



## Does Occupation Shape Attitudes on Europe? Benchmarking Validity and Parsimony

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Occupation lies behind many models of individual economic interest, and individual economic interest lies behind most rational accounts of preferences. This article investigates the causal influence of occupation for Euroscepticism. Employing data from the 2003 International Social Science Survey Program, we find that (a) identity and occupation exert independent effects, (b) estimates of the total effect of these variables vary across countries in an explicable way, (c) political framing by political parties influences whether Euroscepticism is related to occupation or identity, and (d) reliability is a serious issue in measuring occupational location.

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### Introduction

This special issue explores the relative power of identity and economic interest in explaining preferences over Europe. Identity and economic interest are championed by distinct literatures in which each variable is conceived as causally prime, yet the two can be regarded as co-sources of attitudes over a range of political objects. We suspect, for example, that economic losers are more likely than economic winners to have exclusive identities, or more broadly, the kinds of identities that are consistent with Euroscepticism.

In this article we explore whether, and to what extent, occupation can account for variance in Euroscepticism. Occupation lies behind most models of individual economic interest, and individual economic interest lies behind most rational accounts of preferences. So we are able to draw on previous work connecting occupation to political preferences.

There are several plausible theories on offer, and we do not seek to formulate another. It seems to us that the bottleneck is not that we lack theory, but that we lack ways to discriminate among the theories that already exist. To make



progress, we need a framework for comparing models. We also need to pay close attention to the quality of the data and the sensitivity of empirical tests to measurement error and alternative operationalizations (Marks, 2007). In the next section, we set out a framework for benchmarking validity and parsimony that can be applied to models having the same dependent variable. We then use this framework to compare operationalizations of occupation. Finally, we place occupation in a structural equation set up which allows us to assess the causal depth of its effects.

Occupation is an interesting variable for us on substantive and methodological grounds. If theorizing the effects of occupational location for political attitudes is valid, it should be valid for attitudes over European integration. The European Union is the deepest and most comprehensive international trade regime in the world. The principal goal of European integration has been to reduce the transaction costs of economic exchange, and this has had transparent effects on income streams across occupations. If occupational models work anywhere, they should work in the European Union.

Second, occupation is exogenous to the object we wish to explain. It is plausible to regard political attitudes (including those over European integration) as caused by the kind of job a person has and implausible to argue the reverse.<sup>1</sup> This simplifies interpretation of results, and facilitates comparison of alternative operationalizations.

Finally, data on occupation are objective and fine-grained. The International Standards Classification of Occupations (ISCO-88) specifies several hundred occupational categories in its 1988 classification. The ISCO classification is adopted in most social surveys, including the International Social Survey Program and the European Social Survey, which we use here.<sup>2</sup> So we not only have the prospect of being able to measure occupation precisely, but we can entertain alternative operationalizations of occupation by re-aggregating constituent categories.

### **Benchmarking Validity and Parsimony**

We begin by setting out a general framework for comparing models on the basis of their validity and parsimony, which we then apply to the effect of occupation on public attitudes over European integration.

ISCO-88 distinguishes 390 categories of occupation in a hierarchical coding scheme based on two dimensions: *skill level*, 'which is a function of the range and complexity of the tasks involved, where complexity of tasks has priority over the range' and *skill specialization*, 'which reflects type of knowledge applied, tools and equipment used, material worked on, or with, and the nature of the goods and services produced' (International Labour Organization, 1990, 6).

The full ISCO-88 coding scheme can be simplified by aggregating categories according to their hypothesized commonalities. However, the statistical power of any additive combination of categories cannot be greater than that of the superset from which it is derived. This allows us to estimate a ceiling for any sub-set derived from the most fine-grained measure.<sup>3</sup>

Here we are interested in the validity and parsimony of alternative models. Validity and parsimony are only two of the criteria that one would wish to use to judge a model, but there is little argument that they are fundamental. We need to come to grips with both if we are to benchmark operationalizations in a meaningful way. Validity and parsimony are usually at odds, because increasing the variance explained will usually require that one adds variables. Hence, we are chiefly concerned with the *trade-off* between validity and parsimony — that is, the *leverage* of alternative models (King *et al.*, 1994, 29).

Adding variables to a model not only captures some additional share of the systematic portion of variance in the dependent variable, but it is likely that these variables enhance the variance explained by pure chance.<sup>4</sup> In other words, some portion of the increase in the  $R^2$  represents merely white noise that artificially boosts validity. The *adjusted*  $R^2$  statistic accounts for this by subtracting the following from the  $R^2$ :

$$(1 - R^2) \frac{k}{(n - k - 1)}$$

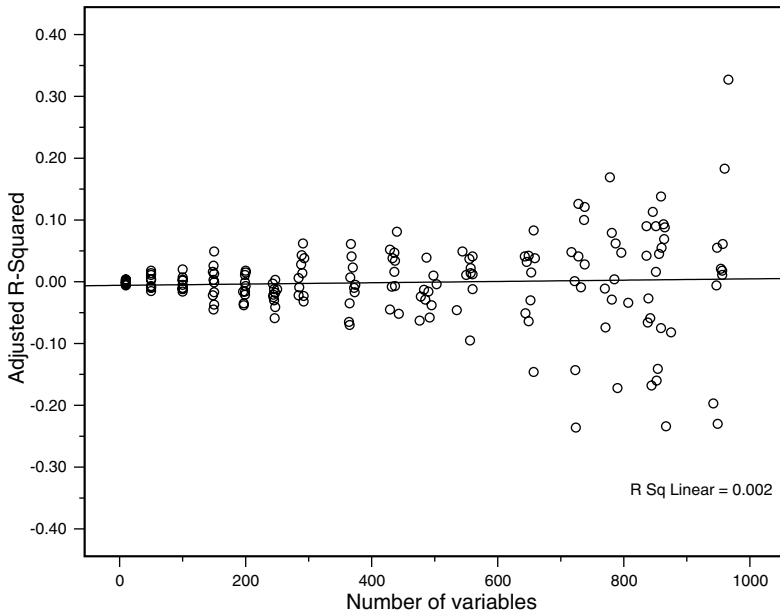
where  $n$  is the number of observations, and  $k$  is the number of variables in the model. This adjustment eliminates the expected portion of the  $R^2$  due to chance. In a random setup, the expected value of the  $R^2$  is  $k/n$ . Hence, if there are 1,000 observations and we have 250 categories to which observations have been randomly assigned, we would expect to see an  $R^2$  of 0.25. Figure 1 plots the *adjusted*  $R^2$  in a random set up where  $n = 1,000$  and where  $k$  varies from 10 to more than 950. The figure shows that the *adjusted*  $R^2$  is normally distributed around zero with a standard deviation that increases as  $k/n$  increases. Figure 1 also suggests that the standard deviation for the *adjusted*  $R^2$  remains within reasonable bounds for  $k/n < 0.5$ .

