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Understanding attitudes towards inequality among the "working rich" matters for any policy aimed at increasing the level of redistribution in society. We investigate this question using a unique sample of nearly 1,000 graduates from a highly ranked MBA program and a representative sample of Americans. We first show that high-earning MBAs are far more likely to know their rank in the income distribution. We then explore whether and how comparisons with peers or others (i.e. reference groups) shape their preferences for redistribution. Asking them to rank within their family, colleagues or classmates leads to an average 18% drop in the income share allocated to the richest 1% but has no discernible effect on their taxation preferences. We discuss the respective contribution of the comparative and normative functions of reference groups as potential mechanisms.

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1 Introduction

An increasing number of economists have noted with concern the rise in inequality experienced in many countries over the past several decades, and the extent to which this has been driven by increases in wage income at the very top of the income distribution (see for example, Milanovic 2016, Piketty and Saez 2006, Atkinson 2018). Researchers have also documented that among representative samples of individuals, most underestimate the extent of inequality in the income distribution (Norton and Ariely, 2011) and their own relative placement within it, thinking, on average, that they are poorer than they really are (Nair, 2018). One explanation for these misperceptions—and their consequences on distributive preferences—has been the tendency of individuals to extrapolate information from their "local" reference groups (e.g. family, colleagues, classmates, neighbors etc.) to the whole population (Cruces et al., 2013). Research has also found that the "ideal" income distribution constructed by representative samples of individuals is often more progressive than those that exist in reality (Kiatpongsan and Norton, 2014; Norton and Ariely, 2011), yet this may not translate into more progressive taxation preferences (Kuziemko et al., 2015).

Whether these findings replicate at the very top of the income distribution remains an open question – mainly because there is usually insufficient sample size in this part of the distribution for proper inference. However, given that any policy aimed at increasing the level of redistribution in a society will necessarily need to take from those at the top of the income distribution, it is important to understand a) whether high income earners have similar misperceptions of their place in the income distribution; b) their preferences for redistribution and policies aimed at redistribution and c) how sensitive those preferences are to comparisons with peers or others (i.e. reference groups). Our paper aims to answer these questions by surveying a unique sample of nearly 1,000 high earning MBAs who graduated from a highly ranked business school between 2012 and 2018. We describe how these high income individuals perceive themselves within the national income distribution of their country of residence, explore their preferences for redistribution and the contribution of reference groups in shaping those preferences. Throughout the paper, we compare these top income earners to data from a representative US sample obtained through Turk Prime.

Our sample of MBA graduates is considerably different from samples obtained from most survey data. More than 80% belong to the richest 5% of their country of residence, with an average annual income over $190,000.[1] Consistent with prior evidence on the source of top income inequality (the "Working Rich" described by Piketty and Saez 2006), 85% of their total income consists of labor income. They are also extremely mobile, representing a population of individuals occupying top executive or managerial positions within 71 different countries on 5 continents. These differences are also reflected in their knowledge of their rank within their local income distribution: We confirm prior findings that income, is for the most part, negatively correlated with perceptions of income rank (i.e. the richer you are, the more you underestimate your rank; Cruces et al., 2013; Karadja et al., 2017). Yet our sample allows us to show that this correlation switches at the top of the income distribution, where we find that the increased income makes you more and more likely to have an accurate sense of your rank in the income distribution.

Understanding what might influence preferences for redistribution among the working rich has the potential to significantly advance any agenda aimed at reducing income inequality. Perhaps, surprisingly, we estimate that the working rich's "ideal" income distribution in their country of residence is considerably more progressive than the one that exists in reality, on average.[2] How-

[1] Within those 80%, more than half belong to the top 1%.

[2] For instance, their preferred top 1% income share is 8.5% on average, against 15% if we were to use the actual top 1% income share within their country of residence. Their distributive preferences tend to be even more progressive than the average of the random US respondent sample. However, their taxation preferences are not significantly

ever, their taxation preferences are more in line with those in the general US population and are not consistent with their more "egalitarian" distributional preferences. A long-standing strand of research in social psychology documents that comparisons with peers or others (i.e. reference groups) are key determinants of personal beliefs and attitude formation (Festinger, 1954; Kelley et al., 1952). For instance, a top manager is generally reminded of his higher rank within his firm when interacting with lower-ranked co-workers, and those "local" comparisons can shape whether he sees pay disparities as fair or unfair (Cullen and Perez-Truglia, 2021). We build on this literature and investigate how activating respondents' reference groups affects their national preferences for redistribution. We construct an online experiment in which treatment comprises two components. First, we randomize respondents into three possible local reference group branches – family, colleagues or former classmates – and ask individuals to compare themselves financially to three individuals of their own choice within the assigned reference group. Second, we ask whether they believe this ranking within the local reference group is driven more by effort (vs. luck). We then measure the effect of this psychological task on three key outcomes: one's (mis)perception of where one ranks in the national income distribution; income shares that one would attribute if one could construct their ideal income distribution; and the tax schedule they would apply to these income shares.

