Supplementary material for "British nationals' preferences over who gets to be a citizen according to a choice-based conjoint experiment"

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Table A1: Occupational distribution for foreign-born and UK-born workers in 2017

Occupation	Eu		Non EU		UK born	
	Number (thousands)	%	Number (thousands)	%	Number (thousands)	%
Managerial	167	7.1	350	11	2,681	10.6
Professional	382	16.2	819	25.8	5,017	19.9
Associate professional	246	10.5	369	11.6	3,819	15.2
Administrative	156	6.6	257	8.1	2,730	10.8
Skilled trades	300	12.7	221	7	2,689	10.7
Personal service	186	7.9	325	10.3	2,402	9.5
Sales	141	6	238	7.5	2,003	8
Processing	283	12	210	6.6	1,460	5.8
Elementary occupation	491	20.9	382	12.1	2,395	9.5
Total	2,354	100	3,172	100	25,196	100

Source: Cinzia Renzio's analysis of Labour Force Survey, Q1-Q4. Occupational categories derived from the Standard Occupational Classification (SOC 2000)
(https://migrationobservatory.ox.ac.uk/resources/briefings/migrants-in-the-uk-labour-market-an-overview/)

Table A2: Largest immigrant groups in the UK in 2017

Rank	Country if birth	Number (thousands)	Percentage share of total population
1	Poland	922	9.8
2	India	829	8.8
3	Pakistan	522	5.6
4	Ireland	390	4.1
5	Romania	390	4.1
6	Germany	318	3.4
7	Bangladesh	263	2.8
8	Italy	232	2.5
9	South Africa	228	2.4
10	China	216	2.3

Source: adapted from ONS Population of the UK by nationality and country of birth, table 1.3 and 2.3
(https://migrationobservatory.ox.ac.uk/resources/briefings/migrants-in-the-uk-an-overview/)

Technical note on method

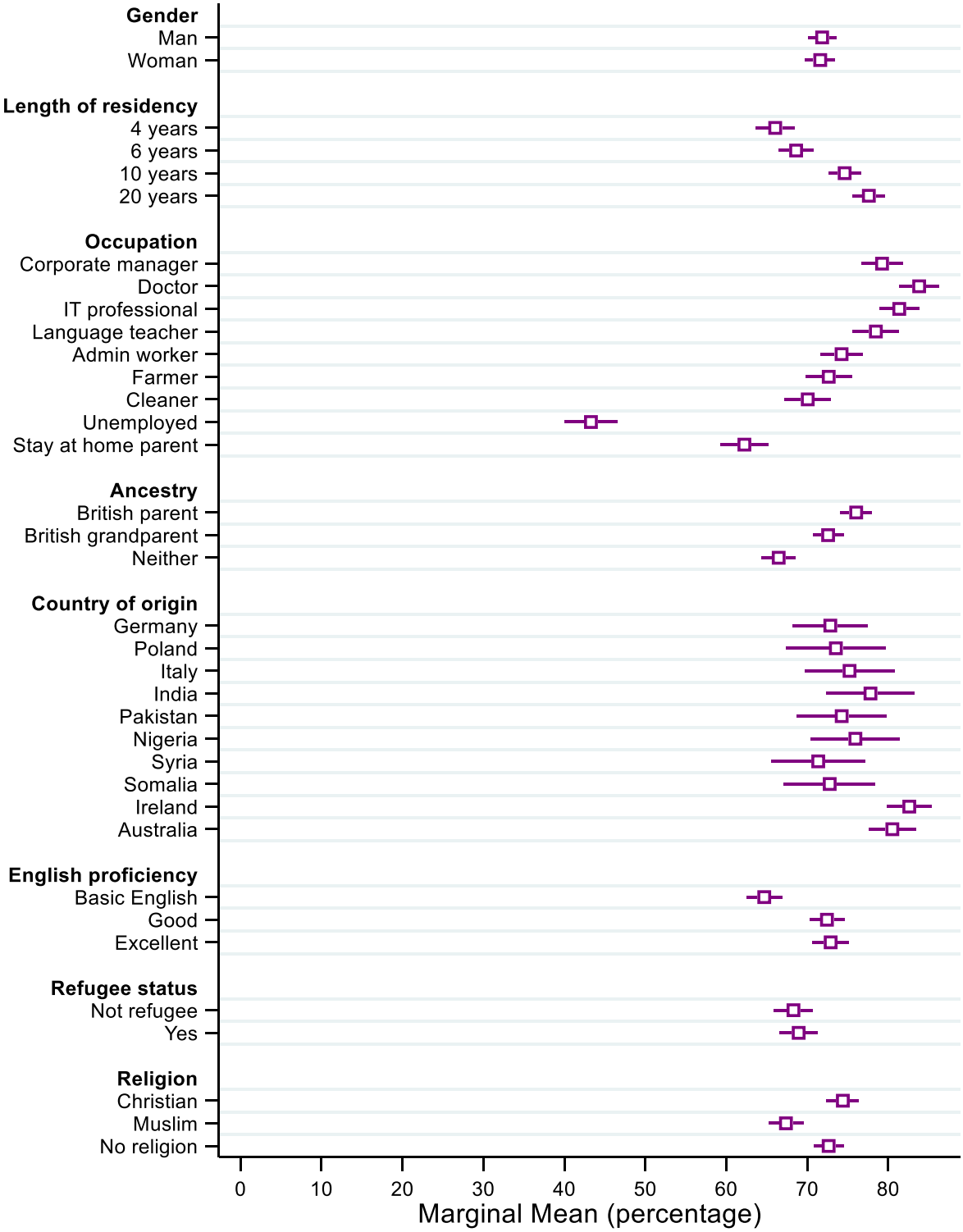
Each individual profile vignette is designed as part of a fractional factorial experimental design that matches the occurrence of each attribute with all other attributes. Each respondent N is presented with j choice tasks and k profile vignette alternatives. Each profile vignette is characterised by S attributes. The treatment given to each respondent N as her k^{th} profile vignette in her j^{th} choice task is a vector $T_{njk,}$ whose S^{th} component T_{njks} corresponds to the S^{th} attribute of the profile vignette. The vector T_{njk} can take on any value given by the product of all possible levels of the attributes, except for the restrictions imposed to specific combinations of levels of attributes. I estimate the attribute's average marginal component effect (AMCE), the average marginal effect of attribute S, on the probability of a profile receiving citizenship. The AMCE is the probability that a profile will be picked if the value of the l_{th} level changed from t_0 to t_1, averaged over all the possible values of the levels conditional on the joint distribution of all profile attributes. I obtain the AMCEs by estimating an OLS regression of the choice outcome on dummy variables for each attribute level, where each coefficient estimate gives the value of moving from the reference category t_0 to a different t_1. To account for the restrictions I impose, I include all main effects of the restricted attributes S^R and all level interactions between them. The estimator of AMCE of changing level from t_0 to t_1 for S^R is the linear combination of the coefficients of the attribute S^R and the relevant interactions, weighted by the corresponding probability of occurrence.