We define parsimony ( $\Psi$ ) as one minus the ratio of  $k$  to  $n-1$ :

$$\Psi = 1 - \frac{k}{n - 1}$$

$\Psi$  approaches 0 when parsimony is almost totally absent, that is, where the number of variables approaches the number of observations minus one.  $\Psi$  approaches 1 where parsimony is at its greatest, that is, where a single independent variable is used to explain an almost infinite number of observations.<sup>5</sup>

We illustrate the principle of benchmarking with data from the 2003 International Social Survey Program for Sweden. Figure 2 plots the  $R^2$  and



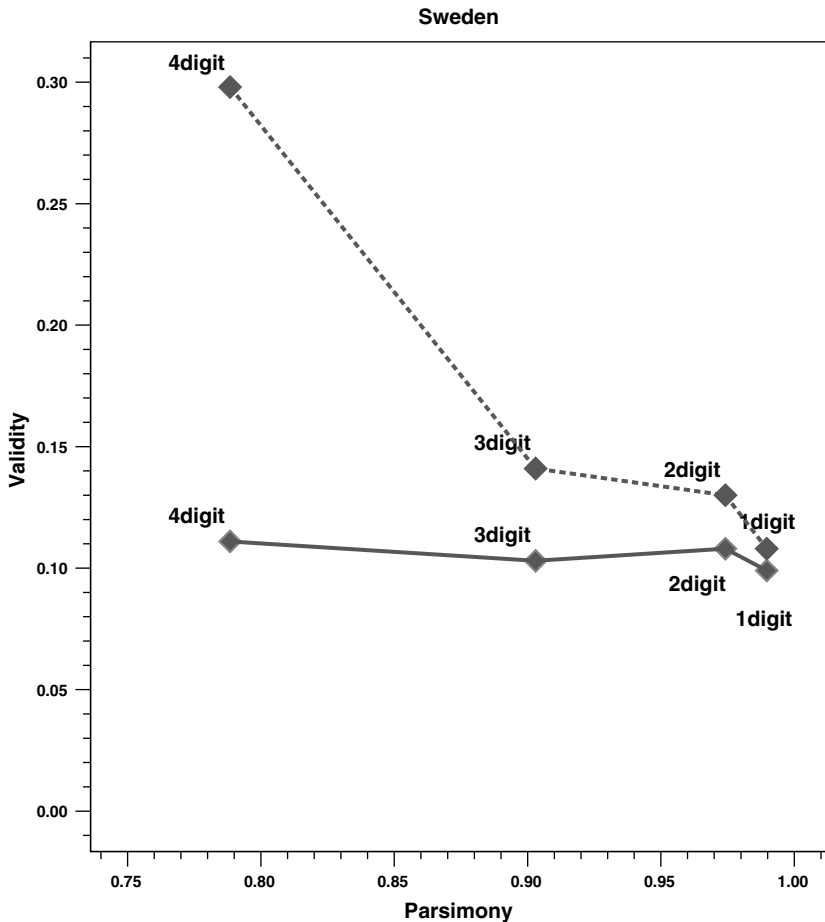
**Figure 1** Parsimony and validity.

*Note:* Experimental results for a given 1,000 cases. Both dependent and independent variables are random.

*adjusted R<sup>2</sup>* for the four operationalizations of occupation drawn directly from ISCO-88 data. The dependent variable is *Eurocepticism*.

One might expect that the more refined the measurement instrument, the greater the share of variance that can be explained. But this is evidently not the case here. The points on the left-hand side in Figure 2 use the full set of information provided by the ISCO-88 coding. Of the 390 categories in the ISCO scheme, 205 categories have values in the Swedish data set, and when these are dummied they produce an *R<sup>2</sup>* of 0.298. Because of the large number of categories, the *adjusted R<sup>2</sup>* (=0.111) exerts a heavy penalty. The next three models represented in Figure 2 are three-digit, two-digit, and single-digit aggregations of ISCO-88 data using 94, 25, and 10 occupational categories, respectively. When we adjust for chance, the ISCO two-digit coding accounts for as much variance as the ISCO four-digit coding — even though it has barely one-eighth of the information.

To understand why this is the case, we need to take a close look at measurement error. Table 1 compares the ISSP (2003) data set with data from the European Social Survey (ESS, 2005) and the European Union Labour Force Survey (2004). ESS and ISSP are based on samples that range from 732



**Figure 2** Occupation and Euroskepticism in Sweden: The trade-off between parsimony and validity.

*Note:* 2003 ISSP data for Sweden,  $N=970$ . See Appendix A for how the different ISCO aggregations are operationalized.

to 2,151. The samples of the European Union Labour Force Survey range from 20,747 (Portugal) to 75,000 (France), and are therefore much more reliable. Discrepancies among the data sets in Table 1 are muffled because the data are aggregated to the one-digit level, which averages out random error across constituent categories. However, even at this level of aggregation, differences among the data sets are frequently not small. Chi-squared tests comparing ISSP data and ESS data to the European Union Labour Force Survey reveal that in only two of 24 country comparisons (ISSP for Austria and ESS for



**Table 1** Occupational distribution compared: ISCO's 10 main categories in ISSP, the European labour force survey, and ESS (%)