Prior evidence has shown that individuals' preferences for redistribution can change once they are informed of their true placement in the income distribution (Cruces et al., 2013; Karadja et al., 2017). This literature relies on informational treatments on own rank, true levels of inequality or tax policies (Kuziemko et al., 2015). We contribute by testing whether reference group salience can also have effects on important beliefs and preferences integral to the understanding of income inequality and redistributive preferences.

Among MBAs, we find no effect of reference group salience on their beliefs of where they rank in their national distribution. But we do find that this reference group priming has a significant effect on their preferences for redistribution: treated MBAs signalled a desire to reduce the share of income that goes to the top 10% to the benefit of the bottom 50%. For example, treatment leads to an 18% drop in the share they allocate to the top 1%, on average. We calculate that this redistributional shift corresponds to a 0.3 point drop in the Gini coefficient, on average, the equivalent of moving from the income distribution of Canada to that of Sweden.

In contrast, we find that treatment leads respondents in the representative US sample to significantly overestimate their position in the US income distribution by 4.5 percentile points, on average. And, strikingly, we find no treatment effect on redistributional preferences for the representative US population.

Finally, though of differing signs between the two samples, we find very small and mostly insignificant treatment effects on the tax schedule imposed by respondents in either sample.

We interpret these mixed results in light of the literature of how reference groups can affect attitudes towards inequality via a *comparative* channel and/or via a *normative* channel (for a review of the experimental and empirical literature, see Clark and d'Ambrosio, 2015). The comparative channel refers to how individuals perceive themselves as rich or poor in comparison to others within the local reference group. As a corollary, individuals tend to use this relative position within their reference group to extrapolate their rank within the national distribution of their country of residence (Cruces et al., 2013). In contrast, the normative channel is independent of where individuals fit in their reference group, and whether they compare to poorer or richer individuals. Instead, it relates to group identity (e.g. inequalities among co-workers vs. among family members) and affects whether individuals perceive inequalities within the group to be fair or unfair (e.g. driven

different from the average US respondent, and only 61% think tax evasion in unfair (versus 80% for the US sample).

more by effort or by luck; Alesina and Angeletos 2005).

We provide suggestive evidence that impacts on redistributive preferences of high earners is inconsistent with an effect passing through a comparative channel. First, while most MBA graduates tend to rank themselves first or second within their reference group, our treatment does not affect their own perception of where they rank in the distribution of their country of residence. Second, when looking at the endogenous ranking elicited from our treatment conditions, we find no significant differences in perceived national rank between individuals who ranked themselves at the top versus at the bottom of their reference group. These results sharply differ when looking at the general US population, for whom the evidence is consistent with the presence of a comparative channel: on average, treated respondents perceive themselves to be richer, and there is a significant correlation between perceived local rank within a reference group and perceived national rank within the country of residence.

In exploring a normative channel, we look at whether the reference group treatment affects perception of whether success is more due to effort (vs. luck). We find that treated MBAs are much more likely to report that financial success is due to luck after being primed to think about their rank within the local reference group. This is also contrary to the US population, where we found a small and weakly significant effect in the opposite direction. While we are not able to provide a definitive explanation for this finding, it is consistent with the importance played by luck as a determinant of relative positions within the local reference groups of top income individuals—e.g. between the top 1% and the top 0.1% (Frank, 2016). Overall we find considerably more suggestive evidence for the normative effect of reference group on attitudes to inequality and preferences for redistribution (i.e. the normative channel) among the high earners than on the representative US population.

The paper is structured as follows. In section 2 we describe our main datasets and experimental setting. Section 3 presents the main results on the misperception of own income rank and on the impact of the reference group treatment on distribution and taxation preferences. Section 4 discusses potential mechanisms, with a focus on the two main functions of reference groups. Section 5 provides additional discussion and concludes.

2 Data and Experimental Setting

We use two samples in our analysis. The first consists of approximately 1000 recent MBA graduates from Insead, a top ranked MBA program. We surveyed graduates between 2012 and 2018 asking them a series of baseline questions including information on their current income and demographic characteristics, as well as questions about how much they think about inequality and questions about their political views. We then randomly allocate respondents into one of three treatments or a control group. The treatment condition randomly asks respondents to think about three members of either a) their family (same generation), b) their colleagues or c) their classmates, comparing themselves financially to these individuals. It then asks them to assess whether the financial success of the top ranked person within this group is driven more by effort or by luck. We repeat the above survey experiment using a random sample of approximately 3800 individuals in the US collected through Turk Prime.[3]

Our treatment condition activates the two main functions of reference groups discussed earlier (see Kelley et al., 1952). It aims to prime respondents to (1) make a judgment about how their financial status compares to three self-chosen others within a particular reference group (the *comparative*

[3]Turk Prime is now known as Cloud Research and continues to specialize in sourcing representative survey samples for academic research. `https://www.cloudresearch.com/`

Table 1: Reference Group Treatment Means (MBA vs. US Sample)

