



Occupational Earning Potential

A new measure of social hierarchy applied to Europe

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Occupational Earning Potential

A new measure of social hierarchy applied to Europe

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Abstract

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 countries used to construct the scale as for countries not used. Moreover, it is associated with the causes (education) and consequences (social mobility) that the theory expects. OEP is a simple and parsimonious indicator of economic advantage that can be meaningfully interpreted, providing a useful tool for stratification research.

Keywords: Occupations, social class, earnings, education, social mobility

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Contents

Executive summary	1
1 Introduction	2
2 Theoretical Framework	3
2.1 Occupations underpin social stratification	3
2.2 Going beyond ISEI	4
2.3 Focussing on occupations' earning potential.....	4
2.4 One scale or several scales?.....	5
3 Data and Methods.....	6
3.1 The construction logic of the OEP	6
3.2 Data and measures	6
3.3 Country-decade OEPs and their correlations over time	7
3.4 Creating one single OEP scale	9
3.5 Analytical strategy: testing the scale's validity	9
4 Results	10
4.1 Explained variance in earnings.....	10
4.2 Occupational returns to education	12
4.3 Mobility in the occupational hierarchy	14
5 Conclusion	15
References.....	18
List of figures	21
List of tables.....	22
Appendix.....	23

Executive summary

Social stratification is interested in the unequal distribution of life chances and assumes the existence of a hierarchy, rooted in the division of labour. To the extent that some occupations offer more advantageous positions in the division of labour than others, 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. 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.

However, occupations do not easily translate into a measure of social hierarchy. One solution is to treat stratification as multidimensional and to aggregate occupations into social classes. Another solution is to align occupations along one single dimension of socio-economic advantage and to create a linear hierarchical scale. This paper 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 that can be analysed with linear rather than multinomial models.

Our scale expresses the hierarchical position of an occupation on the basis of its earning potential. 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.

The OEP scale is constructed on the basis of pooled annual data for full-time employed men and women in five 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. As the OEP scales are strongly correlated between countries and across decades, we construct a joint cross-country scale of OEP based on the period 2000-2021/3.

We submit 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 across European countries, using the 2010 and 2015 European Working Conditions Surveys. The OEP alone explains a quarter of the variance in earnings for European countries which were used to construct the scale as well as for European 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. The conclusion discusses the importance of showing results in a metric that lends itself to a substantive social interpretation and outlines future avenues of research where OEP could be helpful.

1 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 2023).

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 aggregate occupations into a large number of micro-classes (Weeden and Grusky 2005, Jonsson et al. 2009) or a small number of big social classes, as in the EGP class scheme and its European version ESeC (Erikson and Goldthorpe 1992, Rose and Harrison 2010). 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 et al. 2016).

Our paper 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 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 et al. 1992). ISEI has proved extremely useful for empirical research, but we argue it can be enhanced 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 paper 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 on the basis of its earning potential, following earlier work on national scales (Sobek 1995, Kalmijn 1994, De Graaf and Kalmijn 2011).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.

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).

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 harmonised 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 correlation coefficients are high between our harmonized country-decade OEPs ($r=0.82$ across 105 country-decades), we construct a joint cross-country scale of OEP based on the period 2000-2021.

We submit 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 across European countries, using the 2010 and 2015 European Working Conditions Surveys. The OEP alone explains 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 compare the extent of intergenerational mobility in Europe 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.

2 Theoretical Framework

2.1 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 & Xie 2023: 2). 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 (Bihagen and Lambert 2018, Lambert and Bihagen 2014). 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 (Lambert 2024), they do not seem distinct empirically (Meraviglia et al. 2016, Song and Xie 2023). The stability of occupational prestige rankings over time and across countries has been termed the “Treiman constant” (Hout and DiPrete 2006, Treiman 1977), and this stability seems to apply more broadly to hierarchical measures of occupations.

2.2 Going beyond ISEI

In European social sciences, by far the most influential occupation-based scale is ISEI (Ganzeboom et al. 1992, Ganzeboom and Treiman 1996). Between 2000 and 2023, the European Sociological Review published no less than 108 articles – an average of 5 per year – that either used or referenced 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 et al. 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 et al. 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, 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 et al. 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.

2.3 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. While the former is associated with skills, power and status (Tåhlin 2007), the latter reflects differences in task content (Fernandez-Macias & Bisello 2022) and work logic (Oesch 2006). Although we acknowledge that occupations are multidimensional, our analytical focus is on capturing only the hierarchical dimension. We do so by using earnings. Earnings reveal the price that employers pay on the labour market for a systematic bundle of tasks and skills in a given context of state regulation and collective bargaining. 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, Fernandez-Macias and Hurley 2017).

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

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). The use of different hierarchical indicators should therefore lead to similar occupational rankings.

Using only one indicator and omitting 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. With this analytical scale, what you see is what you get. 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 – and use the cohort-specific index developed by Song and Xie (2023) for historical US data, 1850-2018. Particularly 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 et al. 2022) and annual earnings have been shown to be better proxies for lifetime earnings than occupation or education (Brady et. al. 2018, Kim et. al. 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 realise this potential. Even if some lawyers and medical doctors decide to forego the high earnings typical of their profession by working for an NGO, the occupation’s earning potential is high. Similarly, while some assemblers and truck drivers may achieve high earnings through night shifts and week-end work, the occupation’s earning potential remains limited. Our indicator therefore captures earning potential rather than realised earnings.

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 telephone books. 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.

2.4 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.³ A study of historical occupational income scores in the US finds substantial changes over time (Saavedra and Twinam 2020), but the time frame is much longer than in our analysis (1850-2000).

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 exactly 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. Our empirical analysis will show whether a common OEP scale works equally well for men and women.

3 Data and Methods

3.1 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 as a whole (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.

3.2 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 & UK Household Longitudinal Study) 1991-2023 (University of Essex 2023a, b) and the US Current Population Survey 1970-2023 (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. Among others, it involves converting ISCO-68 and ISCO-08 classifications into ISCO-88, using the *iscogen* module in Stata (Jann 2019). Making sure that each

³ Two notable exceptions are the historical CAMSIS scales (Lambert et. al. 2013) and the cohort scales of occupational percentile ranks (Song and Xie 2023).

occupation has at least 20 valid observations in each country and decade, we create 76 harmonized occupations across the five countries that span all the decades. 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 pre-tax 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. Note that our goal is to calculate the typical earnings of a given occupation rather than the life-time earnings of a given individual. Some occupations such as athletes and flight attendants are dominated by young workers, while others, such as judges and corporate managers, are dominated by older workers. Our aim is to measure as precisely as possible the median full-time earnings of an occupation at a given point in time, regardless of the age structure of the occupation.

Although we restrict our analysis to full-time employees aged 25-60 with non-missing values for occupation and earnings, we still have very large analytical samples. 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, 170,808 in the UK and 1,403,380 in the US.

3.3 Country-decade OEPs and their correlations over time

We begin by calculating OEP values for 76 harmonised occupations 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 a given decade, as well as between different decades in different countries.

The correlation matrix for the three decades of the 1990s, 2000s and 2010s within and between the five countries is shown in Table 1. The correlation coefficients are consistently high, fluctuating around $r=0.90$ within countries over time and $r=0.80$ between country pairs in the same or different decades. No correlation coefficient is lower than $r=0.72$, with the correlation averaged over all 105 country-decade pairs being $r=0.82$. This means that the OEP of one country-decade predicts two thirds of the variance of the OEP of another country-decade ($r^2=0.68$). 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 correlates with $r=0.75$ in Sweden and with $r=0.85$ in the US.

These correlations over 50 years correspond to the average correlation of two IQ tests taken by the same person in two different sessions within the same month (Ritchie 2015: 23). Nevertheless, 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. 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 real differences between countries and over time that affect the position of occupations in the earnings distribution. Variation between countries may reflect differences in skill requirements, legal regulations, union power and collective bargaining. Variation over time may reflect technological change and the expansion and contraction of public spending.⁴ While these differences

⁴ Among the few occupations in Sweden that have markedly increased their OEP scores in recent decades are mining occupations. This increase is probably due to technological progress, which has made mining less labour-intensive, but more

over time and space are of great interest to work sociology, comparative politics and labour economics, it is beyond the scope of this paper.

Table 1. Correlation coefficients in OEP values between country scales for 2000/1-2021/3

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

Source: Own calculations

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.

3.4 Creating one single OEP scale

We interpret the strong correlations as evidence in favour of the Treiman constant and its premise of a high degree of stability in the occupational hierarchy across space and time. Importantly, it allows us to construct one single OEP scale rather than resorting to multiple time- and country-specific OEP scales. 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 gives us maximum flexibility to apply OEP to different datasets. For small occupations with less than 20 valid country earnings observations, we impute values 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 at the 1-digit, 2-digit, 3-digit and 4-digit levels of ISCO-88 and ISCO-08 each. 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.

Table 2. Correlation coefficients in OEP values between country scales for 2000/1-2021/3

	General OEP	OEP-CH	OEP-DE	OEP-SE	OEP-UK	OEP-US
General OEP						
OEP-CH	0.95					
OEP-DE	0.95	0.92				
OEP-SE	0.94	0.84	0.90			
OEP-UK	0.92	0.86	0.88	0.86		
OEP-US	0.93	0.86	0.85	0.86	0.89	

Source: Own calculations

The values of OEP are shown for all occupations at the 4-digit level in ISCO-08 and ISCO-88 in Tables 3 and 4 in the Appendix, whereas Figure 6 in the Appendix shows the distribution of OEP values at the detailed 4-digit level of over 500 occupations. 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 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. Approximately ten percent of the full-time working population is paid more than the full-time median employee in these managerial and professional occupations.

3.5 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 a new data source with detailed information on occupations and earnings, the European Working Conditions Survey (EWCS) 2010 and 2015. We compare the variance explained by the general

⁵ This means that we impute information from ISCO 1-digit to ISCO 2-digit, from ISCO 2-digit to ISCO 3-digit or from ISCO 3-digit to 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".

OEP for countries used to construct the scale with countries not used to construct the scale, contrasting 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 earlier findings and theories in stratification research expects it to be associated with. Using yet another data source, the European Social Survey 2002-2020, 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.