	0+	1,000+	2,000+	3,000+	4,000+	5,000+	6,000+	7,000+	8,000+	9,000+
<i>Austria</i>										
ISSP	0.1	7.4	7.7	16.5	14.8	17.6	4.9	15.2	6.9	8.9
ELFS <sup>a</sup>	0.3	7.5	9.8	14.7	14.2	15.0	5.2	16.3	7.8	9.3
ESS	0.0	3.2	13.9	12.8	26.5	17.3	2.5	9.3	3.7	10.7
<i>Czech Republic</i>										
ISSP	0.0	6.5	10.1	17.0	12.5	13.8	2.1	19.2	11.8	7.0
ELFS <sup>a</sup>	0.3	6.2	10.2	20.2	8.1	12.5	1.9	19.7	15.0	5.8
ESS	0.3	5.6	8.3	18.6	9.3	13.5	2.6	16.7	15.0	10.0
<i>Finland</i>										
ISSP	0.5	10.9	20.9	16.1	9.0	13.8	6.2	9.7	5.3	7.6
ELFS <sup>a</sup>	0.4	8.6	16.6	15.8	7.9	15.4	5.2	12.5	8.7	8.9
ESS	0.4	9.9	14.3	12.9	7.4	15.3	8.0	12.0	8.8	11.0
<i>France</i>										
ISSP	1.6	12.1	19.0	25.9	15.8	9.5	2.5	6.0	5.2	2.3
ELFS <sup>a</sup>	1.1	7.7	11.8	18.5	13.0	12.4	4.5	12.2	10.1	8.4
ESS	0.7	9.6	14.0	21.7	11.9	14.7	0.9	8.6	6.2	11.7
<i>Hungary</i>										
ISSP	0.0	6.6	9.5	11.4	7.0	10.8	4.6	29.8	7.9	12.3
ELFS <sup>a</sup>	0.4	6.9	12.6	13.1	9.2	14.1	3.1	19.4	12.6	8.0
ESS	1.0	7.1	12.6	12.8	7.8	12.2	3.1	22.7	8.0	12.7
<i>Norway</i>										
ISSP	0.3	11.8	13.3	20.9	10.1	17.9	3.3	11.4	5.9	5.1
ELFS <sup>a</sup>	0.6	7.6	10.9	23.2	7.9	22.6	3.4	10.9	7.7	5.3
ESS	0.5	9.4	10.5	21.5	7.9	20.9	3.0	11.1	6.6	8.6
<i>Poland</i>										
ISSP	1.0	5.9	9.9	8.8	7.4	12.4	9.3	20.3	9.1	15.8
ELFS <sup>a</sup>	0.6	6.0	11.9	13.1	7.2	11.8	16.7	15.9	9.2	7.5
ESS	0.5	7.7	5.9	12.1	8.6	13.3	9.3	19.6	11.2	11.7
<i>Portugal</i>										
ISSP	0.9	6.5	8.6	8.6	12.6	13.3	3.3	20.9	9.8	15.6
ELFS <sup>a</sup>	0.6	8.4	7.1	7.3	10.0	13.0	11.7	20.5	8.6	12.8
ESS	0.3	9.3	9.5	7.6	11.3	16.3	3.6	17.5	9.5	15.0
<i>Slovakia</i>										
ISSP	0.0	10.5	14.3	33.2	8.1	8.8	0.8	10.5	5.9	7.8
ELFS <sup>a</sup>	0.5	5.8	9.9	18.8	6.4	14.4	1.3	18.2	15.7	9.1
ESS	0.3	9.2	9.8	14.3	8.2	12.5	2.1	16.8	11.1	15.6

**Table 1** *Continued*

	0+	1,000+	2,000+	3,000+	4,000+	5,000+	6,000+	7,000+	8,000+	9,000+
<i>Spain</i>										
ISSP	0.9	7.5	6.6	9.0	11.9	13.7	4.0	17.5	10.3	18.3
ELFS <sup>a</sup>	0.5	7.4	12.1	10.1	9.4	14.6	3.6	17.5	9.6	15.1
ESS	0.3	5.6	15.0	15.9	4.6	14.7	6.2	15.2	6.4	16.0
<i>Sweden</i>										
ISSP	0.2	11.1	17.4	20.0	9.3	17.6	1.2	8.3	10.0	4.8
ELFS <sup>a</sup>	0.2	4.9	18.1	20.0	9.6	18.7	2.6	10.0	10.0	5.7
ESS	0.0	4.7	18.9	16.3	10.0	20.3	2.6	10.2	9.9	7.0
<i>Switzerland</i>										
ISSP	0.2	9.2	18.4	24.7	11.5	13.1	3.6	10.8	2.8	5.7
ELFS <sup>a</sup>	0.1	6.3	16.8	20.4	13.5	13.2	4.3	14.7	4.7	5.6
ESS	0.0	7.4	14.0	23.6	11.9	15.0	4.5	11.8	3.1	8.8

*Note:* 0+ : armed forces; 1,000+ : legislators, senior officials and managers; 2,000+ : professionals; 3,000+ : technicians and associate professionals; 4,000+ : clerks; 5,000+ : service workers and shop & market sales workers; 6,000+ : skilled agricultural and fishery workers; 7,000+ : craft and related trades workers; 8,000+ : plant and machine operators and assemblers; 9,000+ : elementary occupations

<sup>a</sup>ELFS, European Union Labour Force Survey (2004).

Sweden) can we *not* reject the hypothesis (at the  $P > 0.001$  level) that these samples come from different populations than those for the European Union Labour Force Survey. The greater the detail demanded from the ISCO categorization, the greater the measurement error. We conclude that the apparent precision offered by the ISCO four-digit coding scheme is rendered spurious by measurement error. Figure 2 reveals that, for Sweden, we lose no structure by using the more parsimonious two-digit coding.

We next examine some alternative ways to model the effects of occupation on attitudes over European integration.

## Occupational Theory and European Integration

We consider three lines of theorizing connecting occupation to opinion on European integration.

The first models how skill affects individual income streams, and how this, in turn, constrains attitudes. The core expectation is that the more skilled an individual, the greater her mobility, and the more she will benefit from market integration. Reducing the transaction costs of international trade (a) increases the international substitutability of labour and consequently intensifies job



insecurity for less skilled workers (Rodrik, 1997), (b) puts pressure on welfare systems (Huber and Stephens, 2001), and (c) shifts the burden of taxation from mobile factors of production that have the option to exit the tax regime to immobile factors that do not (Scharpf, 2000). So we expect to find that individuals with limited skills are more Eurosceptic than those with extensive skills.<sup>6</sup>

A second model derives expectations about preferences by predicting the effects of regional integration for factor incomes. The Stolper-Samuelson theory of factor endowments asserts that the price of a factor which is abundant in a country relative to the rest of the relevant trading area will decrease with market integration, while the price of a scarce factor will increase (O'Rourke and Sinnott, 2001; Mayda and Rodrik, 2005; Hainmueller and Hiscox, 2006).<sup>7</sup> European integration should therefore reduce rents generated by protection for the locally scarce factor. In wealthy, capital-rich, member states, we should expect unskilled workers to be Eurosceptic and managers and professionals to be pro-EU, while in relatively poor, labour-rich, member states we should therefore expect unskilled workers to be pro-EU and managers and professionals to be Eurosceptic.

