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European Welfare States and Migrant Poverty:

The Institutional Determinants of Disadvantage

Methodological online appendix

For fuzzy-set QCA the raw data need to be transformed into set membership scores, ranging from 0 to 1. This process is called calibration and should be guided by theoretical and substantive knowledge (Ragin, 2008: 82). There are basically two methods of calibration (Ragin, 2008: 85-105; Schneider & Wagemann, 2012: 33-40). First, by using different sources of information as well as inspecting breaks and extreme points in the data, the researcher identifies groups of countries with similar values and assigns fuzzy-set scores. Second, if the basis of calibration is interval-scale data of reasonable quality, the researcher can determine three qualitative anchors: full membership (theoretically a fuzzy-set score of 1, but for this transformation defined by values ≥ 0.95), full non-membership (fuzzy-set score ≤ 0.05), and the crossover point (fuzzy-set score = 0.5). Consequently, the raw data is transformed into fuzzy-set scores by a logistic function within the defined qualitative anchors. Given the quality and nature of our raw data, we choose the calibration by logistic function for our outcome and four conditions as described (often called 'direct method of calibration'; Ragin, 2008). In order to provide as much transparency as possible, we will discuss the calibration of our outcome and conditions in the following. The operationalization that underlies this calibration has been explained and justified in the main text. For the causal conditions we just briefly restate it here, while we present some more detail on the

operationalization of the outcome. The fuzzy-set analysis of this paper was conducted with the software fs/QCA 2.5 (www.fsqca.com).

The outcome: the set of states with high migrant disadvantage (D)

We use disposable household income, equivalized by household size, below 60% of the national median as our indicator of poverty. The motivation behind a relative poverty measure is to indicate when individuals 'lack the resources to obtain the types of diet, participate in the activities and have the living conditions and amenities which are customary, or which are at least widely encouraged or approved, in the societies to which they belong' (Townsend, 1979: 31). The indicator we deploy is widely used by researchers as well as by the European Commission. It is sometimes called 'at-risk-of-poverty rate' because the income threshold does not necessarily imply a low standard of living. The discussion around concept and measurements of poverty is in fact complex and goes well beyond this simple measure (e.g. Lister, 2004). Yet, this article does not intend to address poverty comprehensively. Rather, we use the relative and income-based poverty rate as a general indicator of economic hardship.

The poverty figures are based on data from Eurostat, European Union Statistics on Income and Living Conditions (EU-SILC), years 2007 and 2008.[1] In the only alternative dataset for our purposes, the Luxembourg Income Study, 2007-2008 data was available for only few countries at the time of writing. Admittedly, the coverage of immigrants in the EU-SILC samples is imperfect. As the survey covers only private households, asylum seekers living in institutional accommodation may not be covered. In addition, recent as well as undocumented immigrants are likely to be underrepresented. This means that migrant poverty figures are probably too optimistic (Eurostat, 2011).

[1] The responsibility for all conclusions drawn from the data lies entirely with the authors.

This article does not seek to account for migrant poverty as such, which is influenced by many economic and institutional conditions that affect the native population in a similar way. Rather, we are interested in explaining the cross-national variation in the extent to which immigrants are more often poor than those born in the respective country. To this end, we run a logit model for each country with being in poverty (as defined above) as the dependent variable and migrant status as the main independent variable of interest. In order to avoid confounding effects of the different composition of migrant populations we control for age, gender, and education levels.[2] Based on these models, we estimate for each country the marginal effect of migrant status on poverty, more precisely: the change in predicted probability of being in poverty for non-EU immigrants with respect to natives (calculated as an average over all respondents at their observed values).[3] For the resulting distribution, see Figure 1 in the main text.

We have also compared these marginal effects to the descriptive poverty rate among non-EU immigrants (not controlling for demographics). Most countries (except Portugal, and excluding the uncertain value for Germany) have a descriptive rate between about 25 and 40%. The marginal effect and the descriptive rate are closely correlated ($r=0.83$, $p<0.001$). This suggests that migrant disadvantage is in fact strongly driven by high poverty among immigrants and not by the contrast to the native population. For instance, the countries with the highest disadvantage for immigrants (Belgium and Finland) indeed have higher descriptive immigrant poverty rates than the countries where migrant disadvantage is low (Spain, Norway, Italy, United Kingdom and Portugal).