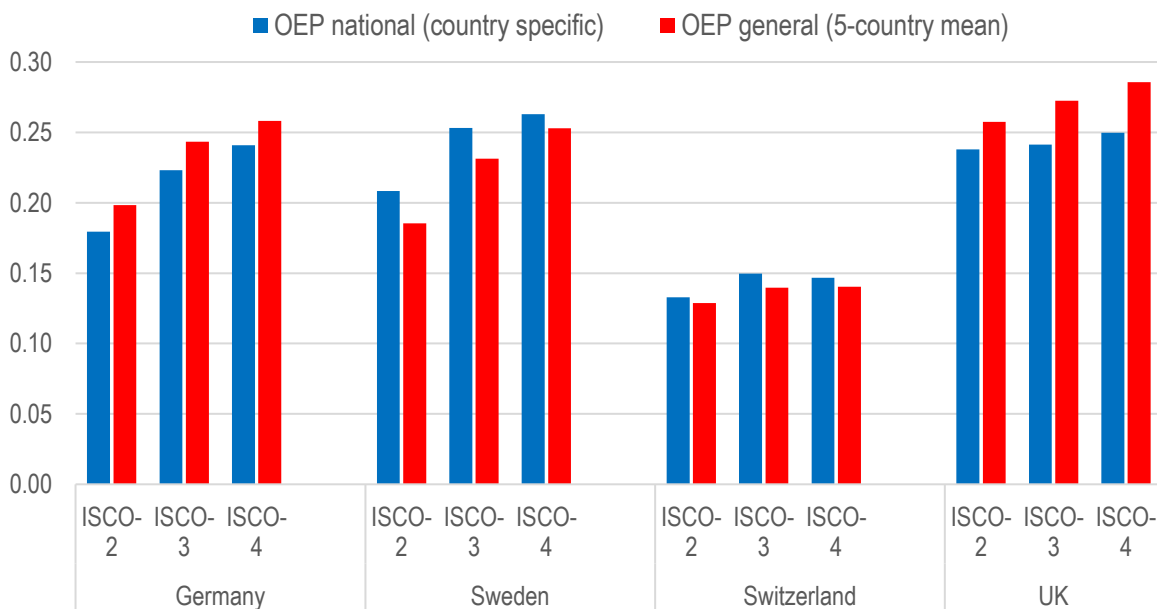
4 Results

4.1 Explained variance in earnings

We begin with an analysis of the variance in earnings explained by the different scales of the OEP. For this purpose, we pool the two rounds of the EWCS that have detailed information on earnings and occupations, 2010 and 2015, and restrict the analytical sample to employed workers aged 25 to 60 years who work full-time. Because of large differences in top earners in the two surveys 2010 and 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 for the four European countries used to construct the scales. Only in Sweden does the national scale explain more variance than the general scale. There is no difference for Switzerland, but the general scale performs better than the national scale in Germany and the UK. Overall, the results with the national and general scales are very similar in all five countries, suggesting that averaging the national OEP scores does not reduce the quality of the measurement of occupational earning potential for these countries.

Figure 1: Variance in earnings explained by OEP and ISEI-08 as measured by r^2



Source: EWCS 2010, 2015 (only 2015 for Switzerland). Analytical sample: employed workers aged 25-60, working full-time (or >30h per week). $N(\text{Germany})$: 2089. $N(\text{Sweden})$: 1116. $N(\text{Switzerland})$: 426. $N(\text{UK})$: 1215.

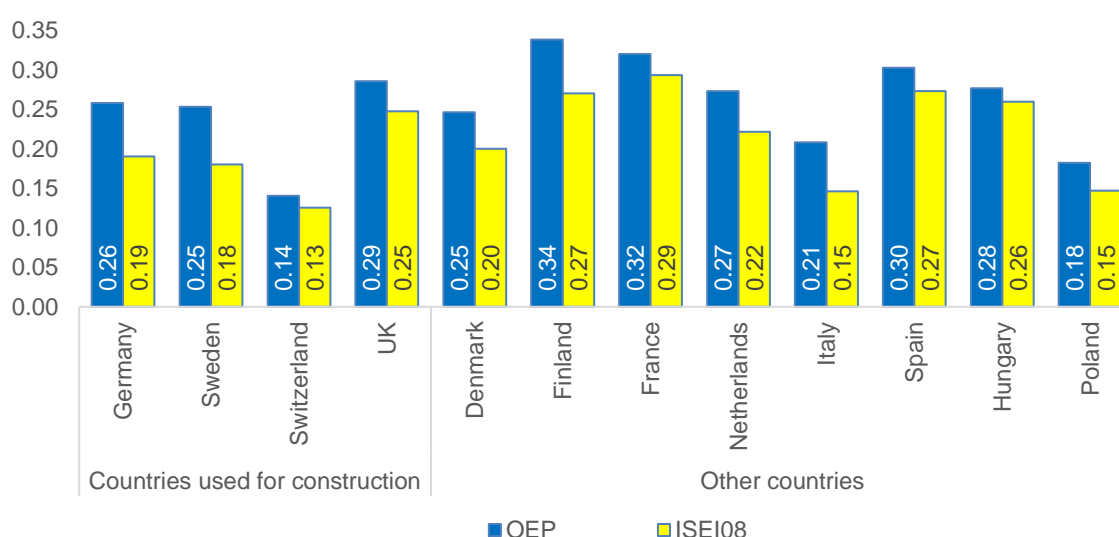
When comparing the r^2 of the OEP scale measured at different levels of occupational detail, we see that the OEP measured at the most detailed ISCO 4-digit level performs best. The general OEP scale at ISCO-08 4-digit accounts for 29 percent of variance in earnings in the UK, 26 percent in Germany, 25 percent in Sweden and 14 percent in Switzerland (where there is only one EWCS round with just 426 observations).⁶ However, differences between OEP at the 4-digit, 3-digit and 2-digit level are small and suggest that even the two more aggregated scales account for 20 to 25 percent of explained variance in earnings. This is good news because many 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. The two questions are, firstly, whether OEP also works for other European countries and, secondly, whether OEP performs as well as ISEI. Figure 2 addresses these two 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 four European 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 5).

Figure 2 shows that the OEP explains between 20 and 30 percent of the variance in earnings for countries for which the scale was not developed. 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 percent of variance compared to 23 percent 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, see Figure 7 in the Appendix).

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



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

⁶ Some readers may prefer correlations (Pearson's r) rather than variance explained (r^2). The correlations between general OEP and earnings are strong, ranging between $r=0.37$ (Switzerland), $r=0.50$ (Sweden), $r=0.51$ (Germany) and $r=0.53$ (UK)

For some readers, it may be the similarity rather than the difference between OEP and ISEI that is striking. Both scales perform particularly well for Finland, France and Spain, but explain less variance for Italy, Poland and Switzerland. 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.

As the OEP is constructed on the basis of full-time earnings only, the question is whether it works as well for women as it does for men, given that women often work part-time. Figure 8 in the Appendix compares the variance in earnings explained by OEP for full-time employed men and women, using the same countries as above. These results show that, on average, OEP explains more variance in women's earnings (28 percent) than in men's (25 percent). But again, the similarity is striking. When we calculate the full-time earnings distributions for men and women separately in order to create separate OEP scales for men and women, we find that these male and female OEP scales are highly correlated: $r=0.87$ in Germany, $r=0.96$ in Sweden, $r=0.92$ in Switzerland, $r=0.86$ in the UK and $r=0.95$ in the US. Occupations thus occupy very similar positions within the male and female earnings distributions in the five countries.

4.2 Occupational returns to education

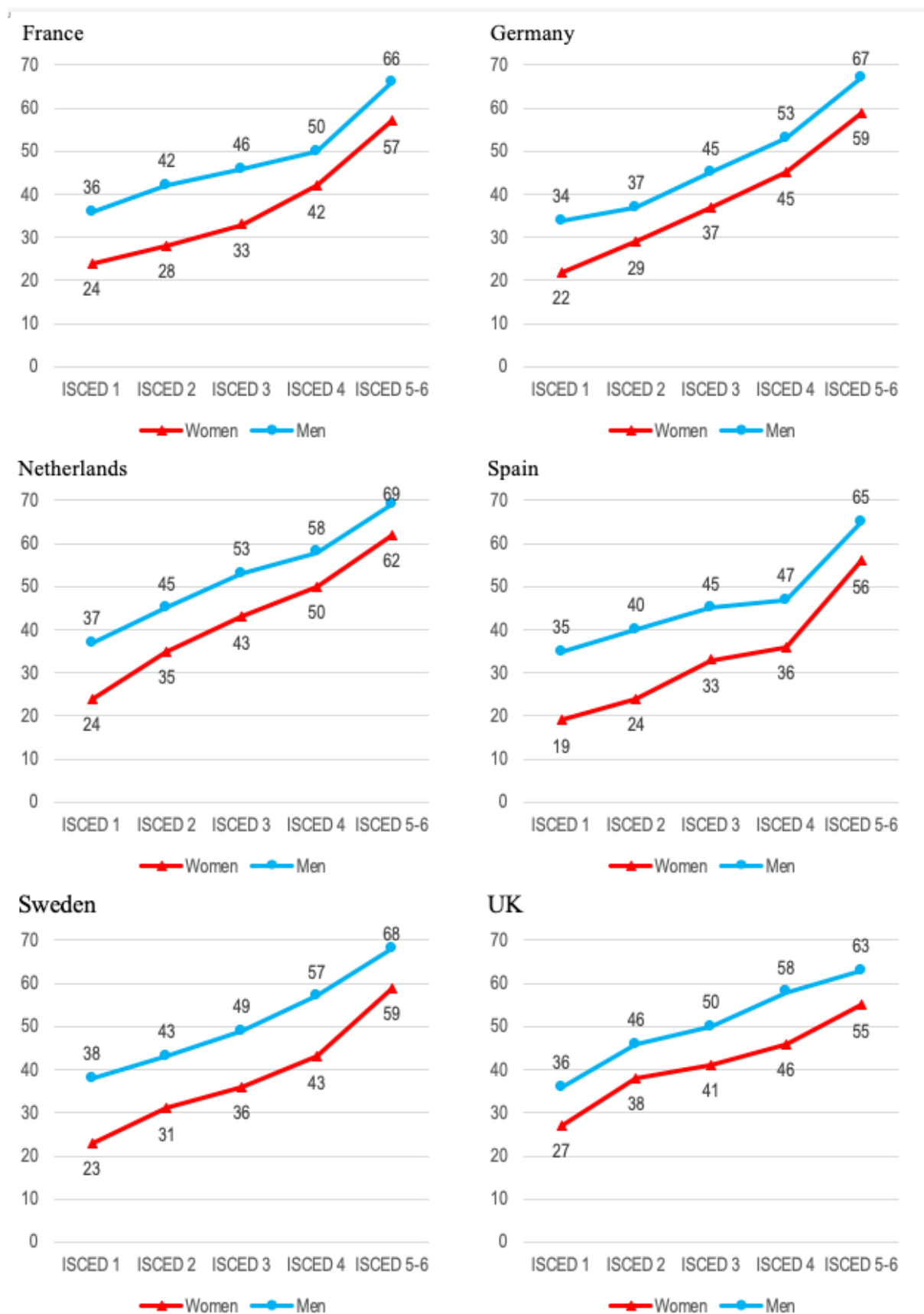
We move on to criterion validity by testing whether OEP is associated with a cause that theory expects occupational attainment to be associated with, namely education. The analysis of occupational returns to education shows the added value of using an indicator of occupational advantage not based on 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 the ESS 2002-2020 and limit the sample to full-time workers aged 40-60 (and who are thus in mature occupational positions). We distinguish five ISCED-categories of education: 1 primary, 2 lower secondary, 3 upper secondary, 4 post-secondary, and 5-6 tertiary education. We then estimate a linear regression where these five 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 three European countries used to construct OEP and three additional European countries. The selection of countries is inconsequential because the results are very similar, the OEP scale being everywhere strongly associated with education: Across Europe, workers succeed in transforming higher levels of education into occupations with higher median earnings, the earnings potential of occupations increases by almost ten percentiles for each additional level.