A third model conceives European integration as a social and political as well as an economic process. European integration breaks down national barriers, increases societal interpenetration, and threatens national sovereignty, all of which engenders cultural resentment among individuals who are unable to take advantage of new opportunities for mobility (Hooghe and Marks, 1999; Kriesi and Lachat, 2004). An occupational model developed by Herbert Kitschelt (1994), Hanspeter Kriesi (1998) and refined by Daniel Oesch (2006) relates such resentment to occupational location (Kitschelt and Rehm, 2004a, b; Kriesi *et al.*, 2004). Occupational location provides a social setting in which a person spends a considerable part of his or her waking life, and which, as a result, affects ideology and preferences over lifestyle. Occupations with limited control over the pace and substance of work will tend to have restrictive notions of community, moral authority, and social order (Kitschelt, 1994). Since European integration challenges national communities and conventional sources of authority, it seems reasonable to expect such people to perceive European integration as a cultural threat to the *status quo* (Kriesi *et al.*, 2004).

Table 2 summarizes the implications of these theories, and Appendix A details how we operationalize them.

Two of these models — the skill model and the work-control model — aggregate ISCO-88 categories. Figure 3 benchmarks these models alongside the single-digit and two-digit ISCO measures for 12 countries: four Central/Eastern European countries that were in prospect of EU membership (the Czech Republic, Hungary, Poland, and Slovakia), two Western non-members



**Table 2** Theorizing the effect of occupation on Euroscepticism

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Skill model	Individuals with high skill specificity are more likely to oppose European integration.
Factor model	Individuals with lower levels of human capital in countries where low human capital is scarce are more likely to oppose European.
Work-control model	Individuals who hold occupations that provide low control over the work environment are more likely to oppose European integration.

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(Norway and Switzerland), and six current EU members from north to south (Austria, Finland, France, Portugal, Spain, and Sweden).

The models are associated with *Euroscepticism* in the expected way. The least parsimonious measure of occupation, the two-digit ISCO measure with up to 32 categories, generally has the strongest association. The chance-adjusted explained variance (*adjusted R*<sup>2</sup>) in *Euroscepticism* exceeds 10% in Sweden and Finland, is between 5 and 10% in Austria, France, Norway, and Slovakia, and is less than 5% in Switzerland, Hungary, Poland, the Czech Republic, Portugal and Spain. More parsimonious models generally explain less variance, although the drop-off is rarely large. In two countries, the work-control model explains as much chance-adjusted variance as the ISCO two-digit model, and in four countries, the ISCO single-digit model with just ten categories accounts for as much variance as the work-control model.

Given the measurement error that we have detected, one should be cautious in evaluating these results, or any results that are derived from the same or similar data sources. Figure 3 is consistent with the view that occupation works differently in different countries. But we cannot discount the possibility that the country patterns revealed in these figures are spurious. So, for example, we see greater structure in Scandinavian countries, but is this because occupation bites harder in these societies, or because the data for these countries are less prone to measurement error?

The factor model explicitly theorizes country variation, since it links Euroscepticism to the scarcity or abundance of skills in an economy relative to other economies in the trade zone. Skilled workers in countries where skills are abundant relative to the trading area should gain from market integration, whereas skilled workers in countries where such skills are relatively scarce should lose. To test this, we need information on an economy's relative endowment of skilled labour. We follow Mayda and Rodrik (2005) and Hainmueller and Hiscox (2006) in using per-capita GDP (2005, PPP-adjusted) on the supposition that countries with higher GDP per capita are better endowed with skilled labour. When we regress *Euroscepticism* against *skill level* (Figure 4), we find that the difference in Euroscepticism between skilled and unskilled is greater in richer countries. The slope is consistent with factor