I also compute the marginal mean (MM) of all attribute levels, including of the reference category, after the OLS regression. In order to compare attribute levels on the same sample, I partition the sample to estimate the MM only on the subset of data for which all combinations were possible. For the attribute 'religion' I partition the sample, dropping all the observations that have 'Poland' as country of origin. For the attribute 'English proficiency' I drop all cases that have 'Australia' or 'Ireland' as 'country of origin'. For the attribute 'country of origin' I drop all observations that have 'basic' and 'good' as 'English proficiency level' and that have 'Muslim' as religion. The MM of the attribute 'refugee status' is computed only across refugee sending countries. Table S4 shows the number of observations used to compute the MM of each attribute.

Table A3: Sample sizes for each attribute when computing MMs

Attribute	**Sample size (n of observations)**
Sex	15,970
Length of residence	15,970
Occupation	15,970
Ancestry	15,970
Country of origin (non-refugee sending)	9,535
Country of origin (refugee sending)	6,435
English proficiency	12,731
Refugee status	6,435
Religion	14,458

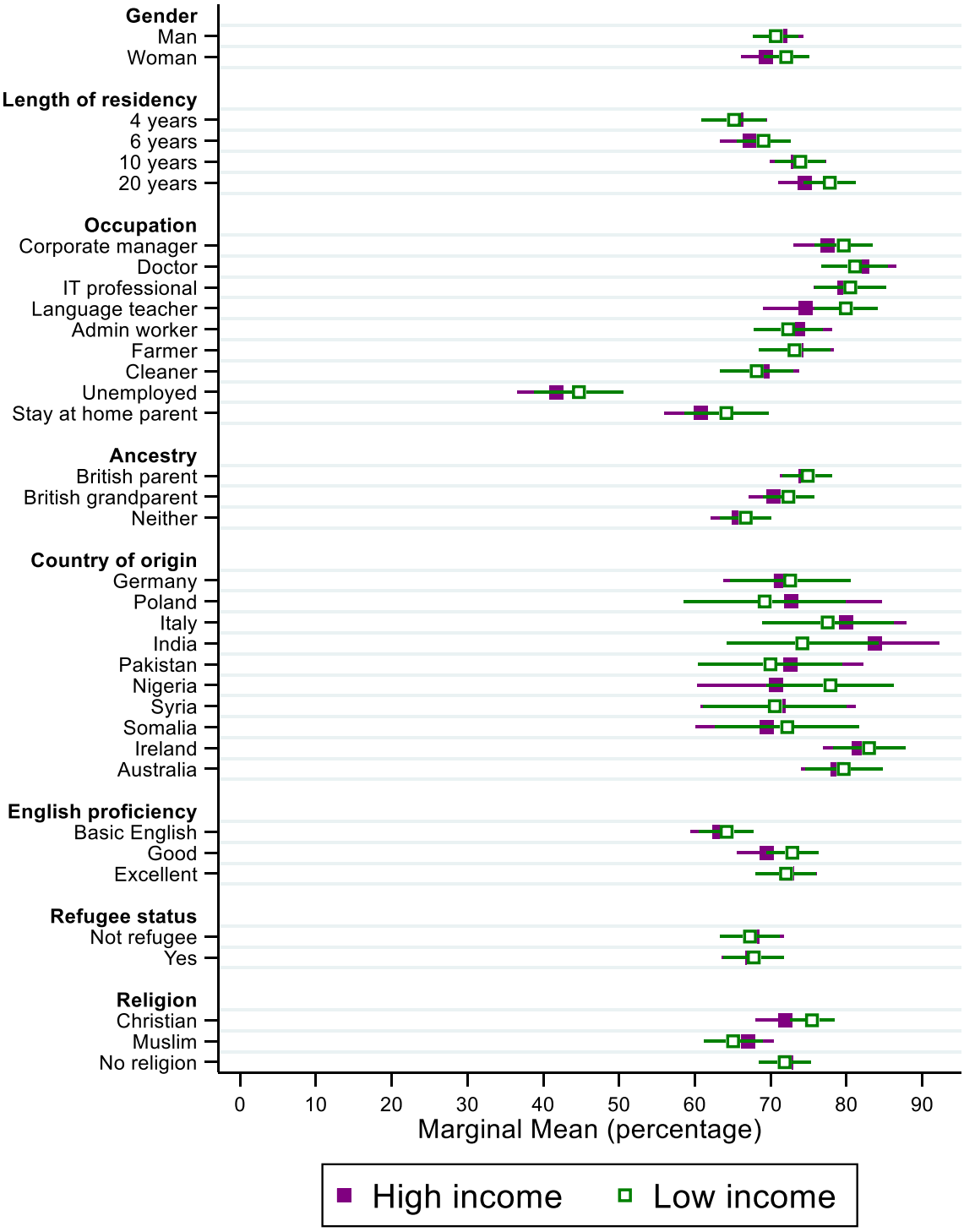
Figure A1: MMS of all attribute levels



Note: MMs calculated after OLS regression of the probability of being granted British citizenship with all attribute levels and no interactions between them, with clustered standard errors and weights. Open squares show MM point estimates and the horizontal lines delineate 95% confidence intervals.
See Table S3 for subsample sizes. To allow comparisons between 'country of origin' categories all Muslim and basic/good English cases were dropped when computing MMs for country of origin.

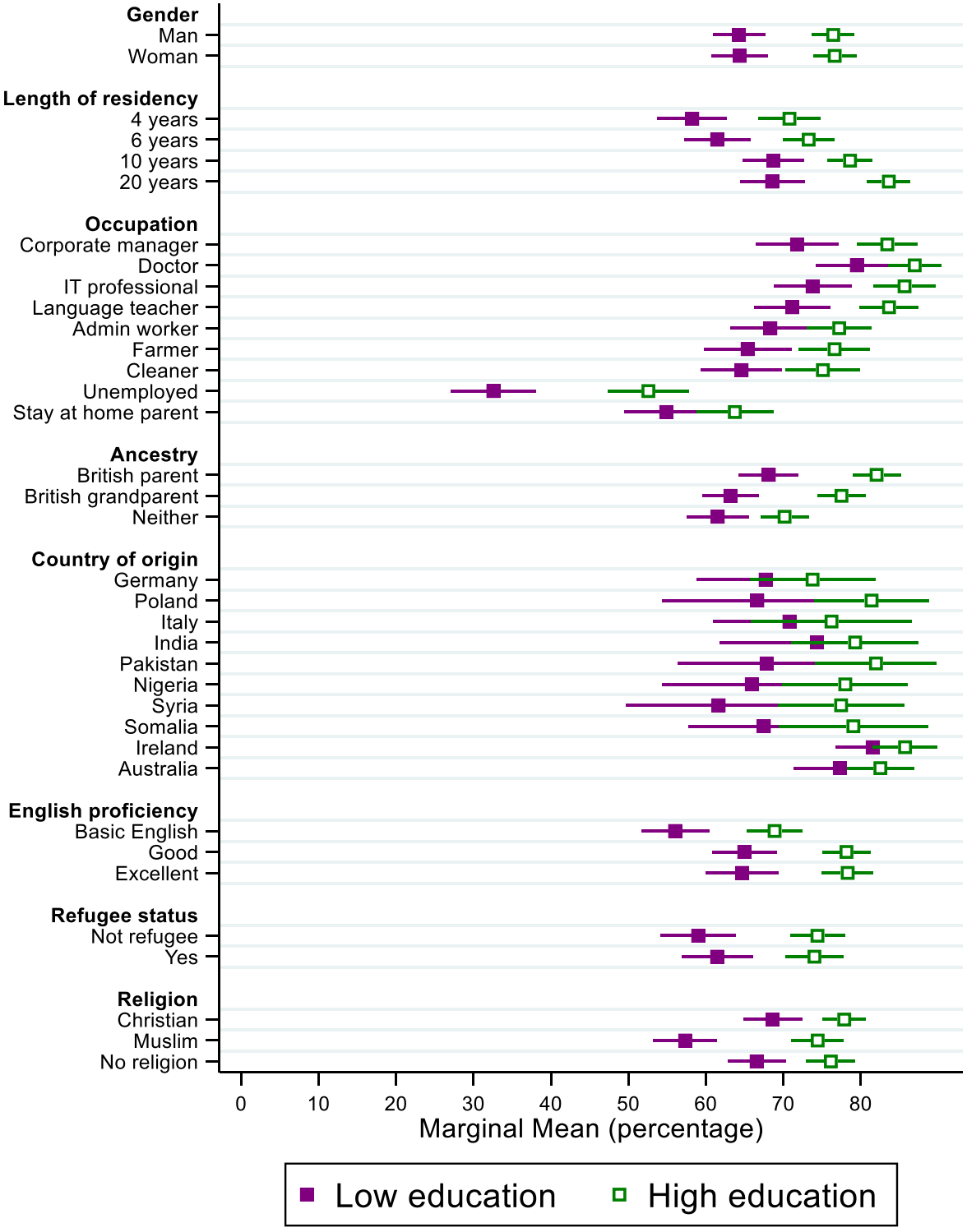
Marginal Means according to respondent characteristics