Figure 3 shows everywhere a gendered pattern. While OEP rises linearly with education, the rise is steeper for women than men because women start out at much lower levels. In the countries shown in Figure 3, women with only primary education were employed in occupations around the 19-27th earning percentiles as compared to the 34-38th earning percentiles for men. In contrast, the gap closes for tertiary education where women were employed in occupations with an OEP of 55 to 62 as compared to 63-69 for men.

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



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

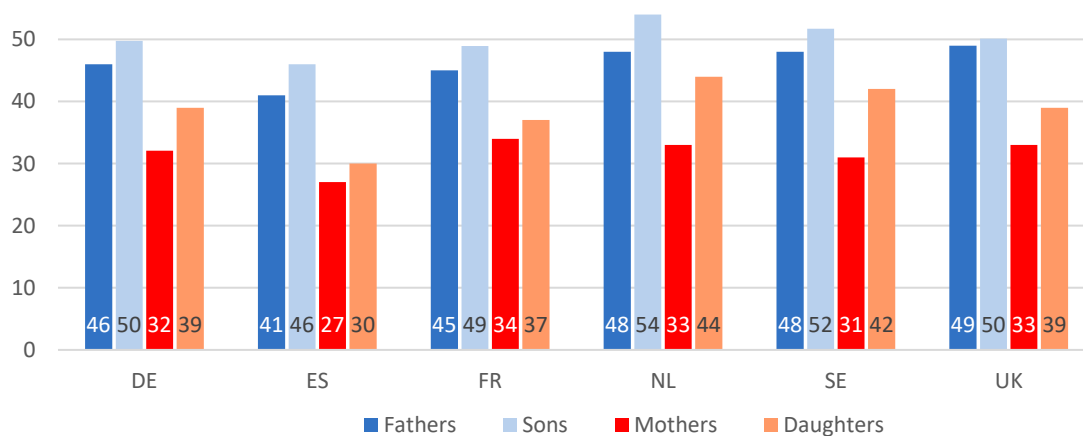
4.3 Mobility in the occupational hierarchy

Stratification research has traditionally placed a strong emphasis on the analysis of social mobility (DiPrete 2020). 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.⁷ We restrict the analytical sample to respondents aged 40 to 60 (and thus in mature occupational positions). This corresponds to the baby boomer generation, born between 1942 and 1970.

We begin by comparing the mean OEP of sons and daughters with the mean OEP of fathers and mothers. Figure 4 shows the results for the same six European countries as before and points to clear-cut upward absolute social mobility. In all six countries, baby boomer men worked in an occupation with a higher earning potential than their fathers, as did baby boomer women compared to their mothers. Averaged across our six countries, men in the child generation had an OEP of 50 (compared with 46 for their fathers) and women in the child generation an OEP of 39 (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 7 percentiles relative to their mothers. Despite the faster catch-up process, baby boomer women continued to be in occupations with much lower earning potential than baby boomer men.

The country comparison shows that the mean OEP was considerably higher, for both the parental and child generation, in the Netherlands (the country with the highest occupational attainment) than in Spain (the country with the lowest attainment among our six countries). In the cohort born in 1942-1970, middle-aged men had an OEP of 54 in the Netherlands as compared to 46 in Spain, and middle-aged women had an OEP of 44 in the Netherlands as compared to 30 in Spain. This finding reflects the earlier shift towards higher-skilled and higher-paid occupations in the Dutch labour market. But then again, the similarities between countries are more striking than the differences.

Figure 4: OEP of sons and daughters (aged 40-60) and their parents, Europe 2002-2010



Source: ESS 2002-2010, all individuals aged 40-60 (and thus born in 1942-1970). OEP based on ISCO-88 4-digit

In a final analysis, we examine the link between parents' occupational earning potential and children's occupational earning potential. We do so by correlating fathers' OEP with sons' OEP and mothers' OEP with daughters' OEP, using the same analytical sample as above (men and women aged 40-60 in ESS

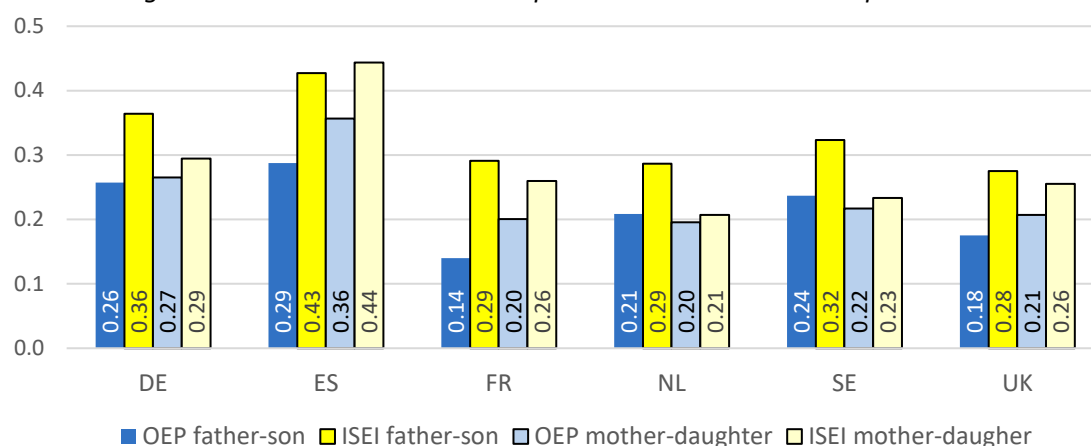
⁷ The detailed coding of parental occupations was carried out by Harry Ganzeboom and collaborators at the Free University of Amsterdam and is only available for the first five rounds of the ESS, 2002-2010. Our analysis only includes the OEP of daughters for whom we also observe an OEP for their mothers, and only sons for whom we observe an OEP for their fathers.

2002-10). 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 correlations are systematically higher for ISEI than OEP. Based on all countries in the ESS sample, the occupations of fathers and sons are correlated at $r=0.26$ for OEP and $r=0.35$ for ISEI, and the occupations of mothers and daughters at $r=0.26$ for OEP and $r=0.33$ for ISEI.⁸ Whether we use ISEI or OEP, the correlations are highest in Spain and Germany, and lowest in France and the Netherlands. But once again, a casual observer would probably be more impressed by the similarity than by the differences between countries.

The effect size of OEP is not negligible. A correlation coefficient of 0.26 indicates that having parents with an OEP of 77 (university teacher) rather than 25 (refuse worker/garbage collector) is associated with children having occupations whose earning potential is 13.5 percentiles higher (0.26×52). Although the correlations for ISEI are a third higher than for OEP, the interpretation of ISEI points is less straightforward.

Figure 5: The association between parents' and children's occupational attainment



Source: ESS 2002-2010, all individuals aged 40-60 (and thus born in 1942-1970). OEP based on ISCO-88 4-digit

Our results for the OEP are very 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. 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. As intergenerational transmission is stronger for education than for earnings (Hällsten 2020), OEP shows more societal fluidity than ISEI. A tentative interpretation is that some of the apparent occupational immobility in the ISEI may reflect educational rather than labour market outcomes.

5 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 paper proposes a new scale that ranks occupations according to their earning potential. While

⁸ Information on parents' occupations at the ISCO-08 4-digit level is available for a few countries in ESS rounds 2012 (seven countries) and 2014 (two countries). When pooling these data for all countries over the two rounds, the correlation between fathers and sons is $r=0.29$ for OEP and $r=0.39$ for ISEI-08, whereas the correlation between mothers and daughters is $r=0.31$ for OEP and $r=0.38$ for ISEI.

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 ($r=0.90$) and between countries ($r=0.80$). 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 another database (EWCS 2010, 2015), 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.

The strong similarity of the occupational earnings hierarchy in space and time is an interesting finding in itself, as it extends the scope of the Treiman constant beyond occupational prestige. The Treiman constant also explains the strong results for ISEI. Despite being based on surveys conducted between 1968 and 1982, using men only (for ISEI), or between 2002 and 2007 (for ISEI-08), it remains an empirically valid measure, explaining over twenty percent of variance in European earnings in 2010 and 2015. 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, reflecting the same underlying occupational hierarchy.

In the analysis of intergenerational mobility, ISEI explains more variance than OEP. This is not surprising given the strong transmission of education between parents and children (Hällsten 2020, Mastekaasa and Birkelund 2023, Strømme and Wiborg 2024). While the OEP scale allows us to see how occupational earnings are correlated across generations, social mobility is a multidimensional phenomenon that cannot be fully captured by any single measure (Breen et. al. 2016, Mood 2017). Other indicators such as education, social class, individual earnings and wealth are also crucial 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 et al. 2016). 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 median earning that exceeds the earnings of 77 percent 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 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 the labour market 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 from different origins and educational levels 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, such as EGP or micro-classes, or scales that reflect differences in education, prestige or intermarriage patterns. In this sense, OEP is a new addition to the toolbox of social stratification research in the Western world, providing a simple, clear and parsimonious measure of life chances that can be meaningfully interpreted.