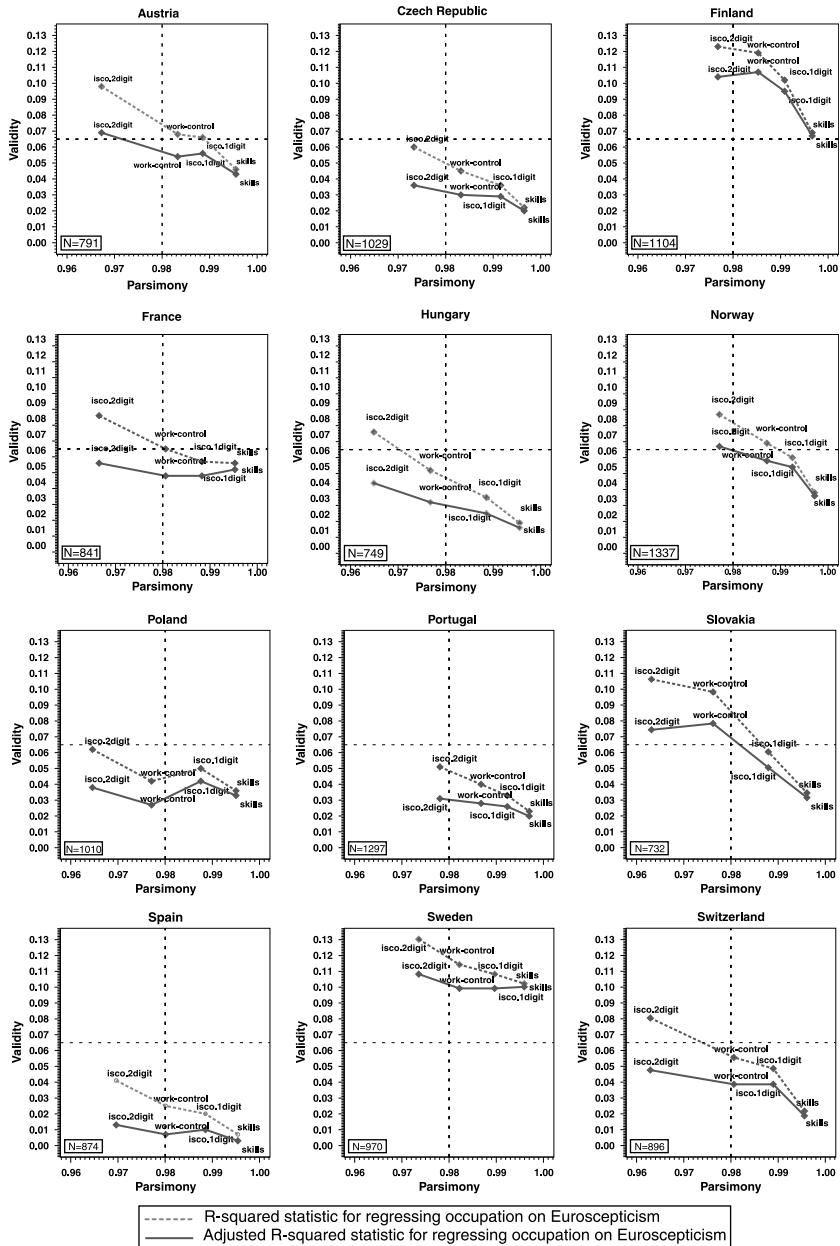


Figure 3 The parsimony/validity trade-off for 12 countries.

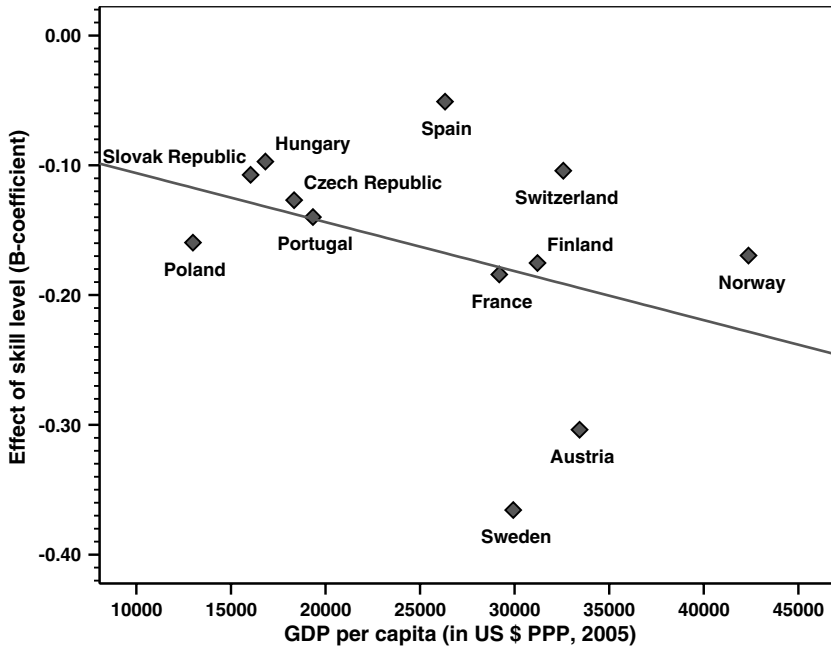


Figure 4 Factor endowment model: skill level and its effect on Eurocepticism.

theory, although skilled workers are less Euroceptic than unskilled workers in every country we examine — as the skill model and the work control model suggest.<sup>8</sup>

### Exerting Controls

We have probed the association between occupation and opinion on Europe, but we have not tested expectations about causation. To do this, we use a structural equation model since we are interested in how occupation affects more proximate causes of Eurocepticism. We have reason to believe that the effect of occupation on Eurocepticism is direct only to some degree. Much of its effect, we hypothesize, is mediated by factors that are closer to our dependent variable, such as income or attitudes concerning trade. Structural equation analysis allows one to array variables in a causal chain and relax the assumption that they are equidistant from the explanandum.

Our theoretical understanding of occupation builds on the Kriesi-Kitschelt claim that occupational location not only shapes an individual's economic



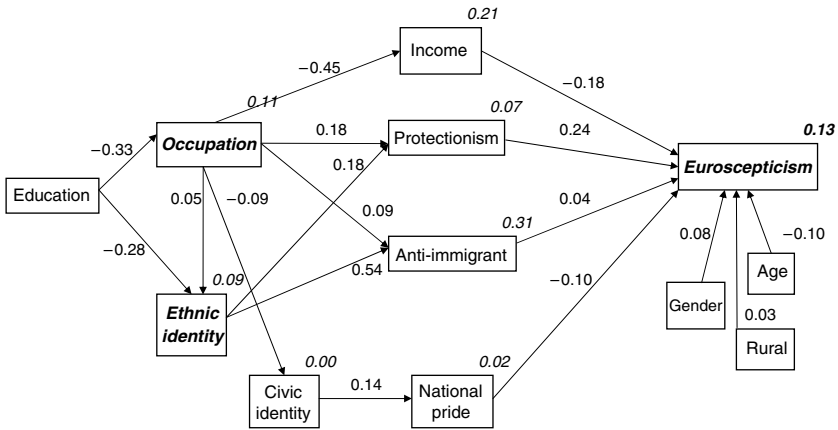
interest, but also her interpersonal relations, and hence, identity. Recent research suggests that identity is a powerful influence on public opinion on European integration (Carey, 2002; Diez Medrano, 2003; Citrin and Sides, 2004; de Vries and Van Kersbergen, this issue). We expect that individuals with an ascriptive, ethnic notion of identity will be inclined to Euroscepticism, while those with a non-ascriptive, civic notion of national identity will tend to be more supportive of European integration (Hooghe and Marks, 2005; McLaren, 2006).

In our model, the effects of occupational location and identity are mediated by three intervening factors. *Income* is influenced by an individual's occupation, and we anticipate that the higher a person's income the more that person stands to benefit from market integration. Economic *protectionism* taps individual preferences towards market integration, and is therefore proximate to opinion on European integration. Attitudes towards immigrants (*anti-immigrant*) taps the income effects of intensified competition arising from labour market integration and the in-group *vs* out-group sources of opinion on European integration.<sup>9</sup> There are strong grounds for believing that attitudes over economic protection are influenced by identity, alongside occupation (O'Rourke and Sinnott, 2001; Mayda and Rodrik, 2005) and that attitudes over immigration are influenced by occupation, alongside identity (Citrin *et al.*, 1990; Luedtke, 2005; Mayda, 2005).

