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Occupational earning potential: a new measure of social hierarchy in Europe and the US

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Social stratification is interested in unequal life chances and assumes the existence of a hierarchy of more or less advantageous occupations. Yet occupations are not easily translated into a linear hierarchical measure. Influential scales combine multiple indicators and lack intuitive interpretation. We therefore present a new scale based on occupations' earnings potential (OEP). OEP measures the median earnings of occupations and expresses them as percentiles of the overall earnings structure: if mechanics earn the national median wage, their OEP is 50. We construct national OEP scales using annual microdata pooled over several decades for Germany, Sweden, Switzerland, the UK and the US. Consistent with the Treiman constant, these national scales are highly correlated over time and across countries, justifying the use of one common OEP scale. When applied to another European dataset, the common OEP scale explains a quarter of the variance in earnings—and works as well for men as women and as well for countries used to construct the scale as for other countries. Moreover, it is associated with the causes (education) and consequences (social mobility) that the theory expects. OEP thereby provides a simple and parsimonious indicator of economic advantage that can be meaningfully interpreted.

Introduction

Social stratification is interested in the unequal distribution of life chances and assumes the existence of a hierarchy, a hierarchy rooted in the division of labour that needs to be made visible. To the extent that some occupations offer more advantageous positions in the division of labour than others—judges rather than janitors, managers rather than machinists—they have been widely used to construct measures of labour market hierarchy. The use of occupations in stratification research has been enhanced by their visibility. Unlike income and wealth, occupations are publicly known to and understood by others. Just by seeing a person at work, we know the occupations of waiters and plumbers, teachers and doctors. People are therefore much less reluctant to disclose their occupation than their income, and occupational information is widely available in public registers and social surveys (Hauser and Warren 1997; Song and Xie 2025).

However, occupations are unwieldy categorical indicators that do not easily translate into a measure of social hierarchy. One solution is to treat stratification as multidimensional and to combine occupations into many micro-classes (Weeden and Grusky 2005; Jonsson et al. 2009), a small number of big social classes, as in the EGP/ESeC classification (Erikson and Goldthorpe 1992, Rose and Harrison, 2010), or into meso-level class schemes (Oesch 2006). Another solution is to align occupations along one single dimension of socio-economic advantage and to create a linear hierarchical scale. Both approaches have advantages and disadvantages, and scholars may legitimately prefer one to the other depending on the research question (Connelly, Gayle and Lambert, 2016).

Our article proposes a measure that fully exploits the scalar approach. Scales have the advantage of simplicity, easy interpretation and parsimony as they transform dozens of occupations into a single continuous variable

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that can be analysed with linear rather than multinomial models. Influential scales include the SIOPS scale based on occupational prestige (Treiman 1977) and the CAMSIS scale based on intermarriage patterns across occupations (Prandy and Lambert 2003). In the European social sciences, the most widely used occupational scale is the International Socio-Economic Index of Occupational Status, more commonly referred to as ISEI (Ganzeboom, De Graaf and Treiman, 1992). ISEI has proved extremely useful for empirical research, but we argue that it can be improved in several regards. Although based on optimal scaling, it is in effect a weighted average of an occupation's education and income. Including both the antecedent (education) and the consequence (income) of an occupation, this synthetic scale was created on a limited survey basis and lacks an intuitive interpretation.

As a result, this article presents a new scale that is a simpler, clearer and more parsimonious alternative to ISEI. Our scale avoids the vague concept of socio-economic status. Instead, it expresses the hierarchical position of an occupation solely based on its earning potential, following earlier work on national scales (Kalmijn 1994; Sobek 1995; De Graaf and Kalmijn 2001).[1] An occupation's earning potential (OEP) is determined by the median earnings of full-time employees in that occupation. We provide an intuitive measure of OEP by expressing its values relative to the earnings distribution of the full-time employed workforce. If the median earnings in a given occupation are identical to the median earnings of the whole workforce (percentile 50), then the value for this occupation's earning potential is 50. By the same logic, an occupation with an OEP score of 75 means that the earning potential of this occupation—measured by its median earnings—is equal to the 75th earnings percentile of the full-time employed workforce. Anchoring OEP values in the overall earnings distribution gives them a meaningful interpretation.

The OEP scale is constructed on the basis of pooled annual data for full-time employed men and women in five distinct Western countries over several decades, using Britain's Understanding Society 1991–2023, Germany's Socio-Economic Panel 1984–2021, Swedish tax register data 1970–2021, Switzerland's Labour Force Survey 1991–2022 and the U.S. Current Population Survey 1970–2023. We first create a OEP scale for each country and decade. The comparison of the correlations of OEP scales between countries and decades allows us to examine the stability in occupational earnings rankings across space and time. As the correlations are high between our country-decade OEPs ($r = 0.81$ across 105 country-decades), we construct a joint cross-country scale of OEP based on the period 2000–2021.

We subject the OEP scale to tests of construct and criterion validity. Construct validity involves testing whether OEP measures the concept it is intended to measure on different data, namely variance in earnings. We do so by comparing the predictive power of OEP for Europe using the 2010 and 2015 European Working Conditions Surveys, and for the United States using the 2010–2016 General Social Survey. The OEP alone explains up to a quarter of the variance in earnings for countries which were used to construct the scale as well as for countries not used. Criterion validity involves testing whether OEP is associated with the causes (education) and consequences (social mobility) that the theory expects. Using yet another data source—the European Social Survey—we show that ascending levels of education are associated with rising occupational earning potential. Finally, we analyse the extent of intergenerational mobility in Europe and the US using OEP and ISEI. While OEP explains more variance in earnings, ISEI shows higher correlations in intergenerational mobility than OEP. The conclusion discusses the importance of expressing results in a metric that lends itself to a substantive sociological interpretation and outlines future avenues of research where OEP could be fruitful.

Theoretical framework

Occupations underpin social stratification

A central source of social inequality is the division of labour which is reflected in the occupational structure. Workers in different occupations control different amounts of productive resources, which places them in asymmetrical social relations with one another. It has therefore been argued that occupation is the single most important indicator of social stratification, 'a measure that is highly associated with one's ability, characteristics, and training, and from which others can infer one's social prestige' (Song and Xie 2025: 356). A person's occupation also tends to delimit future economic prospects. Even for people not in employment such as the unemployed, homemakers or retirees, past occupation provides information about their social and economic standing (Hauser and Warren 1997).

However, occupational classifications distinguish dozens, sometimes hundreds of units, making it necessary to aggregate occupational information into a more parsimonious indicator. While there is a consensus in stratification research to use occupations as the building blocks when measuring people's position in the social hierarchy, it is less clear as to whether stratification should be represented in categorical or continuous terms. Influential scholars have argued that occupations cannot be easily ordered on one single dimension because differences involved are of 'kind as well as level' (Goldthorpe 2010: 316).

At the same time, empirical studies suggest that different measures of class and status—whether categorical or continuous—are highly correlated because they share a common underlying hierarchical dimension (Lambert and Bihagen 2014; Bihagen and Lambert 2018). The same reason explains the strong correlation between different scales of prestige, social status, socio-economic status and social distance. While they may have different theoretical starting points, they do not seem distinct empirically (Meraviglia, Ganzeboom and De Luca 2016; Lambert 2024; Song and Xie 2025). The stability of occupational prestige rankings over time and across countries has been termed the 'Treiman constant' (Treiman 1977; Hout and DiPrete 2006), and this stability seems to apply more broadly to hierarchical measures of occupations.

Going beyond ISEI

In European social sciences, by far the most influential occupation-based scale is ISEI (Ganzeboom, De Graaf and Treiman, 1992; Ganzeboom and Treiman 1996). Between 2000 and 2023, the *European Sociological Review* published no less than 112 articles that used ISEI. While ISEI has proven to be extremely fruitful for research, it also has some problematic features.

Conceptually, ISEI aims to scale occupations in such a way as to best mediate the impact of education on income. Going back to Duncan (1961), ISEI is a kind of latent variable that converts education into income (Ganzeboom, De Graaf and Treiman, 1992). In practical terms, this is equivalent to a weighted sum of mean education and mean income for each occupational group, taking into account the influence of age (Ganzeboom, De Graaf and Treiman, 1992: 12).[2] The weighted sum of education and income leads to values that do not lend themselves to intuitive interpretation. Neither minimum nor maximum values (calibrated to numbers between 16 and 90) nor changes in these values have any concrete meaning. For this reason, Hauser and Warren (1997), as well as Bukodi, Dex and Goldthorpe (2011), argued that synthetic (or composite) scales should be abandoned in favour of disaggregated (or analytical) scales of the occupational hierarchy.