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List of figures

Figure 1: Variance in earnings explained by OEP and ISEI-08 as measured by r^2 10

Figure 2: Variance in earnings explained by OEP and ISEI-08 as measured by r^2 11

Figure 3: OEP by educational level for employed men and women aged 40-60 13

Figure 4: OEP of sons and daughters (aged 40-60) and their parents, Europe 2002-2010..... 14

Figure 5: The association between parents' and children's occupational attainment 15

Figure 6. The distribution of the OEP-values (ISCO-08 4-digit level)..... 39

Figure 7. Variance in earnings (r^2) explained by OEP and ISEI (both measured at ISCO-88 4-digit)..... 40

Figure 8. Variance in earnings explained by OEP for men and women separately (r^2)..... 41

List of tables

Table 1. Correlation coefficients in OEP values between country scales for 2000/1-2021/3..... 8
Table 2. Correlation coefficients in OEP values between country scales for 2000/1-2021/3..... 9
Table 3. OEP-values of occupations at the ISCO-08 4-digit level 23
Table 4. OEP-values of occupations at the ISCO-88 4-digit level 31
Table 5. Variance in earnings (r²) explained by OEP and ISEI-08..... 38

Appendix

Table 3. OEP-values of occupations at the ISCO-08 4-digit level

<i>ISCO-08 code and label</i>	<i>OEP value</i>
110. Commissioned armed forces officers	87
210. Non-commissioned armed forces officers	79
300. Armed forces occupations, other ranks	55
310. Armed forces occupations, other ranks	63
1000. Managers	81
1111. Legislators	90
1112. Senior government officials	83
1113. Traditional chiefs and heads of villages	94
1114. Senior officials of special-interest organizations	79
1120. Managing directors and chief executives	93
1200. Administrative and commercial managers	84
1210. Business services and administration managers	83
1211. Finance managers	87
1212. Human resource managers	84
1213. Policy and planning managers	84
1219. Business services and administration managers not elsewhere classified	81
1221. Sales and marketing managers	85
1222. Advertising and public relations managers	81
1223. Research and development managers	91
1300. Production and specialized services managers	79
1311. Agricultural and forestry production managers	67
1320. Manufacturing, mining, construction and distribution managers	77
1321. Manufacturing managers	77
1322. Mining managers	89
1323. Construction managers	78
1324. Supply, distribution and related managers	75
1330. Information and communications technology services managers	90
1340. Professional services managers	72
1341. Child care services managers	66
1342. Health services managers	83
1343. Aged care services managers	80
1344. Social welfare managers	65
1345. Education managers	85
1346. Financial and insurance services branch managers	91
1349. Professional services managers not elsewhere classified	81
1400. Hospitality, retail and other services managers	52
1410. Hotel and restaurant managers	40
1411. Hotel managers	59
1412. Restaurant managers	42
1420. Retail and wholesale trade managers	55
1431. Sports, recreation and cultural centre managers	54
1439. Services managers not elsewhere classified	79
2000. Professionals	71
2100. Science and engineering professionals	79
2110. Physical and earth science professionals	78
2111. Physicists and astronomers	79
2112. Meteorologists	73
2113. Chemists	79
2114. Geologists and geophysicists	77
2120. Mathematicians, actuaries and statisticians	84
2130. Life science professionals	70
2131. Biologists, botanists, zoologists and related professionals	73
2132. Farming, forestry and fisheries advisers	70
2133. Environmental protection professionals	72
2140. Engineering professionals (excluding electrotechnology)	80
2141. Industrial and production engineers	80
2142. Civil engineers	80
2143. Environmental engineers	77
2144. Mechanical engineers	81
2145. Chemical engineers	81
2146. Mining engineers, metallurgists and related professionals	86
2149. Engineering professionals not elsewhere classified	81
2150. Electrotechnology engineers	84
2151. Electrical engineers	84
2152. Electronics engineers	84

2153. Telecommunications engineers	81
2160. Architects, planners, surveyors and designers	67
2161. Building architects	70
2162. Landscape architects	66
2163. Product and garment designers	64
2164. Town and traffic planners	75
2165. Cartographers and surveyors	71
2166. Graphic and multimedia designers	50
2200. Health professionals	73
2210. Medical doctors	91
2211. Generalist medical practitioners	90
2212. Specialist medical practitioners	86
2220. Nursing and midwifery professionals	55
2221. Nursing professionals	58
2222. Midwifery professionals	57
2230. Traditional and complementary medicine professionals	42
2240. Paramedical practitioners	70
2250. Veterinarians	79
2260. Other health professionals	58
2261. Dentists	79
2262. Pharmacists	78
2263. Environmental and occupational health and hygiene professionals	78
2264. Physiotherapists	48
2265. Dieticians and nutritionists	42
2266. Audiologists and speech therapists	65
2267. Optometrists and ophthalmic opticians	71
2269. Health professionals not elsewhere classified	53
2300. Teaching professionals	62
2310. University and higher education teachers	77
2320. Vocational education teachers	68
2330. Secondary education teachers	69
2340. Primary school and early childhood teachers	52
2341. Primary school teachers	58
2342. Early childhood educators	38
2350. Other teaching professionals	59
2351. Education methods specialists	68
2352. Special needs teachers	63
2353. Other language teachers	59
2354. Other music teachers	55
2355. Other arts teachers	33
2356. Information technology trainers	81
2359. Teaching professionals not elsewhere classified	54
2400. Business and administration professionals	74
2411. Accountants	79
2412. Financial and investment advisers	85
2413. Financial analysts	80
2421. Management and organization analysts	82
2422. Policy administration professionals	71
2423. Personnel and careers professionals	62
2424. Training and staff development professionals	70
2431. Advertising and marketing professionals	78
2432. Public relations professionals	69
2433. Technical and medical sales professionals (excluding ict)	82
2434. Information and communications technology sales professionals	85
2500. Information and communications technology professionals	80
2510. Software and applications developers and analysts	81
2511. Systems analysts	83
2512. Software developers	83
2513. Web and multimedia developers	71
2514. Applications programmers	77
2519. Software and applications developers and analysts not elsewhere classified	85
2521. Database designers and administrators	77
2522. Systems administrators	75
2523. Computer network professionals	79
2529. Database and network professionals not elsewhere classified	86
2600. Legal, social and cultural professionals	65
2610. Legal professionals	87
2611. Lawyers	90
2612. Judges	92
2619. Legal professionals not elsewhere classified	78

2620. Librarians, archivists and curators	51
2621. Archivists and curators	52
2622. Librarians and related information professionals	50
2630. Social and religious professionals	58
2631. Economists	84
2632. Sociologists, anthropologists and related professionals	64
2633. Philosophers, historians and political scientists	69
2634. Psychologists	67
2635. Social work and counselling professionals	54
2636. Religious professionals	61
2640. Authors, journalists and linguists	67
2641. Authors and related writers	68
2642. Journalists	72
2643. Translators, interpreters and other linguists	53
2650. Creative and performing artists	58
2651. Visual artists	46
2652. Musicians, singers and composers	58
2653. Dancers and choreographers	35
2654. Film, stage and related directors and producers	67
2655. Actors	48
2656. Announcers on radio, television and other media	54
2659. Creative and performing artists not elsewhere classified	22
3000. Technicians and associate professionals	55
3100. Science and engineering associate professionals	63
3110. Physical and engineering science technicians	63
3111. Chemical and physical science technicians	54
3112. Civil engineering technicians	64
3113. Electrical engineering technicians	72
3114. Electronics engineering technicians	65
3115. Mechanical engineering technicians	67
3116. Chemical engineering technicians	72
3117. Mining and metallurgical technicians	82
3118. Draughtspersons	50
3119. Physical and engineering science technicians not elsewhere classified	63
3120. Mining, manufacturing and construction supervisors	67
3121. Mining supervisors	82
3122. Manufacturing supervisors	69
3123. Construction supervisors	63
3130. Process control technicians	56
3131. Power production plant operators	65
3132. Incinerator and water treatment plant operators	52
3133. Chemical processing plant controllers	78
3134. Petroleum and natural gas refining plant operators	47
3135. Metal production process controllers	72
3139. Process control technicians not elsewhere classified	63
3140. Life science technicians and related associate professionals	51
3141. Life science technicians (excluding medical)	47
3142. Agricultural technicians	51
3143. Forestry technicians	66
3150. Ship and aircraft controllers and technicians	85
3151. Ships' engineers	75
3152. Ships' deck officers and pilots	65
3153. Aircraft pilots and related associate professionals	91
3154. Air traffic controllers	82
3155. Air traffic safety electronics technicians	83
3211. Medical imaging and therapeutic equipment technicians	60
3212. Medical and pathology laboratory technicians	49
3213. Pharmaceutical technicians and assistants	31
3214. Medical and dental prosthetic technicians	45
3221. Nursing associate professionals	42
3222. Midwifery associate professionals	56
3230. Traditional and complementary medicine associate professionals	19
3240. Veterinary technicians and assistants	26
3250. Other health associate professionals	36
3251. Dental assistants and therapists	29
3252. Medical records and health information technicians	54
3253. Community health workers	47
3254. Dispensing opticians	33
3255. Physiotherapy technicians and assistants	26
3256. Medical assistants	36