Education increases tolerance of out-groups (Hiscox and Hainmueller, 2006) and constrains occupational choice (Iversen and Soskice, 2001a) and so we conceive *education* as causally prior to occupation and to identity. We exert additional controls for *gender*, *age*, *rural-urban* location, and *national pride*, which measures the intensity of national identity (Gabel, 1998; McLaren, 2007).<sup>10</sup>

Figure 5 presents the model with coefficients for Sweden, and Table 3 lists standardized total effects for key variables in 12 countries. The effect of *occupation* on all intervening variables, except *civic identity*, is significant and in the expected direction. More skilled individuals tend to be less Eurosceptic. In Sweden, a one interval shift in *occupation* (on our three interval scale) is associated with a change of 0.13 of a unit on our standardized measure of Euroscepticism.<sup>11</sup>

Can one generalize about the conditions under which one would expect occupation or identity to affect Euroscepticism? Prior research suggests that Euroscepticism becomes potent when political entrepreneurs succeed in connecting feelings of economic or cultural threat with latent unease about European integration (Kriesi *et al.*, 2004; McLaren, 2006). Referenda on European integration provide opportunities for such entrepreneurship because they raise the salience of European integration while weakening the control of party leaders and feeding intra-party dissent (Hooghe and Marks, 2006). This



**Figure 5** Occupation, identity and Eurocepticism (Sweden).

Note:  $N = 970$  (Sweden) from ISSP 2003, structural equation model. Operationalization of the variables in the model is described in Appendix B. Coefficients for all 12 countries are in Table 3.

**Table 3** Structural equation model: standardized total effects by country (occupation = ISCO 2 digit)

	$R^2$	Occupation	Ethnic identity	Income	National pride	Protectionism	Anti-immigrant
Austria	0.180	0.170	0.203	-0.110	-0.120	0.230	0.220
Czech Republic	0.102	0.050	0.076	0.017	-0.170	0.190	0.170
Finland	0.301	0.161	0.180	-0.003	-0.210	0.420	0.150
France	0.210	0.180	0.173	-0.078	-0.192	0.240	0.230
Hungary	0.132	0.042	0.070	-0.063	-0.220	0.181	0.081
Norway	0.140	0.097	0.095	-0.053	-0.010	0.283	0.062
Poland	0.171	0.120	0.110	-0.007	-0.200	0.230	0.221
Portugal	0.111	0.088	0.019	-0.150	-0.256	0.073	0.041
Slovakia	0.180	0.092	0.065	-0.190	-0.293	0.120	0.170
Spain	0.074	0.032	0.049	-0.007	-0.200	0.074	0.140
Sweden	0.131	0.130	0.062	-0.180	-0.100	0.240	0.035
Switzerland	0.130	0.075	0.150	-0.070	-0.009	0.110	0.290

Note: Results calculated using the structural equations model in Figure 5. Occupational categories ranked by country.

conjecture finds strong support in our data. Estimates for the total effect of occupation, ethnic identity, and protectionism tend to be higher in countries that have held at least one referendum on Europe in the period 1990–2003.<sup>12</sup>



We also expect the presence of a populist right party to act as a conduit for Euroscepticism (De Vries and Edwards, 2005). Populist right parties, such as the *Front National* or the Austrian *Freiheitliche Partei*, reject Europe because it threatens national culture and national sovereignty (Hooghe *et al.*, 2002). In our data, the estimated effect of anti-immigrant feelings and ethnic identity on Euroscepticism is positively associated with the vote of populist right parties ( $R=0.81$  and  $R=0.49$ , respectively).

Do radical left parties strengthen the link between occupation and Euroscepticism? The data here do not support it. The vote for radical left parties, such as the Swedish *Vänsterpartiet* or the former Czech communist party *KSCM*, is *negatively* associated with our estimate of the standardized total effect of occupation on Euroscepticism ( $R=-0.11$ ). As researchers have suspected, the populist right seems to set the pace in cueing Euroscepticism (Kriesi *et al.*, 2004).

## Conclusion

To what extent does a person's occupation measurably affect his/her attitude to European integration? The path we have taken to answer this question has led us to examine measurement error and to benchmark models. As a result, we are alert to the fact that conventional measures of significance (which assume valid data) overestimate the confidence one should place in regression estimates.

In two respects, our set up is conducive to our effort to benchmark models. We have a single dependent variable (*Euroscepticism*) and a single set of categories, four-digit ISCO-88, from which alternative subsets of categories can be aggregated. This makes more direct our comparison of models in terms of validity and parsimony and allows us to estimate a ceiling for the effect of any additive measure using ISCO-88 data.

Our benchmarking effort produces a graphic for *leverage*, which is the ratio between the information one puts into a model and the information one gets out. Our effort to benchmark the ratio between validity and parsimony raises the question whether the curve describing leverage varies systematically depending on the social phenomenon we wish to explain. In the data used here, the leverage curve is not linear. As we introduce more information into the model, we gain smaller amounts of validity. The reason for this appears to be that measurement error becomes more severe as we demand more refined information about occupation. The trade-offs we have mapped show that there is little loss of validity (taking chance into account) as we reduce data from the 390 categories in the four-digit ISCO code to the 25 categories in the two-digit ISCO-88 code. A classic trade-off between validity



and parsimony appears only at lower levels of resolution than the two-digit ISCO-88.

We have engaged three theories that make predictions about how a person's occupational location affects his/her political attitudes. Although we have not settled the issue in favor of one or the other theory, we suggest that it may be useful to theorize the influence of occupation in conjunction with identity. However, we have been unable to reduce the effect of identity to occupational location, and we believe that it is impossible to do so.

Despite measurement error, estimates of the total effect of occupation and identity appear to vary across countries in an intelligible way. Attitudes on European integration are more structured in countries that have experienced referenda on EU issues. We confirm that populist right parties frame Euroscepticism in terms of identity by mobilizing anti-immigrant sentiment, but we do not confirm that radical left parties play a similar role in framing the implications of occupational location for attitudes on Europe.

The connections between occupation, identity, and attitudes towards political objects, such as European integration, are not facts that are uttered in response to survey questions, but are perceptions that are politically constructed. To better understand how this construction takes place will require not only more sophisticated theory, but perhaps most of all, more reliable data.