The literature provides no standard for what constitutes a large effect of migrant status on poverty. Therefore, the empirical distribution and substantive knowledge guided our choice of qualitative anchors. Cases are full members in the set of countries with large

[2] Education is measured by the highest level attained in the International Standard Classification of Education (ISCED). We have collapsed the six ISCED levels into three, by merging levels 0-2 and 3-4.
[3] Sample weights have been applied in all of these calculations.

migrant disadvantage if the marginal effect of migrant status on poverty is 25 percentage points or more. This is the case in Belgium. This threshold reflects that in developed democracies very extreme poverty differences do not occur. While the cases with extreme values are easy to spot, differences in the middle of the distribution are more gradual. Table A1 shows a certain break in the data between Denmark (12.99) and Spain (10.96). Consequently, the crossover point is set between these cases at 12.0 percentage points. Though this is still a high difference, the threshold recognizes the fact that for inherent reasons (for instance the time it takes to settle down, learn the language, find a job) migrants may do worse immediately after settlement (Kogan, 2006). Consequently, eleven of our cases are counted as having to varying degrees a notable migrant disadvantage in terms of poverty. Germany is included here because the effect of migrant status is most likely underestimated due to the German data not distinguishing between EU and non-EU migrants. We have therefore adjusted Germany's score to match that of Austria. The countries below the crossover point are, in descending order, Spain, Norway, Italy, United Kingdom, and Portugal. Cases are fully out of the set of large migrant disadvantage if the marginal effect is 1 percentage point or less, i.e. if migrant status does not notably increase the risk of poverty. Thus, only Portugal is scored as fully a non-member.

Table A1. Calibration of the outcome: states with high migrant disadvantage (D)

Case	**Marginal effect of migrant status**	**Fuzzy-set scores**
Belgium	25.75	0.96
Finland	22.21	0.91
Ireland	20.90	0.89
Sweden	17.22	0.77
France	16.69	0.75
Switzerland	14.87	0.66
Greece	13.86	0.61
Austria	13.52	0.59
Netherlands	13.21	0.57
Denmark	12.99	0.56
Spain	10.96	0.43
Norway	10.36	0.39
Italy	8.30	0.27
United Kingdom	7.76	0.24
Germany	6.23	0.59
Portugal	-0.48	0.03

Source: EU-SILC, own calculations.

Note: The marginal effects are of the years 2007 and 2008. The thresholds for full membership, the crossover point and non-membership are respectively 25, 12, and 1. Germany's fuzzy-set score is adjusted to match that of Austria due to a deficiency in the underlying data.

Causal condition: the set of generous welfare states (G)

The generosity of the welfare state is measured by social expenditure (public and private mandatory) as a percentage of GDP (OECD, 2013), averaged from 2003 to 2007 and excluding pension expenditures. Denmark and Sweden are by common standards very generous welfare states (Esping-Andersen, 1990; Scruggs & Allan, 2006). Therefore, the threshold for full membership is set at 20.0%. There is a large gap between the Netherlands and Switzerland. Accordingly, we set the crossover point at 16.0%. Although the Swiss welfare state has changed substantially since the 1970s and is now more generous, "strong liberal traits remain", especially in the administration of unemployment insurance and social assistance (Armingeon, 2001: 150). On the other hand, the Netherlands are commonly recognized as a generous welfare state. All countries below the crossover point belong to either the liberal or the South-European welfare regime. Greece is scored fully out of the set of generous welfare states. Non-membership therefore occurs at or below 11.0%. Compared to other South-European countries the Greek welfare state is very uneven with the most generous pension benefits and particularly lean unemployment benefits (Ferrera, 2010).

Table A2. Calibration of the set of generous welfare states (G)

Case	Social expenditures	Fuzzy-set scores
Denmark	20.5	0.97
Sweden	20.0	0.95
France	19.3	0.92
Belgium	19.2	0.92
Germany	18.9	0.90
Finland	17.3	0.73
Austria	17.1	0.70
Norway	17.0	0.68
Netherlands	16.5	0.59
Switzerland	15.1	0.37
United Kingdom	14.8	0.33
Spain	14.5	0.29
Portugal	14.2	0.25
Italy	13.6	0.19
Ireland	13.2	0.16
Greece	10.4	0.03

Source: OECD (2013)

Note: Social expenditures are as percentage of GDP, averaged for 2003-2007, and exclude pension expenditure. The thresholds for full membership, the crossover point, and non-membership are respectively 20, 16, and 11.