3257. Environmental and occupational health inspectors and associates	60
3258. Ambulance workers	58
3259. Health associate professionals not elsewhere classified	41
3300. Business and administration associate professionals	58
3310. Financial and mathematical associate professionals	57
3311. Securities and finance dealers and brokers	90
3312. Credit and loans officers	59
3313. Accounting associate professionals	59
3314. Statistical, mathematical and related associate professionals	61
3315. Valuers and loss assessors	61
3320. Sales and purchasing agents and brokers	65
3321. Insurance representatives	66
3322. Commercial sales representatives	64
3323. Buyers	64
3324. Trade brokers	72
3330. Business services agents	59
3331. Clearing and forwarding agents	49
3332. Conference and event planners	57
3333. Employment agents and contractors	56
3334. Real estate agents and property managers	66
3339. Business services agents not elsewhere classified	59
3340. Administrative and specialized secretaries	50
3341. Office supervisors	64
3342. Legal secretaries	41
3343. Administrative and executive secretaries	43
3344. Medical secretaries	34
3350. Government regulatory associate professionals	62
3351. Customs and border inspectors	60
3352. Government tax and excise officials	58
3353. Government social benefits officials	46
3354. Government licensing officials	65
3355. Police inspectors and detectives	71
3359. Government regulatory associate professionals not elsewhere classified	60
3410. Legal, social and religious associate professionals	44
3411. Legal and related associate professionals	50
3412. Social work associate professionals	39
3413. Religious associate professionals	44
3420. Sports and fitness workers	46
3421. Athletes and sports players	60
3422. Sports coaches, instructors and officials	61
3423. Fitness and recreation instructors and programme leaders	43
3430. Artistic, cultural and culinary associate professionals	41
3431. Photographers	44
3432. Interior designers and decorators	44
3433. Gallery, museum and library technicians	40
3434. Chefs	42
3435. Other artistic and cultural associate professionals	45
3510. Information and communications technology operations and user support technicians	66
3511. Information and communications technology operations technicians	54
3512. Information and communications technology user support technicians	68
3513. Computer network and systems technicians	65
3514. Web technicians	65
3521. Broadcasting and audiovisual technicians	50
3522. Telecommunications engineering technicians	62
4000. Clerical support workers	38
4110. General office clerks	44
4120. Secretaries (general)	35
4131. Typists and word processing operators	33
4132. Data entry clerks	24
4200. Customer services clerks	37
4210. Tellers, money collectors and related clerks	43
4211. Bank tellers and related clerks	42
4212. Bookmakers, croupiers and related gaming workers	34
4213. Pawnbrokers and money-lenders	49
4214. Debt collectors and related workers	36
4220. Client information workers	27
4221. Travel consultants and clerks	33
4222. Contact centre information clerks	29
4223. Telephone switchboard operators	29
4224. Hotel receptionists	23

4225. Inquiry clerks	27
4226. Receptionists (general)	29
4227. Survey and market research interviewers	26
4229. Client information workers not elsewhere classified	44
4310. Numerical clerks	46
4311. Accounting and bookkeeping clerks	38
4312. Statistical, finance and insurance clerks	52
4313. Payroll clerks	55
4320. Material recording and transport clerks	38
4321. Stock clerks	31
4322. Production clerks	49
4323. Transport clerks	46
4410. Other clerical support workers	37
4411. Library clerks	30
4412. Mail carriers and sorting clerks	37
4413. Coding, proofreading and related clerks	40
4414. Scribes and related workers	37
4415. Filing and copying clerks	39
4416. Personnel clerks	45
4419. Clerical support workers not elsewhere classified	35
5000. Services and sales workers	23
5100. Personal services workers	21
5110. Travel attendants, conductors and guides	41
5111. Travel attendants and travel stewards	43
5112. Transport conductors	45
5113. Travel guides	18
5120. Cooks	21
5130. Waiters and bartenders	12
5131. Waiters	16
5132. Bartenders	19
5140. Hairdressers, beauticians and related workers	13
5141. Hairdressers	16
5142. Beauticians and related workers	17
5151. Cleaning and housekeeping supervisors in offices, hotels and other establishments	20
5152. Domestic housekeepers	17
5153. Building caretakers	30
5161. Astrologers, fortune-tellers and related workers	47
5162. Companions and valets	7
5163. Undertakers and embalmers	39
5164. Pet groomers and animal care workers	26
5165. Driving instructors	54
5169. Personal services workers not elsewhere classified	20
5211. Stall and market salespersons	14
5212. Street food salespersons	11
5221. Shopkeepers	36
5222. Shop supervisors	45
5223. Shop sales assistants	21
5230. Cashiers and ticket clerks	12
5241. Fashion and other models	24
5242. Sales demonstrators	29
5243. Door-to-door salespersons	26
5244. Contact centre salespersons	21
5245. Service station attendants	26
5246. Food service counter attendants	12
5249. Sales workers not elsewhere classified	22
5300. Personal care workers	18
5311. Child care workers	13
5312. Teachers' aides	15
5320. Personal care workers in health services	20
5321. Health care assistants	20
5322. Home-based personal care workers	17
5329. Personal care workers in health services not elsewhere classified	27
5411. Firefighters	64
5412. Police officers	67
5413. Prison guards	52
5414. Security guards	28
5419. Protective services workers not elsewhere classified	41
6000. Skilled agricultural, forestry and fishery workers	22
6100. Market-oriented skilled agricultural workers	21
6111. Field crop and vegetable growers	24

6112. Tree and shrub crop growers	20
6113. Gardeners; horticultural and nursery growers	21
6114. Mixed crop growers	22
6121. Livestock and dairy producers	16
6122. Poultry producers	26
6123. Apiarists and sericulturists	16
6129. Animal producers not elsewhere classified	13
6130. Mixed crop and animal producers	28
6210. Forestry and related workers	32
6220. Fishery workers, hunters and trappers	33
6221. Aquaculture workers	42
6222. Inland and coastal waters fishery workers	41
6223. Deep-sea fishery workers	29
6224. Hunters and trappers	30
6310. Subsistence crop farmers	22
6320. Subsistence livestock farmers	22
6330. Subsistence mixed crop and livestock farmers	22
6340. Subsistence fishers, hunters, trappers and gatherers	22
7000. Craft and related trades workers	44
7110. Building frame and related trades workers	42
7111. House builders	49
7112. Bricklayers and related workers	46
7113. Stonemasons, stone cutters, splitters and carvers	34
7114. Concrete placers, concrete finishers and related workers	41
7115. Carpenters and joiners	38
7119. Building frame and related trades workers not elsewhere classified	42
7120. Building finishers and related trades workers	45
7121. Roofers	38
7122. Floor layers and tile setters	34
7123. Plasterers	32
7124. Insulation workers	41
7125. Glaziers	41
7126. Plumbers and pipe fitters	51
7127. Air conditioning and refrigeration mechanics	53
7131. Painters and related workers	35
7132. Spray painters and varnishers	35
7133. Building structure cleaners	31
7200. Metal, machinery and related trades workers	47
7210. Sheet and structural metal workers, moulders and welders, and related workers	42
7211. Metal moulders and coremakers	35
7212. Welders and flame cutters	40
7213. Sheet metal workers	44
7214. Structural metal preparers and erectors	45
7215. Riggers and cable splicers	42
7220. Blacksmiths, toolmakers and related trades workers	45
7221. Blacksmiths, hammersmiths and forging press workers	42
7222. Toolmakers and related workers	54
7223. Metal working machine tool setters and operators	43
7224. Metal polishers, wheel grinders and tool sharpeners	41
7230. Machinery mechanics and repairers	49
7231. Motor vehicle mechanics and repairers	42
7232. Aircraft engine mechanics and repairers	59
7233. Agricultural and industrial machinery mechanics and repairers	53
7234. Bicycle and related repairers	22
7310. Handicraft workers	35
7311. Precision-instrument makers and repairers	44
7312. Musical instrument makers and tuners	32
7313. Jewellery and precious metal workers	26
7314. Potters and related workers	36
7315. Glass makers, cutters, grinders and finishers	32
7316. Signwriters, decorative painters, engravers and etchers	32
7317. Handicraft workers in wood, basketry and related materials	27
7318. Handicraft workers in textile, leather and related materials	17
7319. Handicraft workers not elsewhere classified	35
7320. Printing trades workers	44
7321. Pre-press technicians	50
7322. Printers	44
7323. Print finishing and binding workers	37
7400. Electrical and electronics trades workers	53
7411. Building and related electricians	53

7412. Electrical mechanics and fitters	53
7413. Electrical line installers and repairers	59
7421. Electronics mechanics and servicers	50
7422. Information and communications technology installers and servicers	52
7511. Butchers, fishmongers and related food preparers	27
7512. Bakers, pastry-cooks and confectionery makers	22
7513. Dairy products makers	35
7514. Fruit, vegetable and related preservers	28
7515. Food and beverage tasters and graders	44
7516. Tobacco preparers and tobacco products makers	17
7520. Wood treaters, cabinet-makers and related trades workers	32
7521. Wood treaters	41
7522. Cabinet-makers and related workers	32
7523. Woodworking machine tool setters and operators	32
7530. Garment and related trades workers	21
7531. Tailors, dressmakers, furriers and hatters	15
7532. Garment and related patternmakers and cutters	26
7533. Sewing, embroidery and related workers	19
7534. Upholsterers and related workers	30
7535. Pelt dressers, tanners and fellmongers	30
7536. Shoemakers and related workers	20
7540. Other craft and related workers	42
7541. Underwater divers	56
7542. Shotfirers and blasters	70
7543. Product graders and testers (excluding foods and beverages)	39
7544. Fumigators and other pest and weed controllers	27
7549. Craft and related workers not elsewhere classified	27
8000. Plant and machine operators and assemblers	37
8100. Stationary plant and machine operators	34
8111. Miners and quarriers	58
8112. Mineral and stone processing plant operators	75
8113. Well drillers and borers and related workers	67
8114. Cement, stone and other mineral products machine operators	49
8120. Metal processing and finishing plant operators	44
8121. Metal processing plant operators	46
8122. Metal finishing, plating and coating machine operators	35
8130. Chemical and photographic products plant and machine operators	46
8131. Chemical products plant and machine operators	51
8132. Photographic products machine operators	25
8141. Rubber products machine operators	33
8142. Plastic products machine operators	31
8143. Paper products machine operators	35
8150. Textile, fur and leather products machine operators	16
8151. Fibre preparing, spinning and winding machine operators	30
8152. Weaving and knitting machine operators	30
8153. Sewing machine operators	15
8154. Bleaching, dyeing and fabric cleaning machine operators	16
8155. Fur and leather preparing machine operators	16
8156. Shoemaking and related machine operators	17
8157. Laundry machine operators	9
8159. Textile, fur and leather products machine operators not elsewhere classified	35
8160. Food and related products machine operators	28
8170. Wood processing and papermaking plant operators	39
8171. Pulp and papermaking plant operators	50
8172. Wood processing plant operators	32
8180. Other stationary plant and machine operators	30
8181. Glass and ceramics plant operators	30
8182. Steam engine and boiler operators	52
8183. Packing, bottling and labelling machine operators	24
8189. Stationary plant and machine operators not elsewhere classified	35
8210. Assemblers	32
8211. Mechanical machinery assemblers	41
8212. Electrical and electronic equipment assemblers	30
8219. Assemblers not elsewhere classified	26
8300. Drivers and mobile plant operators	39
8311. Locomotive engine drivers	69
8312. Railway brake, signal and switch operators	58
8320. Car, van and motorcycle drivers	27
8321. Motorcycle drivers	49
8322. Car, taxi and van drivers	26