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## Notes

- 1 Except perhaps for EU officials, who self-select on positive dispositions to Europe (Hooghe, 2002).
- 2 This classification was adopted by the International Labour Organization in 1992 and subsequently received the imprimatur of the European Commission. A revised classification will be released in 2007/08.
- 3 The ceiling is for simple aggregation of categories, not for complex operationalizations that calculate ratios and the like, such as the one developed by Torben Iversen and his collaborators (Iversen and Soskice, 2001a; Cusack *et al.*, 2005). A description of these data, as well as several data sets, can be accessed from Iversen's webpage: <http://www.people.fas.harvard.edu/~Iversen/SkillSpecificity.htm>.
- 4 At the margin, an additional variable with a T-score greater than one will increase the *adjusted R*<sup>2</sup> of a model.
- 5 Hence, a model using a single variable to predict 1,000 cases produces a  $\Psi$  of 0.998.
- 6 Another causal path from occupation to political attitudes over trade may run through asset specificity, which as Williamson has argued, increases exposure to risk (Williamson, 1985, 52). Torben Iversen and David Soskice have theorized the implications of skill specificity for social welfare policy (Iversen and Soskice, 2001a) and for the effect of trade on demand for welfare regimes (Iversen and Soskice, 2001b).



- 7 Empirical tests suggest that this line of reasoning is more propitious than a specific-factors model which expects that trade benefits those employed in export-oriented sectors and hurts those in import-competing sectors (Mayda and Rodrik, 2005).
- 8 The  $R^2$  statistic is 0.114. The fit is the same when we use years of education as measure of skill.
- 9 Attitudes towards immigrants can be regarded as an instrumental variable in this model, since it is associated with a variable we wish to measure — the extent to which respondents have an exclusive national identity — but unlike exclusive national identity, pro- or anti-immigrant attitudes are plausibly regarded as exogenous from *Euro-scepticism*.
- 10 Prior research has shown that national pride tends to be negatively related to Euro-scepticism (Carey, 2002; Hooghe and Marks, 2005).
- 11 When we replicate the analysis using general linear modeling, the effect of occupation is considerably weaker because we cannot take into account indirect effects. The effect of occupation is now three times weaker than that of ethnic identity (the two factors are about equally strong in the structural equation model) and more than 10 times weaker than protectionism or anti-immigrant sentiment (instead of 35–40% weaker). Regression analysis tends to crowd out distal variables with a modest direct effect in favor of causally proximate factors that may be more strongly associated with the dependent variable.
- 12 The  $R^2$  statistic for occupation is 0.680, for ethnic identity it is 0.601, and for protectionism it is 0.582.

## Appendix A

### Operationalizing ISCO

ISCO-88, developed by the International Labour Organization, is the most widely used classification of occupational titles. There is also ISCO-88 (COM), which was developed by the European Union in 1994 to harmonize national occupational classifications across EU member states. The differences between the two schemes are minor (for a detailed discussion, see Elias and Birch, 1994, <http://www.warwick.ac.uk/ier/isco/brit/intro.html>).

ISCO-88 classifies work according to tasks or duties that come with an occupation and, secondarily, skills necessary for fulfilling the formal and practical requirements of a particular occupation (International Labour Organization, 1990; Bergman and Joye, s.d.). All occupations are organized in a four-tier hierarchical classification scheme, ranging from the most detailed ISCO four-digit classification to the most aggregate ISCO one-digit scheme. We use these tiers in our analysis.

Each one-digit class is characterized by a certain level of educational or training skills. ISCO-88 distinguishes between four skill levels, which are added in parentheses below. Skill forms the backbone of several operationalizations we use.

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ISCO one digit	Highest level of aggregation. Ten major groups: 0+ : armed forces (skill n.a.) 1,000+ = legislators, senior officials and managers (skill n.a.); 2,000+ = professionals (skill level 4); 3,000+ = technicians and associate professionals (skill 3); 4,000+ = clerks (skill 2)
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	5,000+ = service workers and shop & market sales workers (skill 2)
	6,000+ = skilled agricultural and fishery workers (skill 2)
	7,000+ = craft and related trades workers (skill 2)
	8,000+ = plant and machine operators and assemblers (skill 2)
	9,000+ = elementary occupations (skill 1)
ISCO two digit	28 sub-major groups, which are nested in the 10 major groups. For example, within 4,000, the two sub-major groups are office clerks (4,100) and customer services clerks (4,200).
ISCO three digit	116 minor groups, nested in the 28 sub-major groups. For example, the sub-major group of office clerks (4,100) disaggregates into four minor groups: secretaries and keyboard-operating clerks (4,110), numerical clerks (4,120), material-recording and transport clerks (4,130), and library, mail and related clerks (4,140).
ISCO four digit	Most detailed classification into 390 unit groups, which are nested in the 116 minor groups. For example, the minor group of office clerks (4,110) breaks down into five unit groups: stenographers and typists (4,111), word-processor and related operatives (4,112), data entry operators (4,113), calculating-machine operators (4,114), and secretaries (4,115).

We also test the causal power of several operationalizations based on the ISCO classification:

Work-control	Regrouping of the 390 ISCO-88 unit groups into the following 17 categories: large employers, self-employed professionals, technical experts, higher-grade managers, socio-cultural professionals, socio-cultural semi-professionals, associate managers, technicians, petite bourgeoisie with employees, petite bourgeoisie without employees, skilled crafts, skilled office, skilled service, routine service, routine office, routine agriculture, and routine operatives. <i>Source:</i> Oesch (2006). Details on recoding of ISCO-88 categories are provided in the schemata below. <i>Note:</i> in the Oesch classification the categories 7,129–7,130 were doubly classified as both skilled crafts and routine operatives; in our data set they are classified as routine operatives only.
Skill	Recoding of ISCO-categories into the four skill levels that ILO uses to categorize the ten major groups. We allocate level 4 (highest level) to the 1,000 category, since it seems plausible to assume that the large majority of senior legislators, officials and managers are university-educated. We exclude armed forces from the analysis since armed forces draw from all classes of educational achievement.
Factor endowment	Skill factor as above, but interacted with GDP/capita at PPP to capture the relative scarcity or abundance of human capital. <i>Source:</i> Mayda and Rodrik (2005).

*Schemata constituting the basis of the work-control operationalization*  
See Tables A1 and A2.