Figure A2: MMs of the first vs. third gross household income tercile



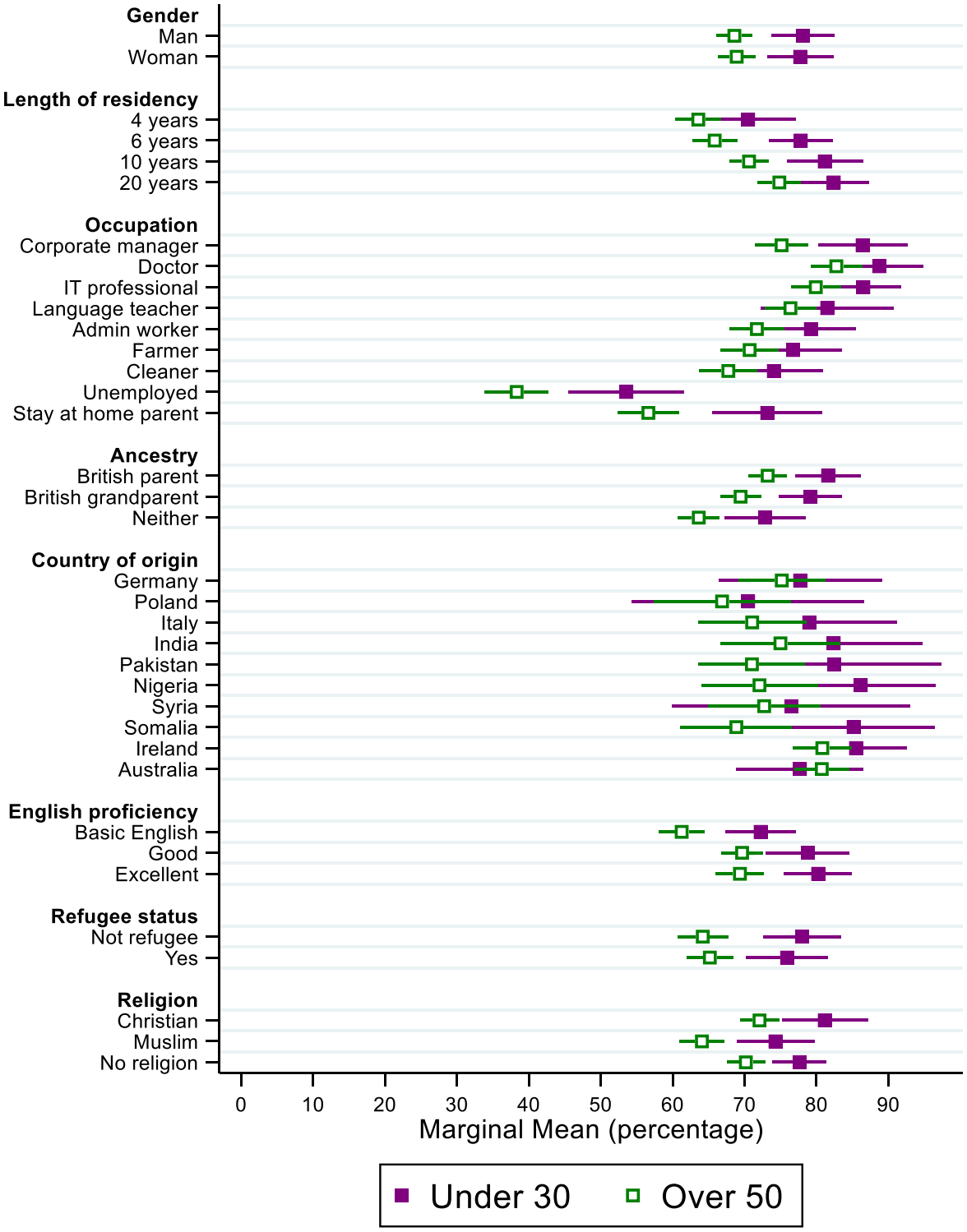
Note: MMs calculated after OLS regression of the probability of being granted British citizenship where gross household income (first or third) is interacted with the attributes, with clustered standard errors and weights. Open and full squares show MM point estimates for first and third income group respectively; the horizontal lines delineate 95% confidence intervals. F-test of the null of hypothesis that all interaction terms are equal to zero: p>0.05. See Table S3 for subsample sizes. To allow comparisons between 'country of origin' categories all Muslim and basic/good English cases were dropped when computing MMs for country of origin