In addition, by including education and income, ISEI integrates both the antecedents of entering an occupation (education) and the consequences of being in a given occupation (income). However, many researchers are interested in how education translates into occupational attainment. By removing education from the construction of the scale, one avoids the problem of including education on both sides of the equation—as an independent variable (education) and as a dependent variable (ISEI).

Empirically, ISEI was built on a database that most users ignore, namely 31 surveys for 16 countries, conducted between 1968 and 1982, only including men (Ganzeboom, De Graaf and Treiman, 1992; Ganzeboom and Treiman 1996). Although the original version is still mostly used by researchers, including the main architect of ISEI (Meraviglia, Ganzeboom and De Luca 2016), there is a new version of ISEI-08 based on men and women using 2002-07 International Social Survey Programme (ISSP) data (Ganzeboom 2010). However, ISEI-08 uses *household* income (along with education) to rank occupations rather than the more obvious alternative of individual labour income.

Focussing on occupations' earning potential

Building on these arguments, we propose an alternative that is simpler, clearer and more parsimonious. Our aim is to innovate in three ways: Conceptually, by ranking occupations according to a single, well-defined criterion, namely earnings. Statistically, by using an intuitive metric that expresses the median earnings of occupations in percentiles of the entire earnings distribution. Empirically, by using extensive annual labour market data for five different Western countries over several decades.

The occupational structure has both a vertical and a horizontal dimension. Although we acknowledge that occupations are multidimensional, our analytical focus is on capturing the hierarchical dimension by using earnings. Earnings reveal the price that employers pay on the labour market for a specific set of tasks and skills in a given context of state regulation and collective bargaining. Earnings are commonly seen as an indicator for 'how individuals are valued socially and economically' (Goldin 2014: 1093). We therefore rank occupations according to their median earnings, as commonly done in the literature on upgrading and polarization of the employment structure (e.g. Wright and Dwyer 2003 , Fernández-Macías and Hurley 2017).

This approach invites the objection that other job characteristics such as skill requirements, work autonomy, promotion prospects or job security also matter for labour market inequalities. While this is certainly the case, earnings are positively correlated with these indicators of job quality (Muñoz de Bustillo et al., 2011; Oesch and Piccitto 2019), and using different hierarchical indicators should lead to similar occupational rankings. Nevertheless, the use of only one indicator and the omission of education may come at an empirical cost. However, it has the advantage of measuring a clearly defined phenomenon, namely earnings potential, which lends itself to a substantive interpretation. What you see is what you get with this analytical scale. This is a deliberate move away from synthetic

scales and the ambiguous notion of 'socio-economic status', which has been measured by education and income (Duncan 1961; Ganzeboom and Treiman 1996), but which in the Weberian tradition is seen as referring to prestige and social recognition (Chan and Goldthorpe 2007; Gidron and Hall 2017).

Of course, depending on the research question, one may legitimately prefer a synthetic scale such as ISEI or an analytical scale that ranks occupations based on years of education, such as the cohort-specific index developed by Song and Xie (2025) for historical US data. For studies interested in lifestyle, consumption and cultural capital, the educational characteristics of occupations may be more important than their earnings. However, in terms of social inequalities, the rewards associated with being in an occupation (earnings) appear to be more consequential than the inputs required to enter that occupation (education).

Given our focus on earnings, one might wonder why we do not use the direct measure of individuals' earnings. This question is all the more relevant given that income measures have come to dominate stratification research (Barone, Hertel and Smallenbroek, 2022) and annual earnings have been shown to be better proxies for lifetime earnings than occupation or education (Brady et al. 2018; Kim, Tamborini and Sakamoto, 2018; Shahbazian and Bihagen 2022). Our response involves a theoretical and practical argument.

Theoretically, we argue that occupations are defined by a set of tasks and skills and therefore come with an earning potential, regardless of whether incumbents fully realize this potential. Even if some lawyers and medical doctors choose to forego the high earnings typical of their profession by working for an NGO, their occupations' earning potential is high. In the same logic, some assemblers and taxi drivers may achieve high earnings through night shifts and week-end work, yet their occupation's earning potential remains limited.

In practice, occupation has the advantage over earnings that it is much easier to measure in surveys. While many people are reluctant to share information about their earnings, this is not the case for occupation. Its public nature is illustrated by the fact that people's occupations used to be listed in cities' telephone directories (Albers and Kappner 2023). Occupations are much less sensitive to the problems of refusal, recall and reliability than income, resulting in much lower item non-response. Furthermore, when respondents have no earned income because they are still in education, working as a homemaker or are retired, occupational aspirations (for young adults outside the labour force) and former occupation (for homemakers and the retired) provide a proxy for people's position in the social hierarchy—and can be expressed by the occupation's earnings potential.

One scale or several scales?

Based on the Treiman constant, our theoretical premise is that the stability in the occupational structure between countries and over time justifies the use of a single OEP scale rather than several time- and country-specific scales. However, the validity of this premise requires testing. It may be preferable to use several scales for the analysis of different countries and/or long time periods. Nevertheless, the vast majority of occupation-based stratification measures—whether categorical class schemes such as EGP and ESeC or continuous scales such as ISEI and SIOPS—have relied on one single measure covering many countries over long periods of time, with the notable exception of historical CAMSIS scales (Lambert et al. 2013) and the cohort scales of occupational percentile ranks (Song and Xie 2025).

There are several practical advantages to using a single scale. The most important is that trends over time and/or differences between countries are much easier to interpret if they are based on the same scale. If different scales are used instead, the results may be unduly influenced by artefactual breaks in the measures. Similarly, the use of different scales with panel data may show changes for individuals in the same occupation simply because the scale's value for that occupation has changed. Moreover, constructing scales separately for each country and each decade is demanding in terms of occupational and earnings data. For these reasons, a single measure seems preferable, and the empirical analysis will tell whether this is justified.

The same argument applies for gender. Since the OEP scale is based on men and women working full-time, it may give more weight to men than to women, who often work part-time. However, we can only compare the positions of men and women in the social hierarchy if we use the same scale, whereas gender-specific scales make it difficult to detect gender inequalities. Again, the empirical analysis will show whether a common OEP scale works equally well for men and women.

Data and methods

The construction logic of the OEP

We determine the earning potential of occupations by expressing their median full-time earnings relative to the earnings of the entire full-time working population. If the median earnings of secretaries in Germany are identical to the median earnings of the German labour force (percentile 50), secretaries are assigned an OEP value of 50. Similarly, an OEP value of 80 for engineers tells us that the median earnings of engineers

exceed those of 80 per cent of full-time employees in Germany (percentile 80). In other words, we plot the median earnings of each occupation on the cumulative distribution function of full-time earnings that is expressed in percentiles. OEP values thus reflect where the median earnings of occupations fall within the overall earnings distribution. Anchoring occupational earnings potential in the earnings distribution allows us to interpret absolute levels and relative changes in OEP in a meaningful way.

Data and measures

We construct the OEP by using data from five affluent Western countries that have different institutions governing the education system, labour market and welfare state: Germany, Sweden, Switzerland, the United Kingdom and the United States. For each country, we select a national database with large samples (N > 10,000) and detailed measures of occupations and individual earnings for as many common years as possible. This leads us to select the German Socio-Economic Panel 1984–2021 (German Institute for Economic Research 2022), Swedish tax registry data 1970–2021 (Statistics Sweden 2022), the Swiss Labour Force Survey 1991–2022 (Swiss Federal Statistical Office 2023), UK Understanding Society (British Household Panel Survey and UK Household Longitudinal Study) 1991–2023 (University of Essex 2023a, b) and the US Current Population Survey 1970–2023 (CPS-ASEC, Flood et al. 2023).

Occupations are our key variable. In a first step, we translate each country's national occupational classification into the corresponding ISCO-88 3-digit codes. This translation makes the comparison across countries and over time possible. It involves converting ISCO-68 and ISCO-08 classifications into ISCO-88, using the *iscogen* module in Stata (Jann 2019). Note, however, that we return in a second step to the full set of occupations at the 4-digit level.

As for earnings, we use the inflation-corrected pretax labour income of men and women aged 25–60 who work full-time (at least 35 hours per week) as employees, thus excluding the self-employed whose incomes owe as much to entrepreneurial logics as to their occupation's earning potential. As Swedish registers have no detailed information on working hours, we exclude individuals whose annual earnings are below 100,000 SEK (approximately 10,000 Euros) and who are therefore unlikely to be in full-time employment. Our aim is to measure the typical earnings of a given occupation, regardless of the age structure of the occupation, rather than the life-time earnings of a given individual.