Causal condition: the set of insurance-based welfare states (I)

Whether the welfare state is based on social insurance as its main eligibility principle is measured by the share of social spending that is financed through social contributions. Countries are full members in the set of insurance-based welfare states if at least 70% of their welfare state is financed through social contributions. This threshold is below 100% because in practice some parts of the welfare state, such as social assistance and some social services, must be financed through taxes. The crossover point is set at 50.0%, between Italy and Finland. Not only is there a break in the data, but the social protection structure in Italy (and Spain and Greece) was influenced more by a Bismarckian legacy (Gal, 2010: 295; Flora, 1986). In total, eight cases are more in than out the set of insurance-based welfare states. Countries that finance less than half of their welfare state through social contributions are Finland, Norway, Portugal, United Kingdom, Sweden, Switzerland, Ireland and Denmark. To cut off Denmark's extraordinarily low value the lower threshold is set at 20%. Hence, Denmark is the only complete non-member.

Table A3. Calibration of the set of insurance-based welfare states (I)

Case	**Social contribution spending**	**Fuzzy-set scores**
Netherlands	64.2	0.89
Germany	62.1	0.86
Spain	57.7	0.76
France	54.6	0.67
Greece	53.8	0.64
Austria	53.8	0.64
Belgium	52.2	0.58
Italy	50.3	0.51
Finland	46.9	0.42
Norway	41.5	0.30
Portugal	37.4	0.22
United Kingdom	37.1	0.22
Sweden	35.7	0.19
Switzerland	35.5	0.19
Ireland	29.0	0.11
Denmark	4.1	0.01

Source: OECD (2013)

Note: Social contribution spending measures the share of social expenditures financed through social contribution, averaged over 2003 to 2007. The thresholds for full membership, the crossover point, and non-membership are 70, 50, and 20.

Causal condition: the set of states with humanitarian immigration policy (H)

Humanitarian immigration policy is measured by the share of humanitarian and family migrants born in non-EU countries as a percentage of the total non-EU born migrant population. We used data from Eurostat, Labour Force Survey (EU-LFS), 2008.[4] Since it is unlikely that countries only attract humanitarian migrants, we set the threshold for full membership at 80%. This makes Sweden the only full member. The crossover point is at 50%, which makes sense from a logical point of view and in light of the actual distribution. The nine countries that are more in than out of the set comprise in descending order (aside from Sweden) Norway, Denmark, Finland, the Netherlands, Belgium, Germany, Austria, France, and Switzerland. International obligations make it impossible for countries to completely rule out family and humanitarian migration. The threshold for non-membership therefore occurs at 20%. Although none of the countries in our sample are entirely non-members, six countries are more out than in the set. These countries all belong to the liberal or Southern European welfare regime. The fuzzy scores for Finland and Denmark are based on secondary sources (e.g. Bartram, 2007; Constant & Zimmerman, 2005) due to missing data. Germany's fuzzy score is likely an underestimation because it is based on the entire migrant population instead of non-EU born migrants. Yet, even if underestimated, Germany is clearly a member of the set.

[4] The responsibility for all conclusions drawn from the data lies entirely with the authors.

Table A4. Calibration of the set of states with humanitarian immigration policies (H)

Case	**Non-EU born humanitarian migrants**	**Fuzzy-set scores**
Sweden	82.2	0.96
Norway	74.9	0.92
Denmark	-	0.90
Finland	-	0.80
Netherlands	62.9	0.78
Belgium	61.2	0.75
Germany	58.0	0.69
Austria	56.0	0.65
France	52.9	0.57
Switzerland	52.7	0.57
United Kingdom	46.1	0.40
Portugal	40.4	0.28
Italy	34.0	0.17
Ireland	33.0	0.15
Spain	32.5	0.15
Greece	28.7	0.11

Source: EU-LFS, own calculations.