Figure A3: MMs of the no qualifications/age-16 vs. higher education qualification



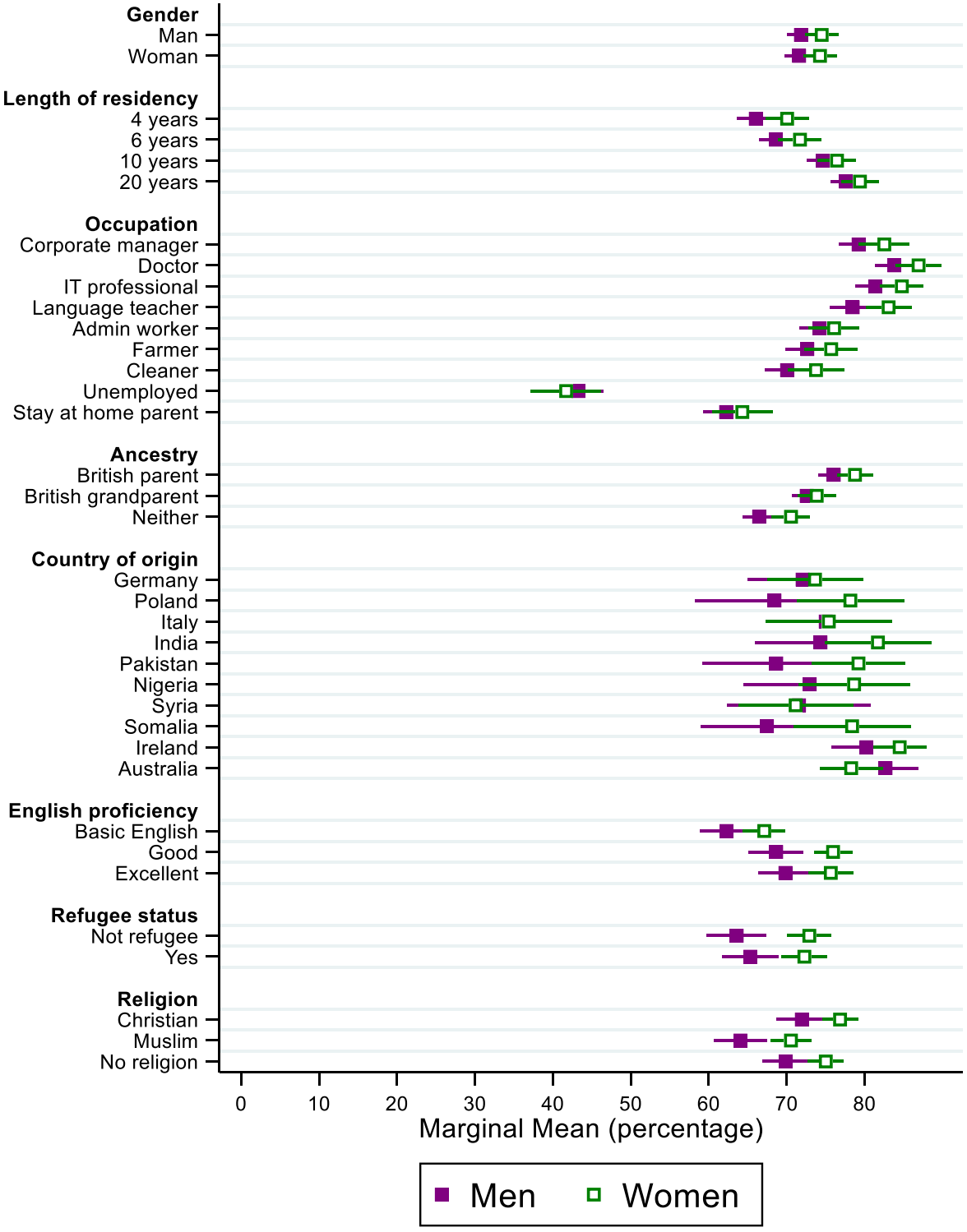
Note: MMs calculated after OLS regression of the probability of being granted British citizenship where qualifications (no qualifications/age-16 or higher education) is interacted with the attributes, with clustered standard errors and weights. Full and open squares show MM point estimates for no qualifications/age-16 qualifications and higher education respectively; the horizontal lines delineate 95% confidence intervals. F-test of the null of hypothesis that all interaction terms are equal to zero: $p<0.05$.
See Table S3 for subsample sizes. To allow comparisons between 'country of origin' categories all Muslim and basic/good English cases were dropped when computing MMs for country of origin

Figure A4: MMs of under 30s vs over 50s



Note: MMs calculated after OLS regression of the probability of being granted British citizenship where age group (Under 30 or over 50) is interacted with the attributes, with clustered standard errors and weights. Open and full squares show MM point estimates for over 50s and under 30s respectively; the horizontal lines delineate 95% confidence intervals. F-test of the null of hypothesis that all interaction terms are equal to zero: $p>0.05$. See Table S3 for subsample sizes. To allow comparisons between 'country of origin' categories all Muslim and basic/good English cases were dropped when computing MMs for country of origin.