	MBA Mean	US Mean	Diff.	US Obs.	MBA Obs.
Rank 1st-2nd vs. 3rd-last (0-1)					
All reference groups	0.67	0.46	-0.21***	2866	724
Family	0.90	0.53	-0.37***	960	250
Colleagues	0.63	0.44	-0.19***	954	236
Classmates	0.46	0.40	-0.06	952	238
Success due to effort vs. luck (0-1)					
All reference groups	0.61	0.69	0.08***	2866	724
Family	0.65	0.72	0.07***	960	250
Colleagues	0.61	0.66	0.05***	954	236
Classmates	0.57	0.68	0.10***	952	238

Notes: Mean response and mean differences between MBA and US samples for the share of respondents ranking themselves first or second (vs. third or last) and perceived fairness (success due more to effort than luck) within one's reference group. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

channel), and (2) reflect on the fairness of those "local" disparities (the *normative* channel).[4] In turn, both channels may affect preferences for redistribution. By making respondents feel relatively richer (vs. poorer), the comparative channel may reduce (vs. increase) individuals' preferences for redistribution (Cruces et al., 2013; Karadja et al., 2017). At the same time, by making respondents perceive economic disparities as being mostly due to effort (vs. luck), the normative channel may increase (vs. reduce) individuals' preferences for redistribution, a mechanism first discussed in Alesina and Angeletos (2005).[5]

Table 1 summarizes the mean responses of our respondents across each of the three reference group treatments within the two samples. Our treatment allows us to elicit MBAs' (perceived) local rank (or local inequality exposure) within their respective reference groups, or alternatively, whether respondents have a tendency to compare themselves to richer versus poorer others. About 67% of respondents in the MBA sample rank themselves first or second within their reference group, against 46% only for the US sample.[6] The most striking difference is found within family members of the same generation, where 90% within the MBA sample rank themselves first or second (37 percentage points higher than within the US sample). Former classmates is the only reference group for which we see no significant difference between the two samples.

We then look at whether respondents perceive these rankings to be driven more by effort versus luck. The discrete scale goes from 0 (only luck) to 1 (only effort), 0.5 corresponding to an equal contribution of luck and effort. On average, both groups believe success within those reference groups is more driven by effort than luck (mean index > 0.5). However, differences between both samples are large: the average MBA respondent tends to put higher weight on financial success being driven by luck across all reference groups. The difference is the strongest when looking at former classmates.[7]

We also ask our respondents ten questions (after treatment) related to their perceived rank in a

[4]Note that respondents are free to choose to whom they wish to compare themselves within each group. This is a critical aspect of the treatment condition as we want respondent to define their own reference groups.

[5]The existing literature on perceived inequality and preferences for redistribution acknowledges the existence of this second channel (Cruces et al., 2013), but generally focuses on the comparative channel only (Cruces et al., 2013; Karadja et al., 2017).

[6]If respondents rank themselves first or second, they perceive themselves to be exposed to advantageous inequality, versus disadvantageous inequality if they rank themselves third or last (Fehr and Schmidt, 1999).

[7]This is consistent with an argument made by Frank (2016) who argues that the role of luck for success in winner-take-all markets, in which high earners actively participate, is particularly high.

national income distribution, preferred income share distribution and a tax scheme, social mobility, life satisfaction, and preferences regarding giving through charity versus taxation.

After treatment, we elicit their perceived income percentile, asking respondents to consider the income distribution in their country of residence and to place themselves within the annual income distribution using a sliding scale. We recover their true ranking in their local income distribution by matching income thresholds from the World Inequality Database.

We then ask individuals to build their preferred income distribution by asking them to distribute the share of income across 4 groups in a 100 person society: the poorest 50 people, the middle 40 people, the 9 next riches people and the richest person in society. We also let them perform a similar allocation with regards to the income tax rates people in each of the four categories (bottom 50, next 40, next 9, top) ought to pay as a share of their total income. Using this information on preferred income distributions, we construct two indexes: a (lower bound) Gini coefficient for their preferred society[8] as well as the progressivity of the constructed tax scheme.[9]

Table 2 describes our two samples in terms of income and distributive preferences (see Appendix Table A1 for full list of variables). We see that the difference in total income between MBA alumni and the US sample is considerable. On average, the alumni sample makes 126k USD more than our US sample. This difference is almost completely driven by the difference in earned labor income (170k for MBAs and 48k for the US sample), consistent with prior evidence on the contribution of very high wages to top income shares (Piketty and Saez, 2003, 2006).

This difference leads to stark differences in where the two populations place in the income distribution of their country of residence. We estimate that 43% of our MBA sample ranks within the top 1% of the income distribution while 93% of the sample are within the top 10%. In comparison, only 19 respondents of the Turk Prime sample reported income that puts them in the top 1% of the US income distribution. But 15% of the US sample do rank within the top 10% richest earners in the US. Overall, respondents in the MBA sample rank at the 95th percentile while respondents in the US sample at the 54th, on average.[10]

3 Main Results

3.1 True and Perceived National Rank

We begin by exploring the differences between true and perceived national rank. Interestingly, we estimate that both populations considerably underestimate their rank, roughly 12 percentile points, on average. We plot estimates of the conditional expectation function (CEF) of rank misperception conditional on true income rank in Figure 1. We see that individuals who are in the lower third of the true income distribution tend to overestimate their rank: They believe they are comparatively richer than they truly are. In the upper terciles, the sign on this misperception switches and, as we move up the true income distribution, individuals believe that they are relatively poorer than they really are. This misperception grows in magnitude to -30 percentile points at around the 85th percentile of the true income distribution. This means that someone who is actually in the 85th percentile of income distribution believes, on average, that they are in the 55th. We then

[8] We rely on a nonparametric definition of the Gini index, defined as twice the area between the egalitarian line and the Lorenz curve. We recover the Lorenz curve by linear interpolation using the four income shares (and corresponding population shares). This is interpreted as the lower bound of the true Gini index (Cowell, 2011).