Despite restricting our analytical sample to full-time employees aged 25–60 with non-missing values for occupation and earnings, the resulting sample sizes are still very large. For the period 2000–2021/3, there are 119,086 valid observations in Germany, 72 million in the Swedish tax registry, 334,083 in Switzerland, 196,167 in the UK and 1,403,380 in the US.

Country-decade OEPs and their correlations over time

We begin by calculating OEP values for occupations coded at the ISCO-88 3-digit level in each decade and country. These country-decade OEP scales allow us to determine the correlation between the OEP scores over time within a given country and between countries in the same decade, as well as between different decades in different countries.

The correlation matrix for the five countries and three decades of the 1990s, 2000s and 2010s is shown in Table 1. The correlation coefficients are consistently high, $r = 0.92$ within countries over time and $r = 0.81$ between country pairs in the same or different decades.[3] This means that the OEP of one country-decade predicts two thirds of the variance of the OEP of another country-decade ($R^2 = 0.66$). The high degree of stability is also confirmed when looking at longer time ranges: The OEP measured in the decade of the 1970s correlates with the OEP measured in the 2020s with $r = 0.75$ in Sweden and with $r = 0.85$ in the US.

Some researchers may take the Treiman constant literally and wonder why the correlations are not closer to one. There are at least three factors at play. First, occupations are prone to measurement error, based on how people describe their jobs and how the underlying algorithms convert job titles into occupational classifications (Kim and Kim 2025). These classifications, in turn, differ across countries and decades, and breaks in classifications can lead to artefactual differences (notably from ISCO-88 to ISCO-08 as well as the crosswalks used in the CPS). Second, none of the surveys used were designed to be representative at the occupational level. Despite the large number of observations, some variance across countries and decades in occupational median earnings will reflect sampling error. Finally, there are certainly real differences between countries and over time that affect the position of occupations in the earnings distribution, reflecting changes in technology and public spending as well as differences in skill requirements, legal regulations, union power and collective bargaining.[4]

Creating one single OEP scale

We interpret the strong correlations as evidence for the Treiman constant and its premise of great stability in the occupational hierarchy across space and time. Importantly, this allows us to construct a single OEP scale rather than having to resort to multiple time- and country-specific OEP scales. Of course, the strong

Table 1 Correlation (Pearson's *r*) in OEP values, across countries and over decades (ISCO-88 3-digit)

	CH. 1990s	CH. 2000s	CH. 2010s	DE. 1990s	DE. 2000s	DE. 2010s	SE. 1990s	SE. 2000s	SE. 2010s	UK. 1990s	UK. 2000s	UK. 2010s	US. 1990s	US. 2000s	US. 2010s
CH. 1990s	1														
CH. 2000s	0.90	1													
CH. 2010s	0.91	0.97	1												
DE. 1990s	0.87	0.87	0.87	1											
DE. 2000s	0.88	0.87	0.87	0.92	1										
DE. 2010s	0.88	0.88	0.88	0.89	0.95	1									
SE. 1990s	0.77	0.76	0.75	0.79	0.79	0.79	1								
SE. 2000s	0.78	0.75	0.78	0.81	0.84	0.85	0.86	1							
SE. 2010s	0.79	0.75	0.77	0.79	0.83	0.82	0.84	0.97	1						
UK. 1990s	0.79	0.78	0.78	0.81	0.84	0.80	0.78	0.85	0.84	1					
UK. 2000s	0.73	0.74	0.74	0.83	0.84	0.80	0.81	0.86	0.77	0.88	1				
UK. 2010s	0.81	0.78	0.80	0.81	0.82	0.81	0.78	0.80	0.79	0.91	0.94	1			
US. 1990s	0.73	0.75	0.73	0.71	0.72	0.74	0.74	0.78	0.77	0.72	0.75	0.75	1		
US. 2000s	0.80	0.79	0.79	0.80	0.81	0.81	0.78	0.85	0.85	0.81	0.85	0.83	0.95	1	
US. 2010s	0.71	0.73	0.71	0.77	0.77	0.76	0.75	0.79	0.77	0.77	0.82	0.79	0.93	0.98	1

similarity of the OEP scales across space and time concerns the occupational earnings hierarchy in *relative* terms. In absolute terms, there is likely to be more variation, with earnings more or less compressed between occupations at different levels, in different countries and over time. In other words, while the OEP ladders are strongly correlated, the rungs of these ladders may be further apart in some countries and periods than in others.

We create a single OEP scale based on data from all five countries for the years 2000/1 to 2021/23, using the same analytical sample of full-time employees aged 25–60. We calculate the OEP values for both ISCO-88 and ISCO-08 at four different levels of occupational information: ISCO 1-digit, 2-digit, 3-digit, 4-digit. This provides maximum flexibility to apply OEP to different datasets. For small occupations with less than 20 valid country earnings observations, we use the OEP value from the less detailed ISCO level.[5]

Once we have calculated the OEP values for each country, we average the OEP values across the five countries (and round them) in order to derive a common OEP scale for ISCO-88 and ISCO-08 each at the level of 1- to 4-digit. Table 2 shows the correlation matrix of all the scales at the level of ISCO-08 3-digit. If we focus on the key correlation between the general OEP scale with the country-specific OEP scales, we obtain high values of between $r = 0.93$ and $r = 0.96$. This suggests that the general and national OEP measure the same phenomenon and that we do not lose any information by using the general OEP scale instead of the national OEP.

Although we measure the earning potential of occupations on the basis of full-time employees only, this does not mean that the indicator cannot be used in analyses of part-time employees (or, for that matter, the self-employed). The UK's Understanding Society has good information on the number of hours normally worked

Table 2 Correlation in OEP values (Pearson's *r*) between country scales for 2000/1–2021/3 (ISCO-08 3-digit)

	General OEP	OEP-CH	OEP-DE	OEP-SE	OEP-UK	OEP-US
General OEP						
OEP-CH	0.95					
OEP-DE	0.96	0.91				
OEP-SE	0.94	0.84	0.89			
OEP-UK	0.94	0.86	0.86	0.86		
OEP-US	0.93	0.84	0.85	0.86	0.86	

per week, which we use to calculate hourly earnings. If we compare our standard OEP-UK scale 2000–2023 using only full-time employees (N = 170,808) with an OEP-UK scale including all employees, full-time and part-time (N = 249,962), we obtain a correlation of r = 0.985. The occupational earnings hierarchy therefore remains unchanged whether or not part-time employees are included.

Table A.1 in the appendix shows the OEP values for ISCO-08 at the 3-digit level, while Figure A.1 in the annex shows the distribution of OEP values at the detailed ISCO-08 4-digit level for more than 500 occupations. A compilation of the OEP values of both the general and the country-specific scales for all occupations (ISCO-88 and ISCO-08, 1–4 digits) can be found on https://osf.io/pr89u/. In terms of statistical software, OEP values can be automatically generated in Stata by the module 'crosswalk' (Jann 2025), which replaces the Stata-module 'iscogen', and in R by the 'DIGCLASS' package (Cimentada et al. 2023).

The ISCO-08 3-digit occupations with the lowest earning potential are domestic cleaners and helpers with an OEP of 11, followed by waiters, market salespersons and ticket cashiers with an OEP of 12. This means that only around ten percent of the full-time workforce earns less than the median worker in these occupations. The occupations with the highest earning potential are managing directors with an OEP of 93, medical doctors with 91, IT managers with 90 and legal professionals with 87. Only about ten percent of all full-time employees are paid more than the median employee in these managerial and professional occupations.

Analytical strategy: testing the scale's validity

We subject the OEP scale to three tests of validity. First, we examine *construct validity* and test on different data whether our OEP scale measures the concept it is intended to measure, namely earnings. We use new data sources with detailed information on occupations and earnings, the European Working Conditions Survey (EWCS) 2010 and 2015 for Europe (Eurofound 2010, 2015) and the General Social Survey (GSS) 2010–2016 for the United States (Davern *et al.*, 2024). We compare the variance explained by the general OEP for countries used to construct the scale with countries not used, and contrast these results with those obtained using ISEI.

We then provide two tests of *criterion validity* and examine whether the OEP scale is associated with the causes—education—and consequences—social mobility—that stratification theories expect it to be linked with. Using yet another data source for Europe, the European Social Survey 2002–2020, and the GSS 2002–2018 for the US,[6] we first calculate the occupational returns to education in terms of OEP and then analyse intergenerational mobility, again comparing the results obtained with OEP and ISEI.