Figure A5: MMs of under male vs female respondents



Note: MMs calculated after OLS regression of the probability of being granted British citizenship where age group (men or women) is interacted with the attributes, with clustered standard errors and weights. Open and full squares show MM point estimates for women and men respectively; the horizontal lines delineate 95% confidence intervals. F-test of the null of hypothesis that all interaction terms are equal to zero: $p<0.05$. See Table S3 for subsample sizes. To allow comparisons between 'country of origin' categories all Muslim and basic/good English cases were dropped when computing MMs for country of origin.

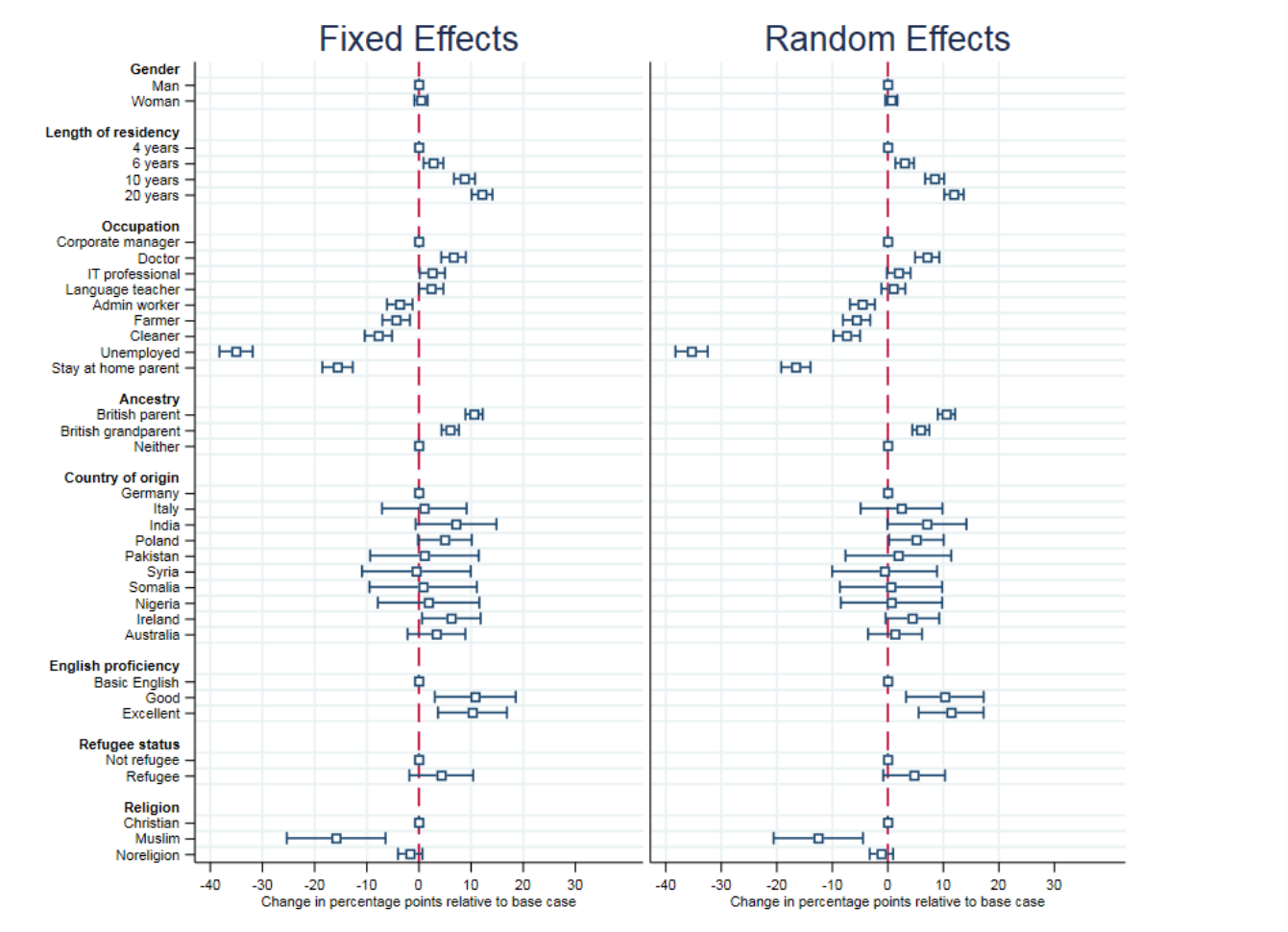
Robustness checks

The dependence of profile choices within individual respondents means that respondent characteristics may drive the effect of applicant characteristics. I fit alternative specifications to the benchmark model to account for this possibility (Hainmueller and Hopkins 2015). I employ regression model specifications that incorporate (i) respondent fixed effects and (ii) random effects. The AMCEs in the fixed effects model are net of the variation between respondents due to respondents' characteristics. They therefore estimate the average marginal effect of each attribute within the average respondent. The random effects model exploits the variation between and within respondents, meaning that the AMCEs are the same as in the benchmark model, but standard errors estimates are more efficient because they account for the clustering of observations within respondents.