[9] Here we simply re-construct a new income distribution applying respondent's preferred tax scheme to their original income distribution. We then compute the resulting (lower bound) after-tax Gini index. The tax progressivity index is the difference between the pre-tax and after-tax Gini indices.

[10] Appendix Figure A2 plots the kernel distribution of true income rank across the two samples.

Table 2: Income and Distributive Preferences (MBA vs. US Sample)

	MBA Mean	US Mean	Diff.	US Obs.	MBA Obs.
Income					
Labor income (thousands USD)	170.00	48.46	121.54***	3810	967
Capital income (thousands USD)	26.98	22.21	4.77	3810	967
Total income (thousands USD)	196.98	70.67	126.31***	3810	967
Top 1% richest	0.43	0.00	0.42***	3810	861
Top 5 % richest	0.80	0.07	0.73***	3810	861
Top 10 % richest	0.93	0.15	0.78***	3810	861
True rank	95.10	54.44	40.66***	3810	861
Perceived rank	82.52	42.49	40.03***	3810	967
Distributive preferences					
Income distribution (Gini)	0.30	0.36	-0.06***	3130	902
Top 1% income share	8.49	12.33	-3.84***	3810	967
Top 1% income tax	38.12	39.50	-1.38**	3810	967
Tax progressivity index	0.05	0.04	0.01***	2665	822
Amount tax collected (% total income)	22.07	23.06	-0.99***	3810	967
Charity (vs. tax) preferences	49.60	62.42	-12.82***	3810	967

Notes: Mean response and mean differences between MBA and US samples for income-related variables and distributive preferences. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

see the correlation between income and misperception switch signs. After approximately the 85th percentile, misperception starts to decline, indicating that the very wealthy have a relatively better understanding of where they sit in the income distribution. We overlay theses non-parametric estimate of the CEF with a linear fit using a two-segment spline regression. The linear predictions appear to fit the data well and the regression allows us to formally test whether there is a non linear relationship between misperceptions and income. Between the bottom and the 85th percentiles the estimated slope is -0.65(0.014). Above the 85th percentile the estimate slope is 1.31(0.12) and, given the small standard errors, we easily reject the null of equal slopes between the segments. This result is not an artefact of the MBA sample because we see a similar switch when focusing only the US population. The MBA sample allows us to extend the CEF estimation and its credibility at the very top of true income quantiles.

This non monotonic relationship, with a kink in the upper right tail of the income distribution is novel. Indeed prior literature has shown that those in the left tail tend overestimate their place in the distribution and that this over estimation switches as we move into the richer quantiles (Cruces et al., 2013; Karadja et al., 2017). But evidence that, among the wealthy, misperception tends towards zero as we move into the top income shares is, to our knowledge, new to the literature. Given that we have a reasonable number of observations (368 individuals) in the top 1% we construct an indicator variable on whether the respondent was "accurate" to within 10 percentile points of their true rank and use a logit to regress this on an indicator for whether the respondent is within the top 1% of the true income distribution. We estimate that those within the top 1% are 27 percentage points (se=2.6 PPs) more likely to accurately assess their true rank within 10 percentile points.[11] When we condition on whether the respondent is from the MBA sample, this marginal effect drops to 12 percentage points, but remains highly statistically significant. This is unsurprising because such a large proportion of respondents in the MBA sample are within the top 1%, but also shows that the positive association between higher accuracy and top earning status is robust to the population sampled.[12]

[11] Those outside the top 1% are accurate 29% of the time (versus 56% of the time for those within the top 1%).

[12] The marginal effect remains essentially unchanged (13 PPs) when we condition on our baseline covariates: employment status, political affiliation and activism, trust in government, marital status and number of children and