Results

Explained variance in earnings

We first examine the variance in earnings explained by the different scales of the OEP. For this purpose, we pool for Europe the two rounds of the EWCS that have detailed information on earnings and occupations, 2010 and 2015, and for the US the rounds of the GSS 2010, 2012, 2014, 2016. In both datasets, we restrict the analytical sample to employed full-time workers aged 25–60 years. Because of large differences in top earners in EWCS 2010 and EWCS 2015, we set all earnings in the top percentile equivalent to the earnings of the 99th percentile.

Figure 1 compares the explained variance in earnings by the country-specific OEP and the general OEP at different levels of ISCO-08. In Sweden and Switzerland, the national scale explains more variance than the general scale, whereas the general scale fares better in Germany and the UK, with no difference in the US. Overall, the results with the national and general scales are very similar, suggesting that averaging the national OEP scores does not reduce the quality of the measurement of occupational earning potential for these countries.

When comparing the R^2 of the OEP scale measured at different occupational level, we see that the OEP measured at the most detailed ISCO 4-digit level

performs best. The general OEP scale at ISCO-08 4-digit accounts for 33 per cent of variance in earnings in the UK, 25 per cent in Germany and Sweden, 15 per cent in the US and 10 per cent in Switzerland (where there is only one EWCS round with just 396 observations). However, differences between OEP at the 4-digit, 3-digit and 2-digit level are small. Even the two more aggregated scales account for 20–25 per cent of explained variance in earnings in three out of five countries. This is good news because most datasets only report occupational information at the level of ISCO 2- or 3-digit.

Our general OEP scale was calculated using data from the four European countries shown in Figure 1 and the US. Two open questions are whether OEP also works for other European countries and whether OEP preforms as well as ISEI. Figure 2 addresses these questions by comparing the variance in earnings explained by the general OEP and ISEI-08 (both based on ISCO-08 4-digit) between two groups of countries: the five

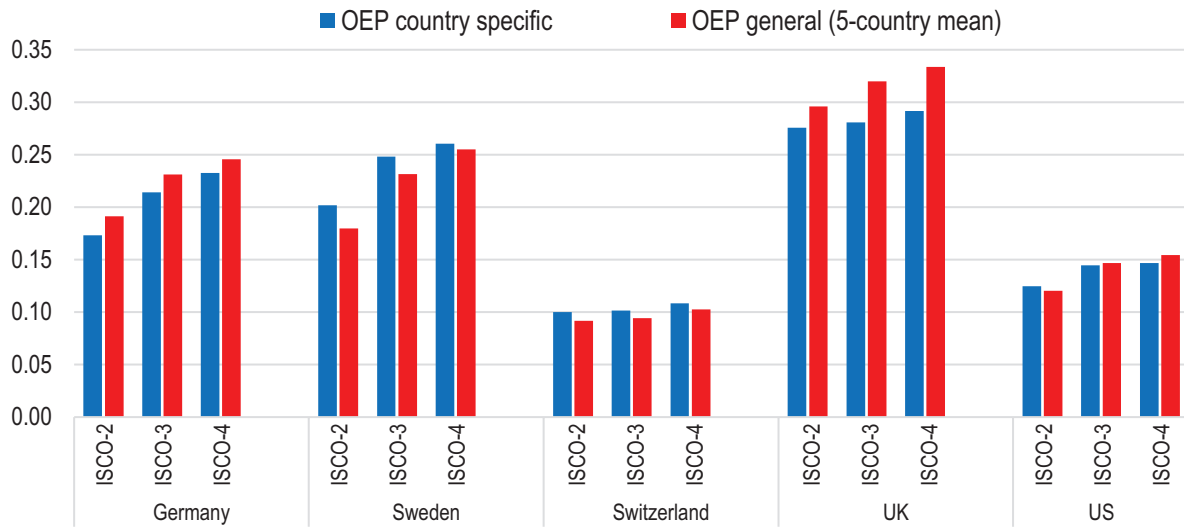

Figure 1 Variance in earnings explained by OEP-scale as measured by R^2

Note: Data: EWCS 2010, 2015 (only 2015 for Switzerland). Analytical sample: employed workers aged 25–60, working full-time (or >35 hours per week). N(Germany): 1895. N(Sweden): 1097. N(Switzerland): 396. N(UK): 1097, N(US): 3308.

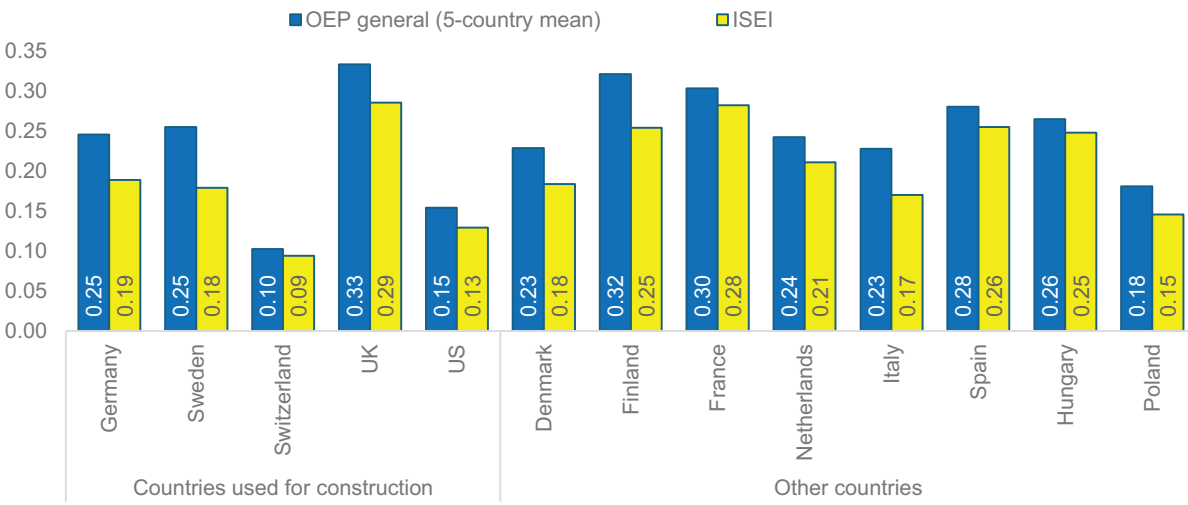

Figure 2 Variance in earnings explained by OEP and ISEI-08 as measured by R^2

Note: Data: EWCS 2010, 2015 (only 2015 for Switzerland). OEP and ISEI are based on ISCO-08 at the 4-digit level.

countries used to construct the OEP and a selection of eight European countries not used, namely two Continental Western European, two Eastern European, two Mediterranean and two Scandinavian. To avoid the impression of cherry-picking, we show the full results for all countries included in the EWCS in the Appendix (see Table A.2).

Figure 2 shows that the OEP explains between 20 and 30 per cent of the variance in earnings for countries not used in the construction of the scale. This means that the general OEP performs as well for European countries used to construct the scale as it does for the other countries. By simply assigning OEP scores to occupations at the 4-digit level, we can explain about a quarter of the variance in earnings between workers across Europe. In terms of construct validity, this suggests that the OEP measures what it is supposed to measure.

Although constructed on the basis of a single indicator, OEP explains more variance in earnings than ISEI, which uses education and income while controlling for age. For the twelve European countries shown in Figure 2, OEP explains 28 per cent of variance compared to 23 per cent for ISEI-08. The advantage of OEP holds both when comparing OEP to ISEI-08 (both measured at ISCO-08) and when comparing OEP to ISEI-88 (both measured at ISCO-88).

For some readers, it may be the similarity rather than the difference between OEP and ISEI that is striking. This similarity is due to the high correlation between OEP and ISEI: In the EWCS data, the correlations are r = 0.90 between OEP and the new ISEI-08 (measured at ISCO-08 4-digit) and r = 0.81 between OEP and the old ISEI (measured at ISCO-88 4-digit). Consistent with the Treiman constant, these strong correlations suggest that while OEP and ISEI may be based on different concepts and data, they measure very similar occupational hierarchies.