The clustering of profiles within respondents may affect findings specifically if the ordering of profiles influences respondents' decision-making process. As respondents are shown five pairs of profiles, arguably, they could learn with experience and make choices based on information from previous profiles. MMs for the fifth pair would therefore differ from MMs for the first pair. I compare MMs of profiles based on whether they were in first or fifth ordering. Finally, I restrict the sample to the respondents who identify as white British/English/Northern Irish/Welsh/Scottish, who do not have a migration background.

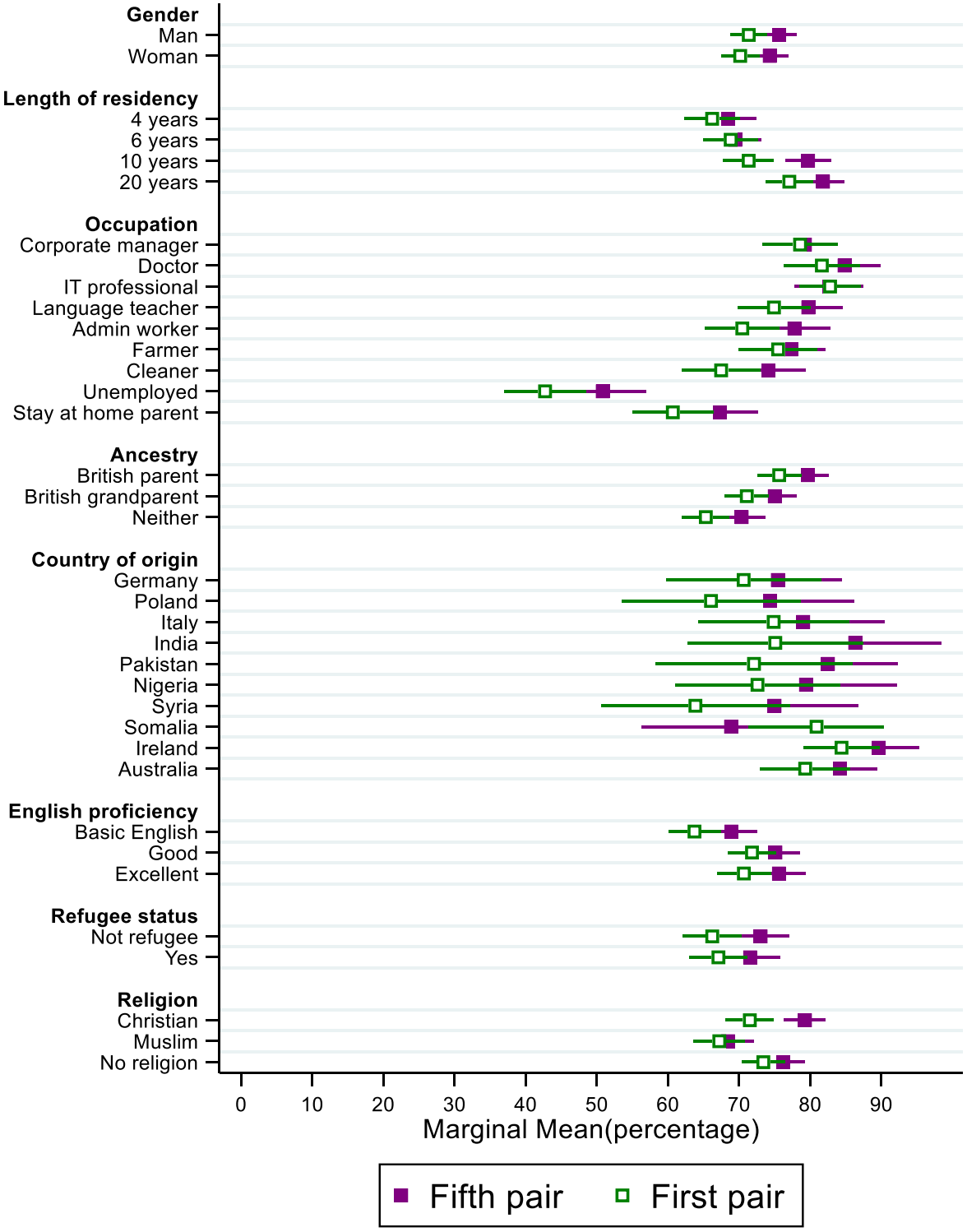
All specifications yield results that are almost identical to the ones obtained with the benchmark model. See Figures A6 and A8 below.