8331. Bus and tram drivers	38
8332. Heavy truck and lorry drivers	40
8340. Mobile plant operators	39
8341. Mobile farm and forestry plant operators	37
8342. Earthmoving and related plant operators	46
8343. Crane, hoist and related plant operators	51
8344. Lifting truck operators	32
8350. Ships' deck crews and related workers	52
9000. Elementary occupations	19
9100. Cleaners and helpers	11
9111. Domestic cleaners and helpers	12
9112. Cleaners and helpers in offices, hotels and other establishments	12
9120. Vehicle, window, laundry and other hand cleaning workers	18
9121. Hand launderers and pressers	14
9122. Vehicle cleaners	16
9123. Window cleaners	18
9129. Other cleaning workers	25
9210. Agricultural, forestry and fishery labourers	14
9211. Crop farm labourers	17
9212. Livestock farm labourers	14
9213. Mixed crop and livestock farm labourers	6
9214. Garden and horticultural labourers	15
9215. Forestry labourers	14
9216. Fishery and aquaculture labourers	14
9300. Labourers in mining, construction, manufacturing and transport	26
9310. Mining and construction labourers	34
9311. Mining and quarrying labourers	49
9312. Civil engineering labourers	40
9313. Building construction labourers	28
9320. Manufacturing labourers	21
9321. Hand packers	19
9329. Manufacturing labourers not elsewhere classified	19
9330. Transport and storage labourers	32
9331. Hand and pedal vehicle drivers	52
9332. Drivers of animal-drawn vehicles and machinery	50
9333. Freight handlers	34
9334. Shelf fillers	7
9410. Food preparation assistants	13
9411. Fast food preparers	19
9412. Kitchen helpers	12
9510. Street and related services workers	17
9520. Street vendors (excluding food)	17
9610. Refuse workers	26
9611. Garbage and recycling collectors	35
9612. Refuse sorters	25
9613. Sweepers and related labourers	23
9620. Other elementary workers	24
9621. Messengers, package deliverers and luggage porters	24
9622. Odd-job persons	28
9623. Meter readers and vending-machine collectors	27
9629. Elementary workers not elsewhere classified	22

Source: Own calculations

Table 4. OEP-values of occupations at the ISCO-88 4-digit level

<i>ISCO-88 code and label</i>	<i>OEP value</i>
100. Armed forces	78
110. Armed forces	81
1000. Legislators, senior officials and managers	78
1110. Legislators	90
1120. Senior government officials	83
1130. Traditional chiefs and heads of villages	94
1140. Senior officials of special-interest organisations	79
1141. Senior officials of political-party organisations	79
1142. Senior officials of employers', workers' and other economic-interest organisations	79
1143. Senior officials of humanitarian and other special-interest organisations	76
1200. Corporate managers	81
1210. Directors and chief executives	93
1220. Production and operations department managers	75
1221. Production and operations department managers in agriculture, hunting, forestry and fishing	67
1222. Production and operations department managers in manufacturing	76
1223. Production and operations department managers in construction	72
1224. Production and operations department managers in wholesale and retail trade	61
1225. Production and operations department managers in restaurants and hotels	31
1226. Production and operations department managers in transport, storage and communications	64
1227. Production and operations department managers in business services	87
1228. Production and operations department managers in personal care, cleaning and related services	56
1229. Production and operations department managers not elsewhere classified	78
1230. Other department managers	85
1231. Finance and administration department managers	87
1232. Personnel and industrial relations department managers	84
1233. Sales and marketing department managers	85
1234. Advertising and public relations department managers	81
1235. Supply and distribution department managers	77
1236. Computing services department managers	90
1237. Research and development department managers	91
1239. Other department managers not elsewhere classified	84
1300. General managers	55
1310. General managers	49
1311. General managers in agriculture, hunting, forestry/ and fishing	49
1312. General managers in manufacturing	64
1313. General managers in construction	67
1314. General managers in wholesale and retail trade	47
1315. General managers of restaurants and hotels	38
1316. General managers in transport, storage and communications	55
1317. General managers of business services	68
1318. General managers in personal care, cleaning and related services	46
1319. General managers not elsewhere classified	61
2000. Professionals	73
2100. Physical, mathematical and engineering science professionals	80
2110. Physicists, chemists and related professionals	78
2111. Physicists and astronomers	79
2112. Meteorologists	73
2113. Chemists	79
2114. Geologists and geophysicists	77
2120. Mathematicians, statisticians and related professionals	84
2121. Mathematicians and related professionals	91
2122. Statisticians	70
2130. Computing professionals	80
2131. Computer systems designers and analysts	78
2132. Computer programmers	73
2139. Computing professionals not elsewhere classified	77
2140. Architects, engineers and related professionals	80
2141. Architects, town and traffic planners	71
2142. Civil engineers	80
2143. Electrical engineers	84
2144. Electronics and telecommunications engineers	82
2145. Mechanical engineers	81
2146. Chemical engineers	81
2147. Mining engineers, metallurgists and related professionals	86
2148. Cartographers and surveyors	71
2149. Architects, engineers and related professionals not elsewhere classified	80
2200. Life science and health professionals	78
2211. Biologists, botanists, zoologists and related professionals	70

2212. Pharmacologists, pathologists and related professionals	78
2213. Agronomists and related professionals	70
2220. Health professionals (except nursing)	88
2221. Medical doctors	93
2222. Dentists	79
2223. Veterinarians	79
2224. Pharmacists	78
2229. Health professionals (except nursing) not elsewhere classified	59
2230. Nursing and midwifery professionals	55
2300. Teaching professionals	65
2310. College, university and higher education teaching professionals	77
2320. Secondary education teaching professionals	68
2330. Primary and pre-primary education teaching professionals	57
2331. Primary education teaching professionals	58
2332. Pre-primary education teaching professionals	38
2340. Special education teaching professionals	65
2350. Other teaching professionals	61
2351. Education methods specialists	65
2352. School inspectors	74
2359. Other teaching professionals not elsewhere classified	56
2400. Other professionals	71
2411. Accountants	79
2412. Personnel and careers professionals	62
2419. Business professionals not elsewhere classified	78
2420. Legal professionals	87
2421. Lawyers	90
2422. Judges	92
2429. Legal professionals not elsewhere classified	78
2430. Archivists, librarians and related information professionals	51
2431. Archivists and curators	52
2432. Librarians and related information professionals	50
2440. Social science and related professionals	58
2441. Economists	84
2442. Sociologists, anthropologists and related professionals	64
2443. Philosophers, historians and political scientists	69
2444. Philologists, translators and interpreters	53
2445. Psychologists	67
2446. Social work professionals	54
2450. Writers and creative or performing artists	65
2451. Authors, journalists and other writers	68
2452. Sculptors, painters and related artists	46
2453. Composers, musicians and singers	60
2454. Choreographers and dancers	35
2455. Film, stage and related actors and directors	58
2460. Religious professionals	61
2470. Public service administrative professionals	70
3000. Technicians and associate professionals	55
3100. Physical and engineering science associate professionals	62
3110. Physical and engineering science technicians	62
3111. Chemical and physical science technicians	54
3112. Civil engineering technicians	64
3113. Electrical engineering technicians	72
3114. Electronics and telecommunications engineering technicians	66
3115. Mechanical engineering technicians	67
3116. Chemical engineering technicians	72
3117. Mining and metallurgical technicians	82
3118. Draughtspersons	50
3119. Physical and engineering science technicians not elsewhere classified	63
3120. Computer associate professionals	67
3121. Computer assistants	71
3122. Computer equipment operators	54
3130. Optical and electronic equipment operators	53
3131. Photographers and image and sound recording equipment operators	43
3132. Broadcasting and telecommunications equipment operators	45
3133. Medical equipment operators	58
3139. Optical and electronic equipment operators not elsewhere classified	53
3140. Ship and aircraft controllers and technicians	85
3141. Ships' engineers	75
3142. Ships' deck officers and pilots	65
3143. Aircraft pilots and related associate professionals	91

3144. Air traffic controllers	82
3145. Air traffic safety technicians	83
3151. Building and fire inspectors	58
3152. Safety, health and quality inspectors	53
3210. Life science technicians and related associate professionals	49
3211. Life science technicians	49
3212. Agronomy and forestry technicians	53
3213. Farming and forestry advisers	49
3220. Modern health associate professionals (except nursing)	40
3221. Medical assistants	43
3222. Sanitarians	55
3223. Dieticians and nutritionists	42
3224. Optometrists and opticians	37
3225. Dental assistants	29
3226. Physiotherapists and related associate professionals	46
3227. Veterinary assistants	26
3228. Pharmaceutical assistants	31
3229. Modern health associate professionals (except nursing) not elsewhere classified	43
3231. Nursing associate professionals	42
3232. Midwifery associate professionals	56
3241. Traditional medicine practitioners	19
3300. Teaching associate professionals	43
3320. Pre-primary education teaching associate professionals	32
3330. Special education teaching associate professionals	41
3340. Other teaching associate professionals	47
3410. Finance and sales associate professionals	63
3411. Securities and finance dealers and brokers	90
3412. Insurance representatives	66
3413. Estate agents	66
3414. Travel consultants and organisers	51
3415. Technical and commercial sales representatives	67
3416. Buyers	64
3417. Appraisers, valuers and auctioneers	61
3418. Auctioneers	63
3419. Finance and sales associate professionals not elsewhere classified	59
3420. Business services agents and trade brokers	57
3421. Trade brokers	72
3422. Clearing and forwarding agents	49
3423. Employment agents and labour contractors	56
3429. Business services agents and trade brokers not elsewhere classified	59
3430. Administrative associate professionals	52
3431. Administrative secretaries and related associate professionals	45
3432. Legal and related business associate professionals	50
3433. Bookkeepers	59
3434. Statistical, mathematical and related associate professionals	61
3439. Administrative associate professionals not elsewhere classified	68
3440. Customs, tax and related government associate professionals	56
3441. Customs and border inspectors	60
3442. Government tax and excise officials	58
3443. Government social benefits officials	46
3444. Government licensing officials	65
3449. Customs, tax and related government associate professionals not elsewhere classified	54
3450. Police inspectors and detectives	71
3460. Social work associate professionals	39
3470. Artistic, entertainment and sports associate professionals	49
3471. Decorators and commercial designers	49
3472. Radio, television and other announcers	54
3473. Street, night-club and related musicians, singers and dancers	26
3474. Clowns, magicians, acrobats and related associate professionals	22
3475. Athletes, sportspersons and related associate professionals	48
3480. Religious associate professionals	44
4000. Clerks	37
4100. Office clerks	38
4110. Secretaries and keyboard-operating clerks	34
4111. Stenographers and typists	35
4112. Word-processor and related operators	33
4113. Data entry operators	24
4115. Secretaries	35
4120. Numerical clerks	46
4121. Accounting and bookkeeping clerks	39