Given that women are more likely to work part-time, the question is whether the OEP, which is based on full-time earnings only, works as well for women as it does for men. Figure A.2 in the appendix compares the variance in earnings explained by OEP for full-time employed men and women. These results show that, on average, OEP explains more variance in women's earnings (26 per cent) than in men's (21 per cent). But again, the similarity is striking. When we calculate the full-time earnings distributions for men and women separately to create distinct OEP scales for men and women, we find that these male and female OEP scales are highly correlated at 0.87 in Germany, 0.96 in Sweden, 0.92 in Switzerland, 0.86 in the UK, 0.95 in the US. Occupations thus have very similar positions within the male and female earnings distributions.

Occupational returns to education

We move on to criterion validity by testing whether OEP is associated with a cause that theory expects occupational attainment to be linked with, namely education. The analysis of occupational returns to education shows the added value of using an indicator of occupational advantage that is not based on education. It allows researchers to use education as the independent variable and OEP as the dependent variable, including education on only one side of the equation. We use data from the ESS 2002–2020 (European Social Survey 2020) and the GSS 2002–2018 and limit the sample to full-time workers aged 40–60, thus excluding younger workers who have not yet reached occupational maturity (Trinh 2023; Bihagen, Shahbazian and Kjellsson, 2024). We distinguish five ISCED levels of education: 1 primary, 2 lower secondary, 3 upper secondary, 4 post-secondary, 5–6 tertiary education[7]. We then estimate a linear regression where these categorical levels are interacted with gender, while controlling for age. The equation looks as follows:

$$y\,(OEP) = \beta_1 + \beta_2\,(educ) + \beta_3\ \ (gender) + \beta_4\,(educ * gender) + \beta_5\,(age) + \ \varepsilon$$

Figure 3 shows the predicted values of OEP for men and women by education for the US, three European countries used to construct OEP and two other European countries, the Netherlands and Spain. The selection of countries is inconsequential because the results are very similar, the association between education and OEP looking almost alike in the six countries. Across Europe and the US, workers succeed in transforming higher levels of education into occupations with higher median earnings, the earnings potential of occupations increasing by almost ten percentiles for each additional level.

Figure 3 shows everywhere a gendered pattern, with men having higher OEP at each educational level. While OEP rises linearly with education, the rise is steeper for women than men because women start out at lower levels. In the countries shown in Figure 3, women with only primary education were employed in occupations around the 22–29th earning percentiles as compared to the 34–39th earning percentiles for men. In contrast, the gap closes for tertiary education where women had occupations with an OEP of 55–63 as compared to 63–69 for men.

Mobility in the occupational hierarchy

Stratification research has traditionally placed a strong emphasis on the analysis of social mobility. In a last test of criterion validity, we therefore use the OEP scale to predict intergenerational mobility. For this purpose, we use the first five rounds of the European Social

Survey 2002–2010 in which respondents were asked about their father's and mother's occupation at the age of 14, with occupations being coded at the ISCO-88 4-digit level,[8] and select the same period for the US (GSS 2002–2010). We restrict the analytical sample again to respondents aged 40–60 (and thus in mature occupational positions), which corresponds to the birth cohort 1942–1970.

We begin by comparing the mean OEP of sons and daughters with the mean OEP of fathers and mothers. Figure 4 presents the results for the same six countries as in Figure 3 and shows strong upward absolute social mobility. In all six countries, men born between 1942 and 1970 worked in an occupation with a higher earning potential than their fathers, as did women compared to their mothers. Averaged across our six countries, men in the child generation had an OEP of 51 (compared with 47 for their fathers) and women in the child generation an OEP of 41 (compared with 32 for their mothers). This finding reflects occupational upgrading over the period studied: Sons gained 4 percentiles relative to their fathers and daughters 9 percentiles relative to their mothers. However, despite their catch-up process, women born between 1942 and

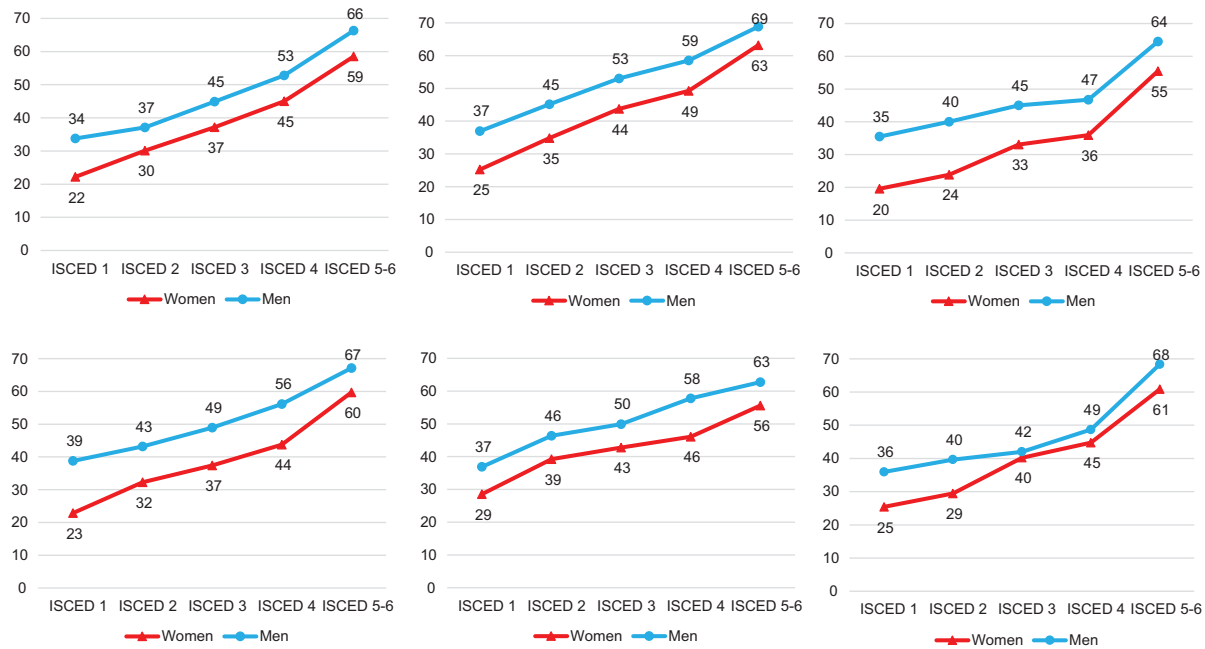

Figure 3 OEP by educational level for employed men and women aged 40–60

Note: Data: ESS 2002–2020, GSS 2002–2018. Employed full-time workers aged 40–60. OEP based on ISCO-08 at the 4-digit level.

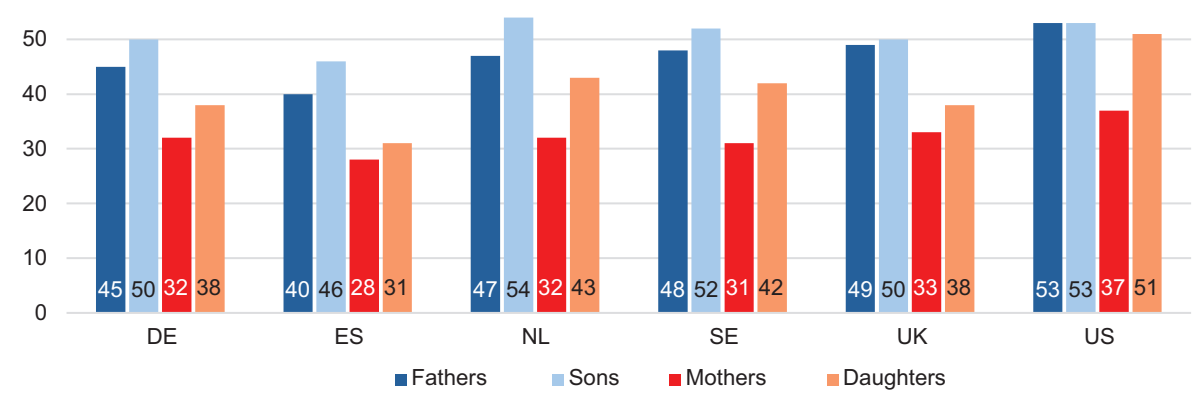

Figure 4 OEP of sons and daughters (aged 40–60) and their parents, Europe and the US 2002–2010

Note: Data: ESS 2002–2010, GSS 2002–2010. All individuals aged 40–60 (born in 1942–1970). OEP based on ISCO-88 4-digit.

1970 continued to be in occupations with much lower earning potential than men of the same birth cohort.