Note: The second column measures the share of non-EU born humanitarian and family immigrants as a percentage of the total non-EU born migrant population in 2008. The thresholds for full membership, the crossover point, and non-membership are 80, 50, and 20. The fuzzy-set scores of Denmark and Finland are imputed based on secondary sources.

Causal condition: the set of states with high levels of employment protection (E)

The strictness of employment protection legislation is measured by the employment protection indicators for individual dismissals of regular workers (OECD, 2013), averaged from 2003 to 2007. Very few changes have occurred in the protection of standard workers during this period (Venn, 2009). The threshold for full membership is set at 3.5. This cuts off the extreme value for Portugal. The crossover point lies between Norway and Finland at 2.25. The Finnish labour market is more flexible than the Norwegian (Emmenegger, 2011). Non-membership occurs at 1.0. This means that none of the countries is scored fully out. It takes into account that although the UK has minimal employment protection, it is not completely absent.

Table A5. Calibration of the set of states with high levels of employment protection (E)

Case	**EPL for regular employment (2003-2007)**	**Fuzzy-set scores**
Portugal	4.45	0.99
Netherlands	2.88	0.82
Germany	2.83	0.80
Greece	2.80	0.79
Italy	2.76	0.77
Sweden	2.61	0.70
France	2.47	0.63
Austria	2.37	0.57
Spain	2.36	0.57
Norway	2.33	0.55
Finland	2.17	0.45
Denmark	2.13	0.43
Belgium	1.81	0.26
Switzerland	1.60	0.17
Ireland	1.37	0.11
United Kingdom	1.20	0.07

Source: OECD (2013)

Note: The thresholds for full membership, the crossover point, and non-membership are 3.5, 2.25 and 1.

Table A6. Truth table for the sufficient condition of high migrant disadvantage (D)

G	H	E	I	D	Consistency	Number	Cases
1	1	0	1	1	1.00	1	BE
1	1	0	0	1	0.96	2	DK, FI
0	1	0	0	1	0.94	1	CH
1	1	1	1	1	0.93	4	AT, DE, FR, NL
1	1	1	0	1	0.91	2	SE, NO
0	0	0	0	1	0.90	2	IE, UK
0	0	1	1	0	0.82	3	ES, GR, IT
0	0	1	0	0	0.71	1	PT
1	0	1	1	-		0	
1	0	1	0	-		0	
1	0	0	1	-		0	
1	0	0	0	-		0	
0	1	1	1	-		0	
0	1	1	0	-		0	
0	1	0	1	-		0	
0	0	0	1	-		0	

Note: The rows with a '-' are logical remainders (configurations that lack empirical instances). The consistency threshold has been set at 0.89, below the row including IE and UK, as there is a clearly larger gap in consistency than any of the differences between the rows above.

Table A7. Membership scores in outcome and causal conditions by case.

	outcome	causal conditions			
	high migrant disadvantage	generous welfare state	humanitarian immigration policy	high employment protection	insurance-based welfare state
	D	G	H	E	I
AT	0.59	0.70	0.65	0.57	0.64
BE	0.96	0.92	0.75	0.26	0.58
CH	0.66	0.37	0.57	0.17	0.19
DE	0.59	0.90	0.69	0.80	0.86
DK	0.56	0.97	0.90	0.43	0.01
ES	0.43	0.29	0.15	0.57	0.76
FI	0.91	0.73	0.80	0.45	0.42
FR	0.75	0.92	0.57	0.63	0.67
GR	0.61	0.03	0.11	0.79	0.64
IE	0.89	0.16	0.15	0.11	0.11
IT	0.27	0.19	0.17	0.77	0.51
NL	0.57	0.59	0.78	0.82	0.89
NO	0.39	0.68	0.92	0.55	0.30
PT	0.03	0.25	0.28	0.99	0.22
SE	0.77	0.95	0.96	0.70	0.19
UK	0.24	0.33	0.40	0.07	0.22

Table A8. Sufficient condition for absence of migrant disadvantage (~D)

Solution	**E*~H*~G → ~D**
Countries covered	Greece
	Italy
	Portugal
	Spain
Consistency	0.86
Raw coverage	0.55
Unique coverage	0.55

Note: Consistency threshold is set at 0.88. Greece is a contradictory case as it has a high migrant disadvantage.

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