4122. Statistical and finance clerks	52
4130. Material-recording and transport clerks	38
4131. Stock clerks	31
4132. Production clerks	49
4133. Transport clerks	46
4140. Library, mail and related clerks	35
4141. Library and filing clerks	33
4142. Mail carriers and sorting clerks	37
4143. Coding, proof-reading and related clerks	40
4144. Scribes and related workers	35
4190. Other office clerks	35
4200. Customer services clerks	34
4210. Cashiers, tellers and related clerks	36
4211. Cashiers and ticket clerks	32
4212. Tellers and other counter clerks	31
4213. Bookmakers and croupiers	34
4214. Pawnbrokers and money-lenders	49
4215. Debt-collectors and related workers	36
4220. Client information clerks	25
4221. Travel agency and related clerks	28
4222. Receptionists and information clerks	24
4223. Telephone switchboard operators	29
5000. Service workers and shop and market sales workers	21
5100. Personal and protective services workers	22
5110. Travel attendants and related workers	41
5111. Travel attendants and travel stewards	43
5112. Transport conductors	45
5113. Travel guides	18
5121. Housekeepers and related workers	20
5122. Cooks	21
5123. Waiters, waitresses and bartenders	12
5130. Personal care and related workers	18
5131. Child-care workers	13
5132. Institution-based personal care workers	20
5133. Home-based personal care workers	17
5139. Personal care and related workers not elsewhere classified	22
5141. Hairdressers, barbers, beauticians and related workers	13
5142. Companions and valets	7
5143. Undertakers and embalmers	39
5149. Other personal services workers not elsewhere classified	23
5152. Fortune-tellers, palmists and related workers	47
5161. Fire-fighters	64
5162. Police officers	67
5163. Prison guards	52
5169. Protective services workers not elsewhere classified	40
5210. Fashion and other models	24
5220. Shop salespersons and demonstrators	21
5230. Stall and market salespersons	14
6000. Skilled agricultural and fishery workers	21
6100. Market-oriented skilled agricultural and fishery workers	21
6111. Field crop and vegetable growers	24
6112. Tree and shrub crop growers	20
6113. Gardeners, horticultural and nursery growers	21
6114. Mixed-crop growers	22
6121. Dairy and livestock producers	20
6122. Poultry producers	26
6123. Apiarists and sericulturists	16
6124. Mixed-animal producers	8
6129. Market-oriented animal producers and related workers not elsewhere classified	13
6130. Market-oriented crop and animal producers	24
6141. Forestry workers and loggers	32
6150. Fishery workers, hunters and trappers	33
6151. Aquatic-life cultivation workers	42
6152. Inland and coastal waters fishery workers	41
6153. Deep-sea fishery workers	29
6154. Hunters and trappers	30
6210. Subsistence agricultural and fishery workers	21
7000. Craft and related trades workers	44
7111. Miners and quarry workers	57
7112. Shotfirers and blasters	70

7113. Stone splitters, cutters and carvers	34
7120. Building frame and related trades workers	42
7121. Builders, traditional materials	34
7122. Bricklayers and stonemasons	46
7123. Concrete placers, concrete finishers and related workers	41
7124. Carpenters and joiners	38
7129. Building frame and related trades workers not elsewhere classified	44
7130. Building finishers and related trades workers	48
7131. Roofers	38
7132. Floor layers and tile setters	34
7133. Plasterers	32
7134. Insulation workers	41
7135. Glaziers	41
7136. Plumbers and pipe fitters	51
7137. Building and related electricians	53
7139. Building finishers and related trade workers not elsewhere classified	31
7141. Painters and related workers	35
7142. Varnishers and related painters	35
7143. Building structure cleaners	32
7200. Metal, machinery and related trades workers	49
7210. Metal moulders, welders, sheet-metal workers, structural- metal preparers, and related trades	42
7211. Metal moulders and coremakers	35
7212. Welders and flamecutters	40
7213. Sheet metal workers	44
7214. Structural-metal preparers and erectors	45
7215. Riggers and cable splicers	42
7216. Underwater workers	56
7220. Blacksmiths, tool-makers and related trades workers	48
7221. Blacksmiths, hammer-smiths and forging-press workers	42
7222. Tool-makers and related workers	54
7223. Machine-tool setters and setter-operators	46
7224. Metal wheel-grinders, polishers and tool sharpeners	41
7230. Machinery mechanics and fitters	49
7231. Motor vehicle mechanics and fitters	41
7232. Aircraft engine mechanics and fitters	59
7233. Agricultural- or industrial-machinery mechanics and fitters	53
7240. Electrical and electronic equipment mechanics and fitters	52
7241. Electrical mechanics and fitters	53
7242. Electronics fitters	50
7243. Electronics mechanics and servicers	52
7244. Telegraph and telephone installers and servicers	49
7245. Electrical line installers, repairers and cable jointers	59
7310. Precision workers in metal and related materials	40
7311. Precision-instrument makers and repairers	41
7312. Musical instrument makers and tuners	32
7313. Jewellery and precious-metal workers	26
7320. Potters, glass-makers and related trades workers	30
7321. Abrasive wheel formers, potters and related workers	41
7322. Glass makers, cutters, grinders and finishers	32
7323. Glass engravers and etchers	28
7324. Glass, ceramics and related decorative painters	28
7330. Handicraft workers in wood, textile, leather and related materials	24
7331. Handicraft workers in wood and related materials	32
7332. Handicraft workers in textile, leather and related materials	17
7340. Printing and related trades workers	44
7341. Compositors, typesetters and related workers	45
7343. Printing engravers and etchers	52
7344. Photographic and related workers	44
7345. Bookbinders and related workers	38
7346. Silk-screen, block and textile printers	35
7400. Other craft and related trades workers	27
7411. Butchers, fishmongers and related food preparers	27
7412. Bakers, pastry-cooks and confectionery makers	22
7413. Dairy-products makers	35
7414. Fruit, vegetable and related preservers	28
7415. Food and beverage tasters and graders	44
7416. Tobacco preparers and tobacco products makers	17
7420. Wood treaters, cabinet-makers and related trades workers	34
7421. Wood treaters	41
7422. Cabinet makers and related workers	32

7423. Woodworking machine setters and setter-operators	35
7424. Basketry weavers, brush makers and related workers	21
7430. Textile, garment and related trades workers	22
7431. Fibre preparers	22
7432. Weavers, knitters and related workers	30
7433. Tailors, dressmakers and hatters	16
7434. Furriers and related workers	20
7435. Textile, leather and related pattern-makers and cutters	26
7436. Sewers, embroiderers and related workers	19
7437. Upholsterers and related workers	30
7441. Pelt dressers, tanners and fellmongers	30
7442. Shoe-makers and related workers	20
8000. Plant and machine operators and assemblers	38
8100. Stationary-plant and related operators	50
8111. Mining-plant operators	72
8112. Mineral-ore- and stone-processing-plant operators	75
8113. Well drillers and borers and related workers	67
8120. Metal-processing-plant operators	46
8121. Ore and metal furnace operators	61
8122. Metal melters, casters and rolling-mill operators	53
8123. Metal-heat-treating-plant operators	58
8124. Metal drawers and extruders	47
8130. Glass, ceramics and related plant operators	30
8131. Glass and ceramics kiln and related machine operators	25
8139. Glass, ceramics and related plant operators not elsewhere classified	31
8140. Wood-processing- and papermaking-plant operators	39
8141. Wood-processing-plant operators	32
8142. Paper-pulp plant operators	75
8143. Papermaking-plant operators	55
8150. Chemical-processing-plant operators	54
8151. Crushing-, grinding- and chemical-mixing-machinery operators	54
8152. Chemical-heat-treating-plant operators	54
8155. Petroleum- and natural-gas-refining-plant operators	47
8159. Chemical-processing-plant operators not elsewhere classified	58
8160. Power-production and related plant operators	57
8161. Power-production plant operators	65
8162. Steam-engine and boiler operators	52
8163. Incinerator, water-treatment and related plant operators	52
8170. Automated-assembly-line and industrial-robot operators	52
8211. Machine-tool operators	41
8212. Cement and other mineral products machine operators	49
8220. Chemical-products machine operators	40
8221. Pharmaceutical- and toiletry-products machine operators	46
8222. Ammunition- and explosive-products machine operators	53
8223. Metal finishing-, plating- and coating-machine operators	35
8224. Photographic-products machine operators	25
8229. Chemical-products machine operators not elsewhere classified	30
8231. Rubber-products machine operators	33
8232. Plastic-products machine operators	31
8240. Wood-products machine operators	33
8251. Printing-machine operators	51
8252. Bookbinding-machine operators	39
8253. Paper-products machine operators	35
8260. Textile-, fur- and leather-products machine operators	15
8261. Fibre-preparing-, spinning- and winding-machine operators	30
8262. Weaving- and knitting-machine operators	30
8263. Sewing-machine operators	15
8264. Bleaching-, dyeing- and cleaning-machine operators	15
8265. Fur and leather-preparing-machine operators	15
8266. Shoemaking- and related machine operators	17
8269. Textile-, fur- and leather-products machine operators not elsewhere classified	35
8270. Food and related products machine operators	28
8271. Meat- and fish-processing-machine operators	24
8272. Dairy-products machine operators	36
8273. Grain- and spice-milling-machine operators	47
8274. Baked-goods, cereal and chocolate-products machine operators	29
8275. Fruit-, vegetable- and nut-processing-machine operators	28
8276. Sugar production machine operators	39
8277. Tea-, coffee-, and cocoa-processing-machine operators	49
8278. Brewers, wine and other beverage machine operators	43