**Table A1** Seventeen-class (and collapsed eight-class) schema based on different work logics

Self-employed		Employees			
Independent work logic		Technical work logic	Organizational work logic	Interpersonal service work logic	Marketable skills
<b>Large employers (&gt;9)</b> Firm owners Salesmen	<b>Self-employed professionals</b> Lawyers Accountants	<b>Technical experts</b> Mechanical engineers Computing professionals	<b>Higher-grade managers and administrators</b> Business administrators Financial managers	<b>Sociocultural professionals</b> University teachers Journalists	<b>Professional/managerial</b>
<b>Petite bourgeoisie with employees (&lt;9)</b> Restaurant owners Farmers		<b>Technicians</b> Electrical technicians Safety inspectors	<b>Associate managers and administrators</b> Managers in small firms Tax officials	<b>Sociocultural semi-professionals</b> Primary school teachers Social workers	<b>Associate professional/managerial</b>
<b>Petite bourgeoisie without employees</b> Shopkeepers Hairdressers		<b>Skilled crafts</b> Machinery mechanics Carpenters	<b>Skilled office</b> Secretaries Bank tellers	<b>Skilled service</b> Children's nurses Cooks	<b>Generally/vocationally</b>
		<b>Routine operatives</b> Assemblers Machine operators	<b>Routine agriculture</b> Farm hands Loggers	<b>Routine office</b> Mail sorting clerks Call centre employees	<b>Routine service</b> Shop assistants Home helpers
					<b>Low/unskilled</b>



**Table A2** ISO-88 codes of each class (identical for British, German and Swiss samples)

<b>Large employers</b> SELF and 10 or more employees	<b>Self-employed professionals</b> SELF and 2,000–2,470 (and less than 10 employees)	<b>Technical experts</b> 2,100–2,213		<b>Higher-grade managers and administrators</b> 1,000–1,251, 2,410–2,419, 2,441, 2,470	<b>Sociocultural professionals</b> 2,220–2,323, 2,350–2,351, 2,359, 2,420–2,440, 2,442–2,443, 2,445, 2,451, 2,460
<b>Petite bourgeoisie with employees</b> SELF and less than 10 employees (and not 2,000–2,470)		<b>Technicians</b> 3,100–3,213, 3,471		<b>Associate managers and administrators</b> 1,252–1,319, 3,410–3,449, 3,452	<b>Sociocultural semi-professionals</b> 2,330–2,340, 2,352, 2,444, 2,446–2,450, 2,452–2,455, 3,220, 3,222–3,224, 3,226, 3,229–3,232, 3,240–3,400, 3,450–3,451, 3,460–3,470, 3,472–3,480
<b>Petite bourgeoisie without employees</b> SELF and no employees (and not 2,000–2,470)		<b>Skilled crafts</b> 110, 7,120–7,142, 7,200–7,233, 7,240–7,423, 7,430–7,520, 8,311, 8,324, 8,333		<b>Skilled office</b> 4,000–4,112, 4,114–4,141, 4,143, 4,190–4,210, 4,213–4,221	<b>Skilled service</b> 3,221, 3,225, 3,227–3,228, 5,122, 5,141, 5,143, 5,110–5,113, 5,150–5,163, 5,200–5,210, 8,323
		<b>Routine operatives</b> 7,100–7,113, 7,129–7,130, 7,143, 7,234, 7,424, 8,000–8,310, 8,312, 8,334–8,400, 9,160–9,162, 9,300–9,333	<b>Routine agriculture</b> 6,010–6210, 8330–8332, 9200–9213	<b>Routine office</b> 4,113, 4,142, 4,144, 4,211–4,212, 4,222–4,223	<b>Routine service</b> 5,120–5,121, 5,123–5,130, 5,131–5,140, 5,142, 5,149, 5,169, 5,220–5,230, 8,320–8,322, 9,100–9,153

Note: Reproduced from Oesch (2006, 269 and 283).



## Appendix B

### Operationalization of Variables in Structural Equation Model

Eurocepticism	Average of two items in ISSP measuring (a) views on membership of European integration: Var 70: 'Generally speaking, would you say that [country] benefits or does not benefit from being a member of the European Union?'	[Non-members: Var 70b: 'would benefit' or 'would not benefit'] (five categories), and (b) views on a referendum about membership, Var 74: 'If there were a referendum today to decide whether [country] does or does not remain a member of the European Union, would you vote in favor or would you vote against?'	[Non-members: Var 73: '...does or does not become a member of the European Union...'] (three categories; recode 'can't choose' as middle category). Responses standardized around the mean; high values indicate Eurocepticism.
Occupation	Rank-ordered variable based on ISCO two-digit, where the number of categories varies from 25 to 33 depending on the country. For each country, categories are rank-ordered from low to high with respect to the mean level of Eurocepticism of individuals in each category.		
Ethnic identity	Factor (principal components) of seven variables tapping conditions of being considered a 'national', including being born in country, having lived there, speak language, share religion, respect institutions, feel a national, have ancestry: Var 11 to Var 18 (not Var 12). Scores highest on birth, life, religion, ancestry. High values indicate ethnocentrism.		
Civic identity	Factor (principal components) of seven variables tapping conditions of being considered a 'national', including being born in country, having lived there, speak language, share religion, respect institutions, feel a national, have ancestry: Var 11 to Var 18 (not Var 12). Scores on this second factor are highest on respect institutions, feeling national, and language. High values indicate high support for civic conception.		
Income	Income standardized by country (var = rincome, i.e. respondent's income).		
Protectionism	Average of two items in ISSP measuring (a) views on foreign imports: Var 36: '[country] should limit the import of foreign products in order to protect its national economy (five categories), and (b) views on foreign companies: Var 41: 'Large international companies are doing more and more damage to local businesses in [country]'		(five categories). Responses standardized; high values indicate protectionism.
Anti-immigrant	Factor (principal components) of five variables in ISSP tapping views on immigrants, including role in crime, national economy, unemployment, innovation, and government support (Var 50 to Var 54). High values indicate anti-immigrant sentiment.		
National pride	Factor (principal components) of six variables measuring pride in country's democracy, world influence, economic achievements, social security system, history, and treatment of groups in society: Var 26, 27, 28, 29, 33 and 34. High values indicate strong national pride.		



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Age	Years of age, standardized around the mean (var = age).
Rural	Five-point scale from 'urban, big city' to 'farm or home in the country', standardized around the mean (var = urbrural).
Gender	Bivariate variable where 1 = male and 2 = female (var = sex).
Education	Years of formal education, standardized (var = educyrs).