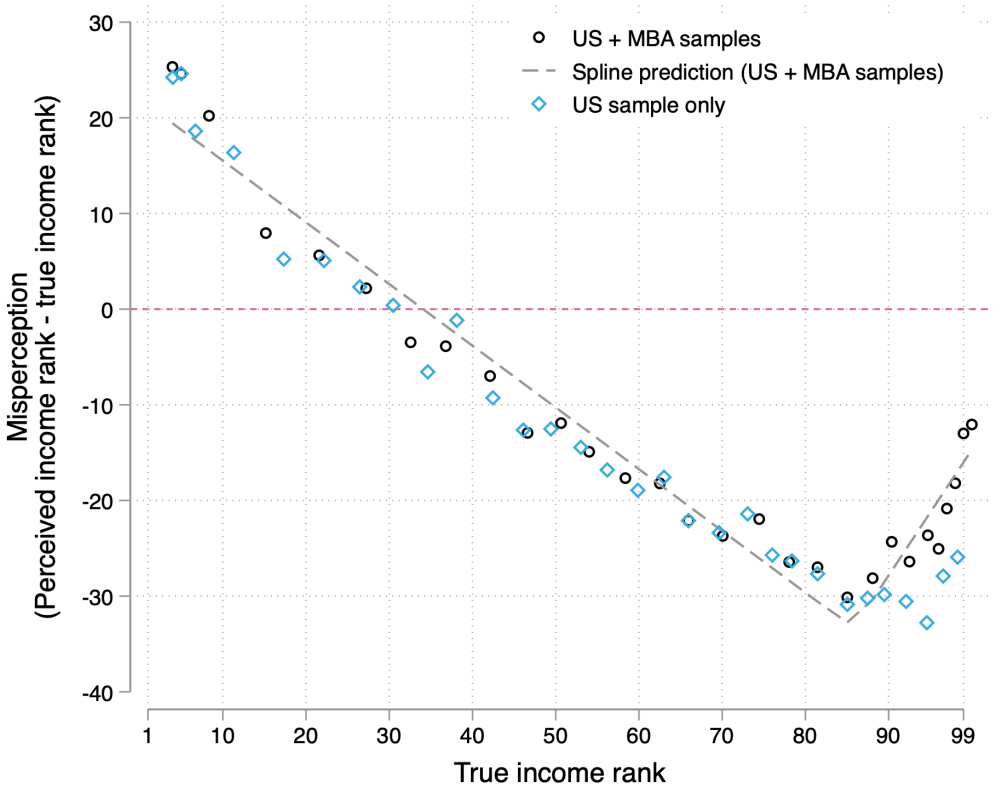

Figure 1: Misperceived Income Rank Conditional on True Income Rank

Notes: Expectation function of rank misperception conditional on true income rank. The scatter-plots pools observations into 30 bins. The dotted line refers to the linear fit resulting from a two-segment spline regression.

Finally, we also find that respondents' ideal income distribution is more progressive than what it is in reality. On average, MBA respondents allocate 8.5% of national income to the richest 1%. If their preferences would match the actual income distribution within their country of residence, the average top 1% income share reported would be 15%.[13] Their ideal income distribution is also more evenly distributed than the average US respondent who would allocate 12.3% of national income to the richest 1% (versus 19% in reality). Despite those differences in distributional preferences, however, both samples show similar taxation preferences.

3.2 Impact of Treatment on Distributional and Taxation Preferences

We first test the effect of our treatment on distributional and taxation preferences. Estimation results are presented separately for the MBA and US populations in the odd numbered columns of Table 3. We see stark heterogeneous effects in average treatment effects depending on the population.

Treatment had a significant effect on how top earners construct their ideal income distribution. We see that treatment leads the MBA alumni to construct a more equitable income distribution overall, driven by a reduction of 1.79 percentage points attributed to the top 1% and 1.35 percentage points to the top 10%. The majority of this effect is reallocated to the bottom 50% of the

also whether they reside in an OECD country.

[13]See Appendix Figure A1 for country-level evidence.

income distribution (+2.03 pp). The effect is not trivial. The reallocation away from the top 1% represents an 18% drop off of the control mean of 9.8. We create an index of this measure through the construction of a Gini coefficient that corresponds to the distribution created by respondents (column 7). The treatment effect on the Gini is close to -0.03. This would be a larger drop in inequality than going from an income distribution like in the US (0.39) to the UK (.366) and the equivalent of going from France (.301) or Canada (.304) to Sweden (.275).[14]

Table 3: Impact of Treatment on Distributional and Taxation Preferences

	Top 1%		99-91%		90-51%		Bot. 50%		Gini	Tax prog.	Char/tax
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Share	Tax	Share	Tax	Share	Tax	Share	Tax	Index	Index	Index
Panel A: MBA											
Treated	-1.79***	0.13	-1.35*	-0.00	1.11	-0.22	2.03**	-0.29	-0.03**	0.00	-4.35*
	(0.64)	(1.19)	(0.69)	(0.92)	(0.84)	(0.63)	(0.88)	(0.64)	(0.01)	(0.00)	(2.24)
Control Mean	9.81	38.23	21.44	31.15	40.98	21.23	27.77	12.18	0.32	0.05	53.06
Observations	967	967	967	967	967	967	967	967	902	822	967
Panel B: US											
Treated	0.63	-0.30	0.44	-0.36	-1.45**	0.52	0.38	1.20**	0.01	-0.00	1.58*
	(0.44)	(0.83)	(0.40)	(0.65)	(0.61)	(0.53)	(0.60)	(0.48)	(0.01)	(0.00)	(0.96)
Control Mean	11.91	39.79	18.37	31.38	41.49	21.53	28.24	12.30	0.36	0.05	61.17
Observations	3,810	3,810	3,810	3,810	3,810	3,810	3,810	3,810	3,130	2,665	3,810

Notes: OLS models reported. All regressions control for family status, number of children, employment, education, political preferences, trust in government and OECD residency status. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Comparing these effects on the MBA population with those estimated on the US population we have evidence that reference group treatments has distinctly different effects. There is strong evidence to reject the null of equal treatment effects across the measures of distributional preferences, with considerably smaller point estimates that are often of the opposite sign for the representative US population. If anything, the treatment caused a reallocation away from the 51-90 percentile group to the other groups. Yet this does not translate into any meaningful effect on our composite measure, the Gini.