8279. Tobacco production machine operators	45
8280. Assemblers	32
8281. Mechanical-machinery assemblers	41
8282. Electrical-equipment assemblers	27
8283. Electronic-equipment assemblers	31
8284. Metal-, rubber- and plastic-products assemblers	27
8285. Wood and related products assemblers	37
8286. Paperboard, textile and related products assemblers	28
8290. Other machine operators and assemblers	28
8300. Drivers and mobile-plant operators	39
8311. Locomotive-engine drivers	69
8312. Railway brakemen, signallers and shunters	58
8320. Motor-vehicle drivers	37
8321. Motor-cycle drivers	49
8322. Car, taxi and van drivers	26
8323. Bus and tram drivers	38
8324. Heavy-truck and lorry drivers	40
8330. Agricultural and other mobile-plant operators	39
8331. Motorised farm and forestry plant operators	37
8332. Earth-moving- and related plant operators	46
8333. Crane, hoist and related plant operators	51
8334. Lifting-truck operators	32
8340. Ships' deck crews and related workers	52
9000. Elementary occupations	21
9100. Sales and services elementary occupations	18
9111. Street food vendors	11
9112. Street vendors, non-food products	20
9113. Door-to-door and telephone salespersons	21
9120. Shoe cleaning and other street services elementary occupations	17
9130. Domestic and related helpers, cleaners and launderers	11
9131. Domestic helpers and cleaners	12
9132. Helpers and cleaners in offices, hotels and other establishments	11
9133. Hand-launderers and pressers	14
9140. Building caretakers, window and related cleaners	29
9141. Building caretakers	30
9142. Vehicle, window and related cleaners	17
9150. Messengers, porters, doorkeepers and related workers	25
9151. Messengers, package and luggage porters and deliverers	24
9152. Doorkeepers, watchpersons and related workers	22
9153. Vending-machine money collectors, meter readers and related workers	27
9160. Garbage collectors and related labourers	26
9161. Garbage collectors	29
9162. Sweepers and related labourers	23
9210. Agricultural, fishery and related labourers	14
9211. Farm-hands and labourers	15
9212. Forestry labourers	14
9213. Fishery, hunting and trapping labourers	14
9300. Labourers in mining, construction, manufacturing and transport	26
9310. Mining and construction labourers	34
9311. Mining and quarrying labourers	49
9312. Construction and maintenance labourers: roads, dams and similar constructions	40
9313. Building construction labourers	28
9320. Manufacturing labourers	21
9321. Assembling labourers	21
9322. Hand packers and other manufacturing labourers	18
9330. Transport labourers and freight handlers	32
9331. Hand or pedal vehicle drivers	52
9332. Drivers of animal-drawn vehicles and machinery	50
9333. Freight handlers	33

Source: Own calculations

Table 5. Variance in earnings (r^2) explained by OEP and ISEI-08

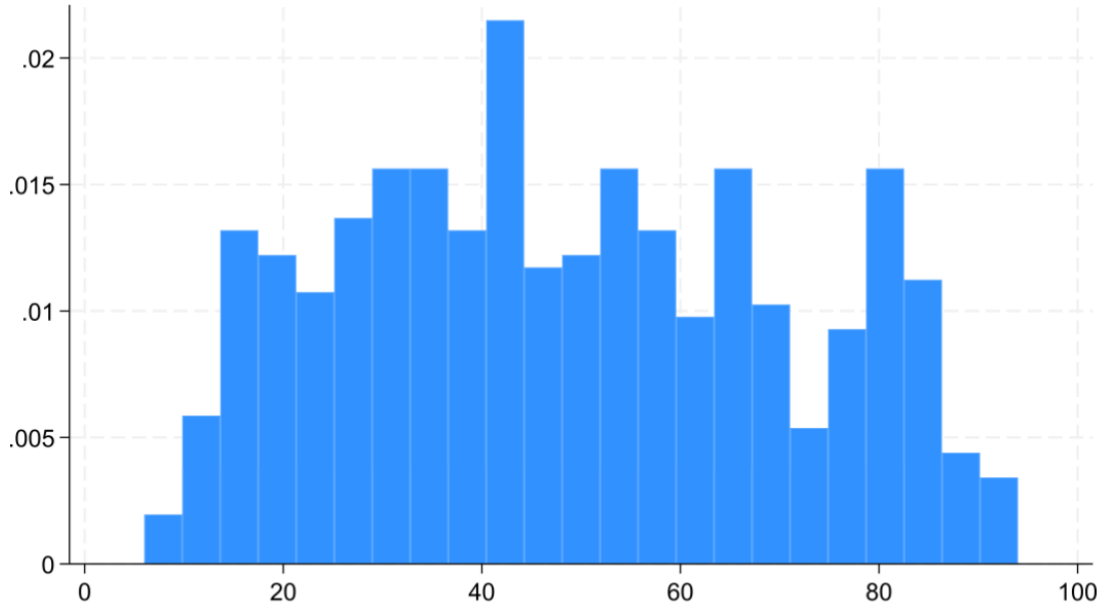
Country	OEP	ISEI-08
Austria	0.25	0.23
Belgium	0.23	0.20
Bulgaria	0.15	0.12
Croatia	0.30	0.31
Cyprus	0.23	0.16
Czech	0.22	0.18
Denmark	0.25	0.20
Estonia	0.26	0.20
Finland	0.34	0.27
France	0.32	0.29
Germany	0.26	0.19
Greece	0.23	0.18
Hungary	0.28	0.26
Ireland	0.26	0.22
Italy	0.21	0.15
Latvia	0.23	0.19
Lithuania	0.09	0.06
Luxembourg	0.31	0.34
Macedonia	0.21	0.22
Malta	0.32	0.31
Montenegro	0.15	0.13
Netherlands	0.27	0.22
Norway	0.27	0.21
Poland	0.18	0.15
Portugal	0.29	0.28
Romania	0.29	0.27
Slovakia	0.23	0.20
Slovenia	0.25	0.27
Spain	0.30	0.27
Sweden	0.25	0.18
Switzerland	0.14	0.13
Turkey	0.25	0.27
UK	0.29	0.25

(1) OEP and ISEI-08 are measured at ISCO-08 4-digit level.

(2) Albania, Kosovo and Serbia excluded because of small samples.

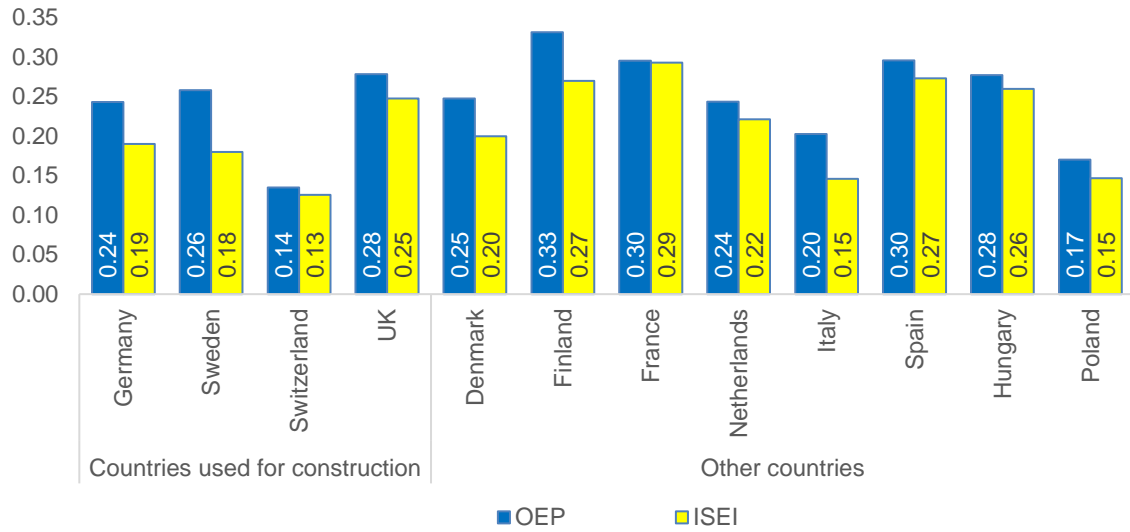
Source: EWCS 2010, 2015 (only 2015 for Switzerland)

Figure 6. The distribution of the OEP-values (ISCO-08 4-digit level)



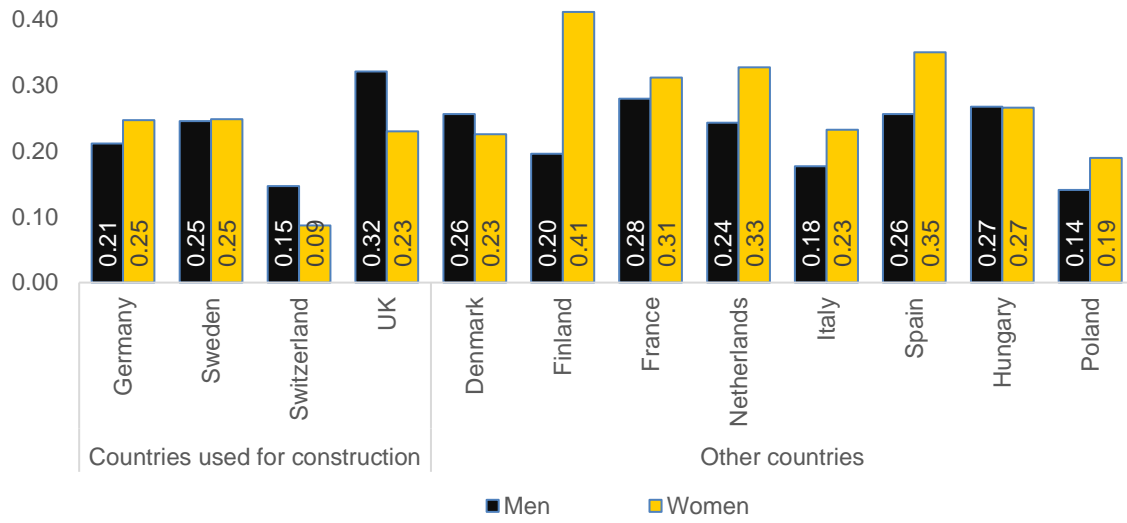
Source: Own calculations

Figure 7. Variance in earnings (r^2) explained by OEP and ISEI (both measured at ISCO-88 4-digit)



Source: EWCS 2010, 2015 (only 2015 for Switzerland). Both OEP and ISEI are based on ISCO-88 at the 4-digit level

Figure 8. Variance in earnings explained by OEP for men and women separately (r²)



Source: EWCS 2010, 2015 (only 2015 for Switzerland). Both OEP and ISEI are based on ISCO-88 at the 4-digit level

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