidad social en Francia basándose en las microclases o profesiones. Recurre a los datos de la encuesta "Emploi en continu" entre 2013 y 2019. Muestra primero que si la reproducción micro, en valores absolutos, es mínima, en realidad es al menos tan importante que al nivel macro cuando se tiene en cuenta el tamaño de los distintos grupos sociales, modelizando la fluidez social y midiendo así la asociación mediante las razones de momios. Abordar la movilidad social mediante las microclases permite además identificar las distintas dimensiones que propician los flujos de movilidad entre profesiones y entre clases sociales. Así identificamos los roles respectivos del sector de actividad, del estatuto del empleo, del tipo de patrón, de los niveles de remuneración y de diplomas medianos en la reproducción y la movilidad sociales. Finalmente, el examen por separado del impacto del oficio de la madre y del padre sobre los destinos de las mujeres y de los hombres evidencia un efecto estructural importante: la probabilidad para las mujeres de conseguir el estatus social de su madre es mayor que la de conseguir el del padre, pero una vez controlado el efecto de la segregación de género en el mercado laboral, ellas suelen reproducir el estatus paterno.

**Palabras-claves.** Movilidad social – Fluidez social – Reproducción social – Clase social – Microclase