We then explore whether the relatively strong, yet heterogeneous, treatment effects seen on respondents ideal income distribution maps to effects on a key redistributive policy tool, taxation. The even numbered columns of Table 3 display treatment impacts on the tax schedule proposed by respondents. First, we note that both populations propose remarkably similar tax rates by segment, roughly a 39-31-21-12 schedule and the highest and lowest tax brackets are actually quite close to the highest and lowest brackets imposed by the US in 2018.[15] In turning to treatment impacts, we find little evidence that tax policy is an instrument through which high earners would like to achieve a more equitable income distribution. Across the different segments we find negative treatment effect estimates that are all small with relatively large standard errors. Aggregating this into a tax progressivity index, shows that placing oneself in a local income distribution had no effect on respondents desired tax policy. For the US population, the estimated coefficients are larger in magnitude but mostly insignificant. And if anything, the treatment leads to a desire to impose higher taxes on lower income individuals, though we refrain from putting weight on this estimate because there is still no significant effect on the overall index. Results differ slightly when constraining respondents to choose between giving away money through charity (where they decide

[14]Based on 2017 data from the OECD: `https://data.oecd.org/inequality/income-inequality.htm`.

[15]For example, the highest marginal rate was 37% in the US while the lowest was 10% (Source: FRED) `https://fred.stlouisfed.org/series/IITTRHB`

where to give) or through taxes that the government will use and redistribute. We find (weakly) significant effects consistent with the shift in distributive preferences: while the MBA population reports higher preferences for taxation over charitable giving, we find the opposite for the US population.

Lastly, when estimating treatment effects separately for each reference group treatment, we find the effect on distributive preferences is fairly consistent across groups, with some notable differences (Appendix Table A2).[16]

Overall, asking high income MBA graduates to think of how their financial condition compares to others within specific reference groups lowers their tolerance to inequality. No such effect is found on the general US population. However, taxation preferences remain largely inelastic to treatment for both population. We now turn to what might explain these differences in the impact of reference group priming between the two samples. To do so, we come back to the two main ways in which reference groups can shape attitudes and beliefs about inequality.

4 Potential Mechanisms

Reference groups can affect preferences for redistribution via a comparative or a normative channel. For instance, individuals may favor more redistribution if they have a tendency to compare themselves to richer people within their reference group, making them feel poorer than they really are (e.g. because they tend to rank themselves at the bottom). This is the comparative channel. Reference groups can also affect distributive preferences independently of where individuals rank themselves within the group. This normative channel relates to how reference groups affect general attitudes towards inequality. For instance, if individuals perceive financial success among colleagues or former classmates as being unfair (i.e. driven less by effort than by luck), this may also affect their beliefs about the sources of inequality within the general population, leading them to favor more redistribution.

4.1 Comparative Channel: Perceived National Rank

A first test for whether the comparative channel can explain the estimated shift in preferences for redistribution consists of looking at whether our reference group treatment affected respondents' subjective views about where they fit in the national income distribution.[17]

Figure 2 shows the local ranking treatment had no discernible effect on MBA alumni perceptions of their national rank (left panel). The point estimate is close to zero and statistically insignificant. Yet we see that the activation of respondents' reference groups strongly affected the perception of the income ranking for the representative US population. On average, we estimate that the treatment induces the US population to believe they are 4.5 percentile points higher in the income rank than they really are. Comparing this to the control mean rank, the treatment effect represents an 11% inflation of one's perceived place in the income distribution in the US. Consistent with a comparative channel, this result does not depend on the identity of the reference group (Appendix Table A3, column 2).

[16] Though treatment impact differences are generally not statistically significant, reallocation away from the top 1% is driven by the family members and colleagues ranking treatment. These treatment arms are also the main drivers of increased willingness to redistribute through taxes versus charity. This reflects findings by Sherman (2017) who notes that stark comparisons to less affluent family members, friends or colleagues generate anxiety.

[17] This is likely to be the case if respondents consider their reference groups to be somewhat representative of the national population. Whether those beliefs are accurate—e.g. because selection into a reference group is not a function of income—or false does not affect the logic of the argument.