The cross-country comparison shows that the mean OEP was considerably higher in the Netherlands (the country with the highest occupational attainment) than in Spain (the country with the lowest attainment of our six countries), for both the parent and the child generation. In the (child) cohort born in 1942–1970, men had an OEP of 54 in the Netherlands as compared to 46 in Spain, and women in the same birth cohort had an OEP of 43 in the Netherlands as compared to 31 in Spain. This finding reflects the earlier shift towards higher skilled and higher paid occupations in the Dutch labour market. It is noteworthy that in the US, men of the child generation did not make up any ground compared to their fathers (both had an OEP of 53), whereas women of the child generation made significant progress (with an OEP of 51 compared to 37 for their mothers).

In a final analysis, we examine the link between parents' occupational earning potential and children's occupational earning potential. We do so by correlating parents' mean OEP with sons' OEP and daughters' OEP, using the same analytical sample as above (men and women aged 40–60 in ESS 2002-10 and GSS 2002–2010). Since ISEI was developed with the analysis of intergenerational mobility in mind (Ganzeboom and Treiman 1996), we compare the results for OEP with those of ISEI.

Figure 5 shows the correlation coefficients for the same selection of countries as before. The intergenerational correlations are systematically higher for ISEI than OEP. For these six countries, the occupations of parents and sons are correlated at r = 0.23 for OEP and r = 0.33 for ISEI, and the occupations of parents and daughters at r = 0.24 for OEP and r = 0.31 for ISEI. Whether we use ISEI or OEP, the correlations are highest in Spain and Germany, and lowest in the Netherlands, the UK and the US.

The effect size of OEP is not negligible. A correlation coefficient of 0.24 indicates that having parents with an OEP of 77 (university teacher) rather than 27 (refuse worker/garbage collector) is associated with children having occupations whose earning potential is 12 percentiles higher (0.24*50). Our results for the OEP are similar to those of Björklund and Jäntti (1997: 1014) in their comparison of fathers' predicted income based on occupation and sons' actual income, finding intergenerational income elasticities of $r = 0.23$ for Sweden and $r = 0.33$ for the US.

The correlations for ISEI are a third higher than for OEP (although the interpretation of ISEI points is less straightforward). Clearly, the link between parents' occupation and children's occupation is stronger when measured by a combination of education and earnings than when measured by earnings alone. It has been observed before that education is more persistent across generations than earnings at the level of both individuals (Hällsten 2020) and occupations (Hauser and Warren 1997). For this reason, Hauser and Warren (1997) argued in favour of scales that use occupational education rather than occupational earnings. However, it is not clear why the empirical observation that parents are more successful in transmitting education than earnings to their children should lead to the normative statement that the former is a better indicator of the hierarchical position of occupations. We would argue the opposite: To distinguish more or less advantageous positions in the labour market, it seems more relevant to know the output (or benefits) associated with an occupation, namely earnings, rather than the input (or requirements for) going into that occupation, education. This holds regardless of whether earnings or education are more persistent across generations.

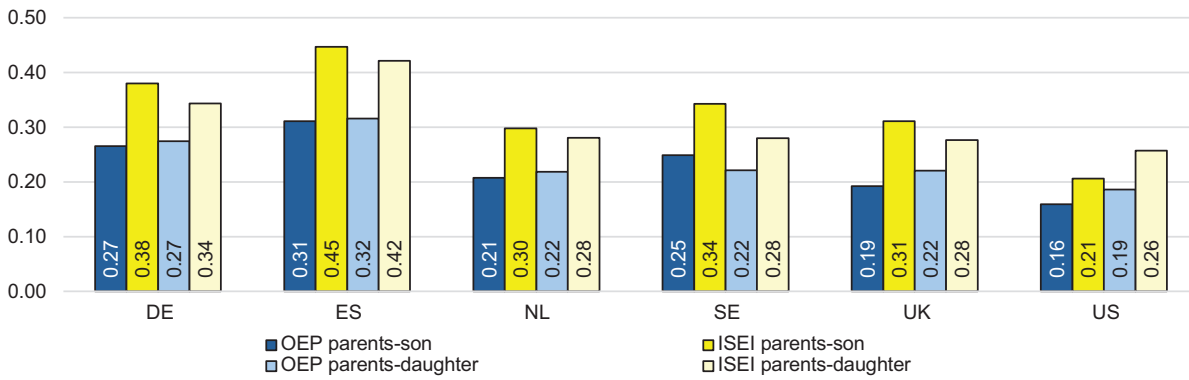

Figure 5 The correlation (Pearson's R) between parents' and children's occupational attainment

Note: Data: ESS 2002–2010, GSS 2002–2010. All individuals aged 40–60 (born in 1942–1970). OEP based on ISCO-88 4-digit

Conclusion

Social stratification is interested in the unequal distribution of life chances and assumes the existence of a hierarchy, a hierarchy rooted in labour markets that needs to be made visible. To this end, this article proposes a new scale that ranks occupations according to their earning potential. While information on people's earnings is sensitive and often difficult to obtain, occupations tend to be publicly known and more readily available.

We measure the hierarchy of occupations' earning potential for five countries over several decades using large annual microdata. The national OEP scales turn out to be very stable over time and space, with high correlations both within countries across decades ($r = 0.92$) and between countries ($r = 0.81$). This allows us to derive a single OEP scale by averaging the five national scales for the period 2000/1–2021/3. When applied to other databases, the common OEP scale explains as much variance in earnings as the national scales. Crucially, the common OEP scale travels well to other European countries, explaining as much variance in earnings for countries used to construct the scale (such as Germany, Sweden and the UK) as for countries not used (such as Denmark, France and Spain), namely about a quarter.

A valid objection relates to the question of which income distribution the common OEP refers to, since it averages the values of five Western countries over the first two decades of the 21st century. Our answer would be that the common OEP is empirically almost indistinguishable from the national OEP, given the correlations of 0.9 and above between the common OEP and the national scales. It is therefore reasonable to assume that the common OEP refers to a Western occupational earnings structure which, once standardized into percentiles, looks similar across countries. However, for ease of communication, researchers studying a particular country—say, Germany or the UK—may still prefer to use that country's national OEP scale. The results will be identical to those obtained with the common OEP, but it will be easier to explain which income structure the national OEP values refer to.[9]

The strong similarity of the occupational earnings hierarchy in space and time is an interesting finding in itself, extending the scope of the Treiman constant beyond occupational prestige. The Treiman constant also explains the strong results for ISEI. Although ISEI is based on surveys conducted between 1968 and 1982, using men only, and ISEI-08 uses household income instead of individual income (for ISSP 2002–2007), it remains an empirically valid measure. ISEI is a synthetic scale using age-corrected education and income, whereas OEP is an analytical scale based on earnings only. Yet these two scales provide similar results because they are highly correlated and reflect the same underlying occupational hierarchy.

In the analysis of intergenerational mobility, OEP shows less intergenerational persistence than ISEI. This is in line with studies showing strong transmission of education between parents and children (Hällsten 2020; Mastekaasa and Birkelund 2023; Strømme and Wiborg 2024). The greater intergenerational fluidity in OEP than in ISEI suggests that the occupations held by parents and children are less similar in terms of their earnings than their education. This reminds us that social mobility is a multidimensional phenomenon that cannot be fully captured by any single measure (Breen, Mood and Jonsson, 2016; Mood 2017). Education, social class, income and wealth are all crucial indicators for the study of social stratification in general and intergenerational mobility in particular.

Not using education in the OEP may come at a cost when analysing outcomes influenced by cultural capital. However, this cost is outweighed by three key advantages of OEP: parsimony, clarity and ease of interpretation. Parsimony refers to the fact that OEP requires only one single input measure, namely earnings. Greater parsimony also translates into greater conceptual clarity as the construction logic of OEP can be explained in one single sentence: OEP measures occupations' median earnings and expresses them as percentiles of the overall earnings structure. There is no need to invoke a concept with multiple interpretations such as socio-economic status, and no need to read a statistical appendix to understand the scale's construction logic. Our results on the link between education and OEP illustrate the clarity of this approach: the earning potential of occupations increases with education for both men and women. While men have higher OEP than women at each educational level, the gender gap is largest at low levels of education and gradually narrows at higher levels of education.

Unlike composite scales, OEP has the key advantage of expressing results in a metric that lends itself to a substantive interpretation. In the last two decades, social scientists have moved beyond the strategy of simply highlighting the sign of a coefficient (positive or negative) and its statistical significance, instead focussing on the effect size and its *social* significance (Bernardi, Chakhaia and Leopold, 2017). By expressing values relative to the percentiles of the overall earnings structure, the OEP has a concrete meaning that can be conveyed in socially significant terms. Two examples illustrate this point. With an OEP of 77, university and higher education teachers have a full-time median earning that exceeds the earnings of 77 per cent of the full-time employed workforce. Alternatively, workers with tertiary education are typically employed in occupations that are 20 percentiles higher in the overall earnings structure than the occupations reached by full-time workers with only upper secondary education.