Figure A6: Fixed effects and random effects model AMCEs



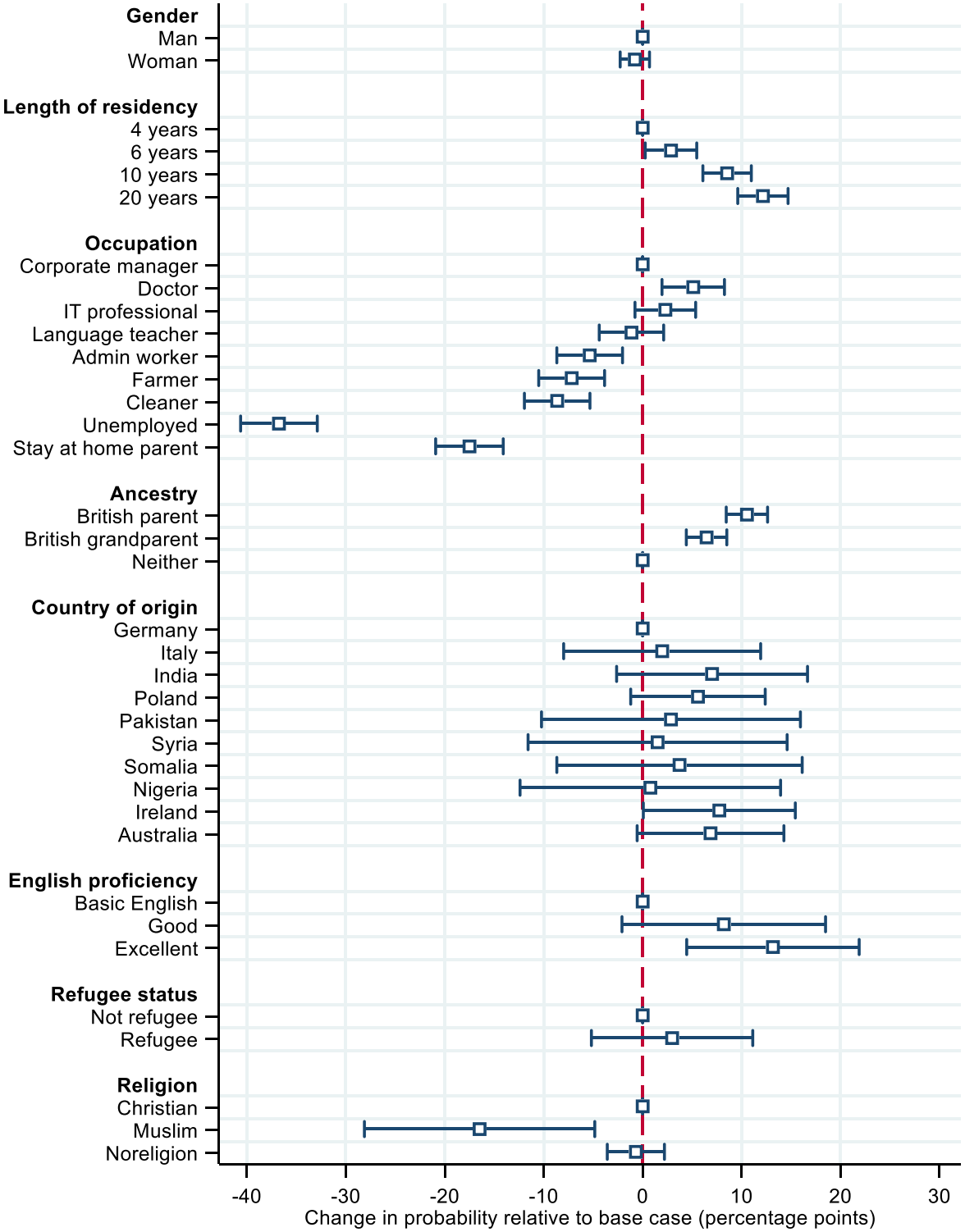
Note: there is no statistically significant difference ($p<.05$) between the AMCES of the two groups.
Open squares show AMCE point estimates and the horizontal lines delineate 95% confidence intervals. Open squares without horizontal lines show reference categories.

Figure A7: MMs of first vs fifth pair



Note: MMs calculated after OLS regression of the probability of being granted British citizenship where pair-order (first or fifth) is interacted with the attributes, with clustered standard errors and weights. Open and full squares show MM point estimates for first and fifth pairs respectively; the horizontal lines delineate 95% confidence intervals. F-test of the null of hypothesis that all interaction terms are equal to zero: $p<0.05$.
See Table S3 for subsample sizes. To allow comparisons between 'country of origin' categories all Muslim and basic/good English cases were dropped when computing MMs for country of origin.

Figure A8: Average marginal component effects on the probability of citizenship award for white respondents



Note: OLS estimates of average effects of each randomised attribute of the probability of being granted British citizenship with clustered standard errors and weights for the subsample of 1,466 white British/Scottish/English/Northern Irish/Welsh respondents. Open squares show AMCE point estimates and the horizontal lines delineate 95% confidence intervals. Open squares without horizontal lines show reference categories.