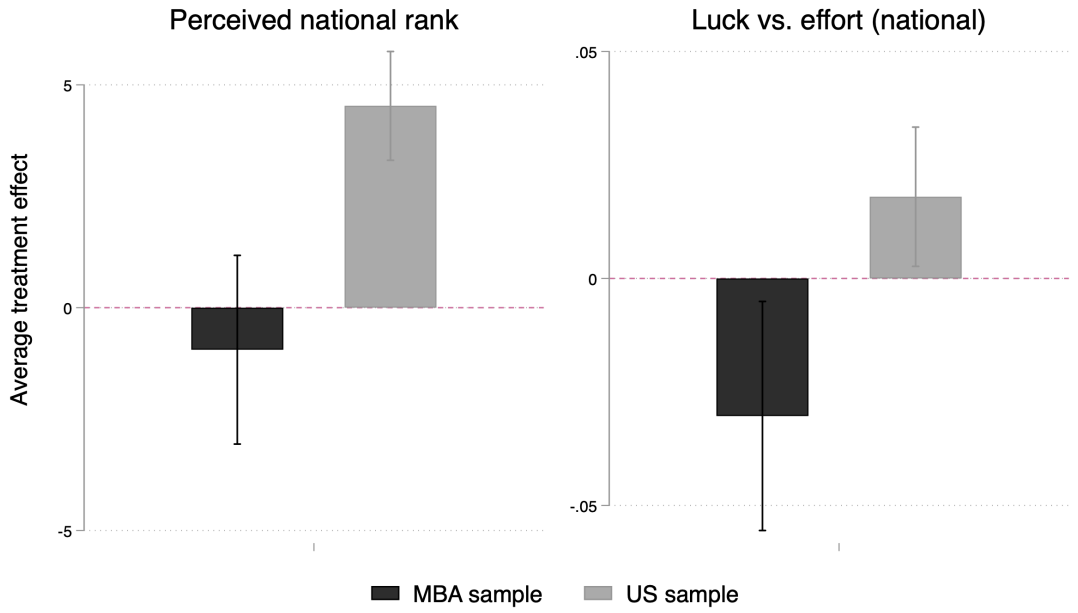

Figure 2: Evidence on Comparative vs. Normative Channels (ATE)

Notes: Average treatment effects (ATE) from OLS models reported together with their 90% confidence intervals (Appendix Table A3). All regressions control for family status, number of children, employment, education, political preferences, trust in government and OECD residency status.

A corollary of the comparative channel is that we should also expect a significant correlation between one's perceived local rank (within the reference group) and one's perceived national rank, even after controlling for respondents' true national rank. Table 4 looks at the correlation between the two subjective rankings within our two populations (column 1). Conditional on true national rank, there is no correlation between perceived rank within a reference group and perceived national rank for the MBA sample. This is not the case for the US respondents who perceive themselves to be richer when ranking higher within their reference group. US respondents ranking first (vs. last) within their reference group report a 14 percentiles higher perceived rank within the national income distribution.[18]

Table 4 also reports the correlation between individuals' reported distributive and taxation preferences and their reference group rankings conditional on their true national rank (columns 3-5). In the MBA sample, we observe no significant correlation with their distributive preferences, and only a weakly significant (positive) correlation with the progressive tax index. On the contrary, we do find a positive and highly significant correlation between reference group ranking and the Gini for the average US respondent. This is aligned with prior evidence on the effect of social comparisons on distributive preferences for the general population (Cruces et al., 2013; Karadja et al., 2017): respondents who rank higher within their reference group also perceive themselves to

[18]Because self-ranking within a reference group is endogenous, this residual correlation could also be the result of measurement error on own income, which may not be fully accounted for when controlling for true national rank. However, it is not clear why measurement error should be stronger for the US sample relative to the MBA sample. If anything, higher income individuals are more likely to misreport income than the average individual, not less (Ravallion, 2021).

Table 4: Evidence on Comparative vs. Normative Channels (Treated Respondents)

	Perceived rank (national)	Effort vs. luck (national)	Gini coefficient	Prog. taxation	Charity (vs. taxes)
	(1)	(2)	(3)	(4)	(5)
Panel A: MBA sample					
Ref. group rankings	0.912	0.007	-0.004	0.003*	-1.443
	(0.623)	(0.008)	(0.006)	(0.001)	(1.119)
Ref. group effort (vs. luck)	3.330	0.356***	0.054**	0.006	5.090
	(2.710)	(0.035)	(0.027)	(0.006)	(4.892)
Treated Mean	82.87	0.48	0.30	0.05	48.58
True national rank	Yes	Yes	Yes	Yes	Yes
Observations	642	642	595	545	642
Panel B: US sample					
Ref. group rankings	3.420***	0.014***	0.012***	-0.004***	-0.790
	(0.406)	(0.005)	(0.004)	(0.002)	(0.523)
Ref. group effort (vs. luck)	4.161***	0.414***	0.037**	-0.009	3.956**
	(1.438)	(0.020)	(0.015)	(0.006)	(1.950)
Treated Mean	43.65	0.62	0.36	0.04	62.84
True national rank	Yes	Yes	Yes	Yes	Yes
Observations	2,866	2,866	2,355	2,006	2,866

Notes: OLS models reported. All regressions control for family status, number of children, employment, education, political preferences, trust in government, OECD residency status, true national rank and its square. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

be richer, hence tend to favor less redistribution (self-interested view).[19] The negative and highly significant correlation between reference group rankings and the progressive taxation index within the US sample is supportive of this interpretation.