Finally, we would like to highlight three avenues of research where OEP could be fruitful. One avenue concerns the occupational aspirations of people who are not (yet) in the labour force, typically young people before entering employment or the unemployed before finding a job. In this context, the OEP provides a measure of the financial attractiveness of jobs which young people and jobseekers aspire to. A second avenue concerns the study of careers and *intragenerational* mobility. Many surveys provide retrospective data on respondents' previous occupations, but rarely on their previous earnings. By assigning occupations their typical earning potential, OEP makes it possible to identify upward, downward and sideways labour market trajectories over the life course. A third avenue concerns *intergenerational* mobility. People know the occupation of their parents and grandparents, sisters and brothers, but rarely their earnings. In the absence of earnings, the OEP provides hierarchical measures of people's social origin and social destination. Thanks to its linear metric, OEP allows for easier statistical analysis—and interpretation—of social mobility than the 'complex world of log-linear modelling' (Blanden 2013: 44).

Of course, for many research questions, scholars may prefer to use categorical class measures or scales that reflect differences in education, prestige or intermarriage patterns. In this sense, the OEP is simply a new addition to the toolbox of social stratification research in the Western world. It may prove helpful as a simple, clear and parsimonious measure of life chances that can be meaningfully interpreted.

Notes

1 Earlier national scales for the UK (Kalmijn 1994) and the Netherlands (De Graaf and Kalmijn 2001) also determined the economic status of occupations based on their labour income. However, by expressing values as z-scores ranging from −2 to 2, these scales lack an intuitive interpretation. In the US, a historical scale based on median percentiles, called the Occupational Income Score, was constructed using the 1950 census to approximate incomes in older censuses going back to 1850 (Sobek 1995; for a critique, see Saavedra and Twinam 2020).

2 In technical terms, ISEI scores are derived using optimal scaling techniques, that is, the scaling of the detailed occupational categories that minimizes the direct effect of education on income and maximizes the indirect effect of education on income through occupation, controlling for age.

3 Respondents in the German (SOEP) and British (Understanding Society) panels can span two decades. Limiting the earnings observations to a single decade per respondent leaves the correlations between the 1990s, 2000s and 2010s basically unchanged. Rounded to one decimal place, all correlations are r = 0.9 in both countries.

4 Among the few occupations in Sweden that have markedly increased their OEP scores in recent decades are for instance mining occupations. This increase is probably due to technological progress, which has made mining less labour-intensive, but more capital- and skill-intensive. On the other hand, there has been a marked decline in Sweden in the OEP of various teaching occupations over the last fifty years.

5 This means that we use information from ISCO 1-digit for ISCO 2-digit, from ISCO 2-digit for ISCO 3-digit or from ISCO 3-digit for ISCO 4-digit. For instance, if there are not enough observations at the ISCO 3-digit level for '234 Special education teaching professionals', the OEP score will be imputed from the ISCO 2-digit level of '23 Teaching professionals'.

6 At the time of writing, ISCO-08 codes for occupations were only available up to 2018 in the GSS.

7 ESS includes a harmonized educational variable of ISCED. In GSS, we construct ISCED as follows: 1: less than 8th grade, 2: 8th-11th grade, 3: 12th grade (high school diploma), 4: 1–3 years of college, 5: at least 4 years of college.

8 The detailed coding of parental occupations was carried out by Harry Ganzeboom and collaborators at the Free University of Amsterdam and is only available for the first five rounds of the ESS, 2002–2010. Our analysis only includes the OEP of daughters for whom we also observe an OEP for their mothers, and only sons for whom we observe an OEP for their fathers.

9 For this reason, all national OEP scales are available in both ISCO-88 and ISCO-08, from the 1-digit to the 4-digit level, on this website: https://osf.io/pr89u/

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Data availability statement

The data underlying this article were generated at large-scale facilities and can be accessed from the references below. All the analyses can be replicated by using the Stata codes that are freely available on https://osf.io/pr89u/

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Appendix

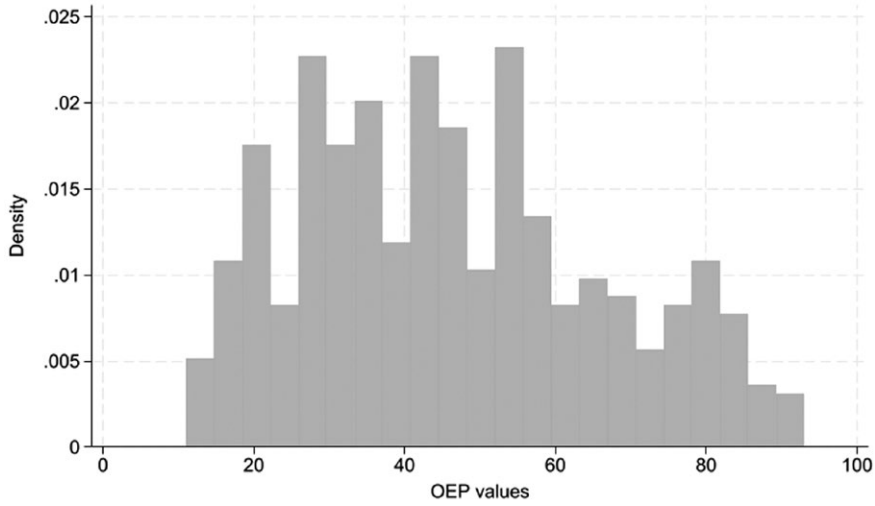

Figure A.1 The distribution of the OEP-values of occupations (measured at the ISCO-08 4-digit level)

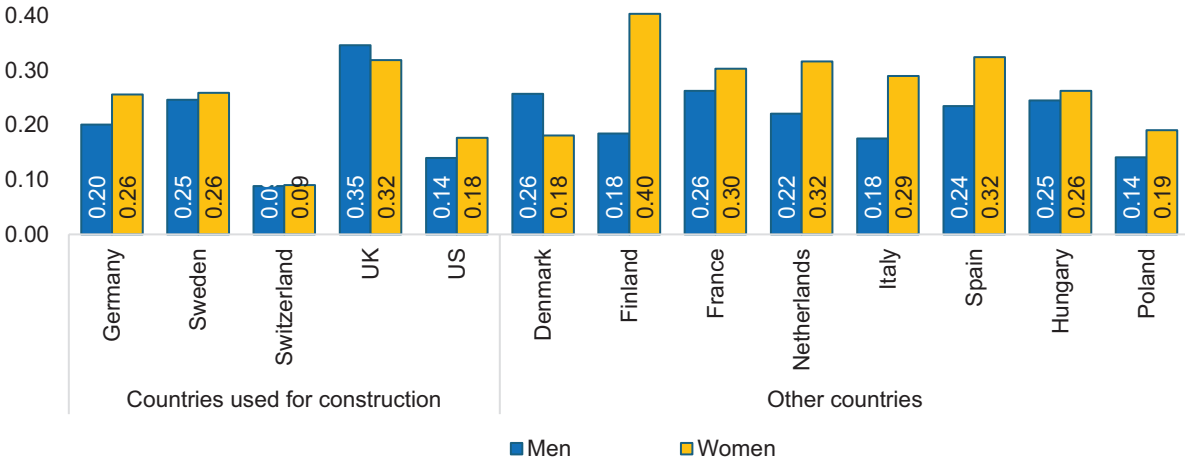

Figure A.2 Variance in earnings explained by OEP for men and women separately (R^2)
Note: Data: EWCS 2010, 2015 (only 2015 for Switzerland). GSS 2010–2016 for the US. OEP is based on ISCO-08 4-digit.

Table A.1 OEP-values of occupations (ISCO-08 3-digit level)

ISCO-08	*ISCO label*	OEP value
000	**Armed forces occupations**	**68**
010	Commissioned armed forces officers	78
011	Commissioned armed forces officers	78
020	Non-commissioned armed forces officers	67
021	Non-commissioned armed forces officers	67
030	Armed forces occupations, other ranks	63
031	Armed forces occupations, other ranks	62
100	**Managers**	**81**
110	Chief executives, senior officials and legislators	87
111	Legislators and senior officials	85
112	Managing directors and chief executives	91
120	Administrative and commercial managers	84
121	Business services and administration managers	83
122	Sales, marketing and development managers	86
130	Production and specialized services managers	79
131	Production managers in agriculture, forestry and fisheries	70
132	Manufacturing, mining, construction and distribution managers	77
133	Information and communications technology services managers	90
134	Professional services managers	72
140	Hospitality, retail and other services managers	52
141	Hotel and restaurant managers	40
142	Retail and wholesale trade managers	52
143	Other services managers	64
200	**Professionals**	**71**
210	Science and engineering professionals	79
211	Physical and earth science professionals	78
212	Mathematicians, actuaries and statisticians	84
213	Life science professionals	70
214	Engineering professionals (excluding electrotechnology)	80
215	Electrotechnology engineers	84
216	Architects, planners, surveyors and designers	67
220	Health professionals	73
221	Medical doctors	91
222	Nursing and midwifery professionals	63
223	Traditional and complementary medicine professionals	63
224	Paramedical practitioners	73
225	Veterinarians	79
226	Other health professionals	58
230	Teaching professionals	62
231	University and higher education teachers	77
232	Vocational education teachers	67
233	Secondary education teachers	67
234	Primary school and early childhood teachers	47
235	Other teaching professionals	59
240	Business and administration professionals	74
241	Finance professionals	80

ISCO-08	*ISCO label*	**OEP value**
242	Administration professionals	70
243	Sales, marketing and public relations professionals	76
250	Information and communications technology professionals	80
251	Software and applications developers and analysts	81
252	Database and network professionals	77
260	Legal, social and cultural professionals	65
261	Legal professionals	87
262	Librarians, archivists and curators	51
263	Social and religious professionals	58
264	Authors, journalists and linguists	67
265	Creative and performing artists	58
300	**Technicians and associate professionals**	**55**
310	Science and engineering associate professionals	63
311	Physical and engineering science technicians	63
312	Mining, manufacturing and construction supervisors	64
313	Process control technicians	56
314	Life science technicians and related associate professionals	51
315	Ship and aircraft controllers and technicians	85
320	Health associate professionals	43
321	Medical and pharmaceutical technicians	44
322	Nursing and midwifery associate professionals	42
323	Traditional and complementary medicine associate professionals	38
324	Veterinary technicians and assistants	31
325	Other health associate professionals	36
330	Business and administration associate professionals	58
331	Financial and mathematical associate professionals	57
332	Sales and purchasing agents and brokers	65
333	Business services agents	59
334	Administrative and specialized secretaries	50
335	Government regulatory associate professionals	62
340	Legal, social, cultural and related associate professionals	40
341	Legal, social and religious associate professionals	45
342	Sports and fitness workers	45
343	Artistic, cultural and culinary associate professionals	41
350	Information and communications technicians	64
351	Information and communications technology operations and user support technicians	65
352	Telecommunications and broadcasting technicians	53
400	**Clerical support workers**	**38**
410	General and keyboard clerks	36
411	General office clerks	41
412	Secretaries (general)	35
413	Keyboard operators	26
420	Customer services clerks	37
421	Tellers, money collectors and related clerks	43
422	Client information workers	27
430	Numerical and material recording clerks	40
431	Numerical clerks	46

ISCO-08	*ISCO label*	OEP value
432	Material recording and transport clerks	38
440	Other clerical support workers	37
441	Other clerical support workers	37
500	**Services and sales workers**	**23**
510	Personal services workers	21
511	Travel attendants, conductors and guides	41
512	Cooks	21
513	Waiters and bartenders	12
514	Hairdressers, beauticians and related workers	13
515	Building and housekeeping supervisors	30
516	Other personal services workers	25
520	Sales workers	22
521	Street and market salespersons	17
522	Shop salespersons	24
523	Cashiers and ticket clerks	12
524	Other sales workers	19
530	Personal care workers	18
531	Child care workers and teachers' aides	13
532	Personal care workers in health services	20
540	Protective services workers	50
541	Protective services workers	50
600	**Skilled agricultural, forestry and fishery workers**	**22**
610	Market-oriented skilled agricultural workers	26
611	Market gardeners and crop growers	27
612	Animal producers	21
613	Mixed crop and animal producers	28
620	Market-oriented skilled forestry, fishery and hunting workers	32
621	Forestry and related workers	32
622	Fishery workers, hunters and trappers	34
630	Subsistence farmers, fishers, hunters and gatherers	21
631	Subsistence crop farmers	21
632	Subsistence livestock farmers	21
633	Subsistence mixed crop and livestock farmers	21
634	Subsistence fishers, hunters, trappers and gatherers	21
700	**Craft and related trades workers**	**43**
710	Building and related trades workers (excluding electricians)	40
711	Building frame and related trades workers	42
712	Building finishers and related trades workers	45
713	Painters, building structure cleaners and related trades workers	33
720	Metal, machinery and related trades workers	46
721	Sheet and structural metal workers, moulders and welders, and related workers	42
722	Blacksmiths, toolmakers and related trades workers	44
723	Machinery mechanics and repairers	49
730	Handicraft and printing workers	40
731	Handicraft workers	35
732	Printing trades workers	44
740	Electrical and electronics trades workers	53

ISCO-08	*ISCO label*	**OEP value**
741	Electrical equipment installers and repairers	54
742	Electronics and telecommunications installers and repairers	50
750	Food processing, woodworking, garment and other craft and related trades workers	28
751	Food processing and related trades workers	25
752	Wood treaters, cabinet-makers and related trades workers	32
753	Garment and related trades workers	21
754	Other craft and related workers	37
800	**Plant and machine operators and assemblers**	**37**
810	Stationary plant and machine operators	34
811	Mining and mineral processing plant operators	57
812	Metal processing and finishing plant operators	44
813	Chemical and photographic products plant and machine operators	50
814	Rubber, plastic and paper products machine operators	33
815	Textile, fur and leather products machine operators	16
816	Food and related products machine operators	28
817	Wood processing and papermaking plant operators	39
818	Other stationary plant and machine operators	31
820	Assemblers	31
821	Assemblers	31
830	Drivers and mobile plant operators	39
831	Locomotive engine drivers and related workers	66
832	Car, van and motorcycle drivers	25
833	Heavy truck and bus drivers	40
834	Mobile plant operators	39
835	Ships' deck crews and related workers	52
900	**Elementary occupations**	**19**
910	Cleaners and helpers	11
911	Domestic, hotel and office cleaners and helpers	11
912	Vehicle, window, laundry and other hand cleaning workers	16
920	Agricultural, forestry and fishery labourers	16
921	Agricultural, forestry and fishery labourers	16
930	Labourers in mining, construction, manufacturing and transport	26
931	Mining and construction labourers	34
932	Manufacturing labourers	21
933	Transport and storage labourers	32
940	Food preparation assistants	14
941	Food preparation assistants	14
950	Street and related sales and services workers	18
951	Street and related services workers	18
952	Street vendors (excluding food)	18
960	Refuse workers and other elementary workers	27
961	Refuse workers	26
962	Other elementary workers	25

Table A.2 Variance in earnings (R^2) explained by OEP and ISEI-08

Country	OEP	ISEI-08
Austria	0.24	0.23
Belgium	0.21	0.18
Bulgaria	0.15	0.12
Croatia	0.31	0.31
Cyprus	0.20	0.15
Czech Republic	0.24	0.19
Denmark	0.23	0.18
Estonia	0.25	0.21
Finland	0.32	0.25
France	0.30	0.28
Germany	0.25	0.19
Greece	0.22	0.18
Hungary	0.26	0.25
Ireland	0.24	0.22
Italy	0.23	0.17
Latvia	0.23	0.20
Lithuania	0.08	0.06
Luxembourg	0.29	0.32
Macedonia	0.21	0.21
Malta	0.33	0.33
Montenegro	0.14	0.13
Netherlands	0.24	0.21
Norway	0.25	0.20
Poland	0.18	0.15
Portugal	0.27	0.26
Romania	0.29	0.28
Slovakia	0.23	0.20
Slovenia	0.25	0.27
Spain	0.28	0.26
Sweden	0.25	0.18
Switzerland	0.10	0.09
Turkey	0.23	0.26
United Kingdom	0.33	0.29
United States	0.15	0.13

Data: EWCS 2010, 2015 (only 2015 for Switzerland); GSS 2010–2016 for the US; Albania, Kosovo and Serbia excluded because of small samples.
Note: OEP and ISEI-08 are measured at ISCO-08 4-digit level.