Overall, the evidence points towards the absence of a strong comparative channel of reference groups within the MBA sample. Social comparisons within reference groups are therefore unlikely to explain the treatment effect found on distributive preferences. This is not the case for the average US respondent who seem to rely at least partly on social comparisons within local reference groups to infer their relative position within the national income distribution.

4.2 Normative Channel: Effort vs. Luck

Turning to the normative channel, Figure 2 (right panel) shows that the reference group priming significantly affects MBA respondents' beliefs about the fairness of inequality, i.e. whether financial success in their country of residence is driven more by effort or by luck. The effect is strong enough to reverse the average relative weight put on effort versus luck. While the average respondent in the control group tends to put relatively more weight on effort (effort index > 0.5), after ranking themselves within members of their reference groups, the average respondent puts relatively more weight on luck (effort index < 0.5). This is not the case for the general US population: when primed to think about their reference groups, they put more weight on effort as a driver of financial success rather than less (weakly significant).[20]

This finding is consistent with an argument made by Frank (2016). In winner-takes-all markets,

[19] The fact that we find no significant average treatment effect on distributive preferences for the US sample (Table 3) is consistent with the fact that on average, US respondents tend to rank themselves close to the median within their reference groups (Table 1).

[20] This effect is fairly consistent across reference groups, with some notable differences (Appendix Table A3, column 4). For instance, the luck effect within the MBA sample is stronger for colleagues and classmates, while the effort effect within the general US population is stronger for classmates.

which are the type of environment top MBA graduates are most likely to be exposed to, what explains large differences in income within the very rich—for instance between the top 1% and the top 0.01%—is less related to effort and more to luck. Descriptive evidence on MBAs' reference groups presented in Table 1 also show MBA tends to put significantly more weight on luck than the average US respondent across all reference groups. Moreover, while we found no correlation between the way MBA graduates rank themselves within their reference group and their perceived rank, there exists a highly significant correlation between how financial success is perceived within a reference group and within one's country of residence (column 2).[21] Unlike the general US population, however, reference group salience within top-income MBA graduates acts as a reminder of the role of luck in financial success.

In sum, while the comparative function of reference groups only applies to the general US population, its normative function—whether inequality is driven by effort or luck—affects both the MBA and US population, although in opposite ways. Hence, when primed to think of their local reference groups, high income respondents are reminded of the fact that income disparities within their colleagues or former classmates are in part driven by luck.

Turning to distributive and taxation preferences, columns 3-5 confirm that the normative channel is predictive of the Gini coefficient for both groups: when respondents put more weight on effort than luck as a driver of financial success within their family, colleagues or classmates, they also favor a less egalitarian distribution nationally. However, the normative channel does not lead to any significant change in the progressive taxation index.

5 Conclusion

We obtain data on high earners and explore whether making local, self-chosen reference groups salient affects their perceptions of their place in the income distribution and their preference for redistribution as well as policies aimed at redistribution. We compare these top earners to a representative US sample.

Among these successful MBA graduates, we find no effect of reference group salience on their beliefs of where they rank in their national distribution. But we do find that this reference group priming has a significant effect on their preferences for redistribution: treated MBAs signalled a desire to reduce the share of income that goes to the top 10% to the benefit of the bottom 50%.

In contrast, we find that treatment leads respondents in the representative US sample to significantly overestimate their position in the US income distribution, but find no treatment effect on redistributional preferences for the representative US population.

While the comparative channel has been explored when it comes to preferences for redistribution (Cruces et al., 2013; Karadja et al., 2017; Kuziemko et al., 2015), we find that it may play little role for high earners than for the general population. We provide new evidence that individuals at the top of the income distribution are increasingly likely to know their true income rank; and contrary to the average or median individual, their perception of whether they are rich or poor may therefore not be significantly affected by the way they rank themselves within local reference groups. Thus, the fact that the working rich are more accurate in their beliefs suggests their preferences for redistribution may also be less elastic to treatments aimed at "correcting" them.

Yet we find that a normative channel may be particularly salient with top earners in terms of views about inequality. Thinking about one's own rank in a local reference group, leads high earners to believe that financial success is more driven by luck than by effort *in general*. Indeed, highly educated graduates—from top MBA programs in particular—are actively engaged and exposed to

[21] The latter is true for both samples, with a point estimate of similar magnitude.

what Frank and Cook (2010) called the "winner-takes-all" society, where top ranking positions are scarce and where luck arguably becomes a major—if not the main—determinant of financial success (Frank, 1999, 2016).

Finally, prior evidence on the inelasticity of taxation preferences replicates within our two populations: more progressive distributive preferences do not translate into impacts on preferences related to the classic policy for redistribution, i.e. tax policy for either population. We find no evidence that treated individuals would like to use marginal tax rates to achieve more equitable outcomes. But we do find that when constrained to choose between two clearly specified alternatives, namely giving away money through taxes that the government will use and redistribute versus through charity (where they decide where to give), treated MBAs show a higher preferences for taxation over charitable giving. This contrasting result, the literature suggests (Kuziemko et al., 2015), may be due to respondents' inability to connect their more egalitarian concerns with the public policies aimed at addressing them.

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Appendix

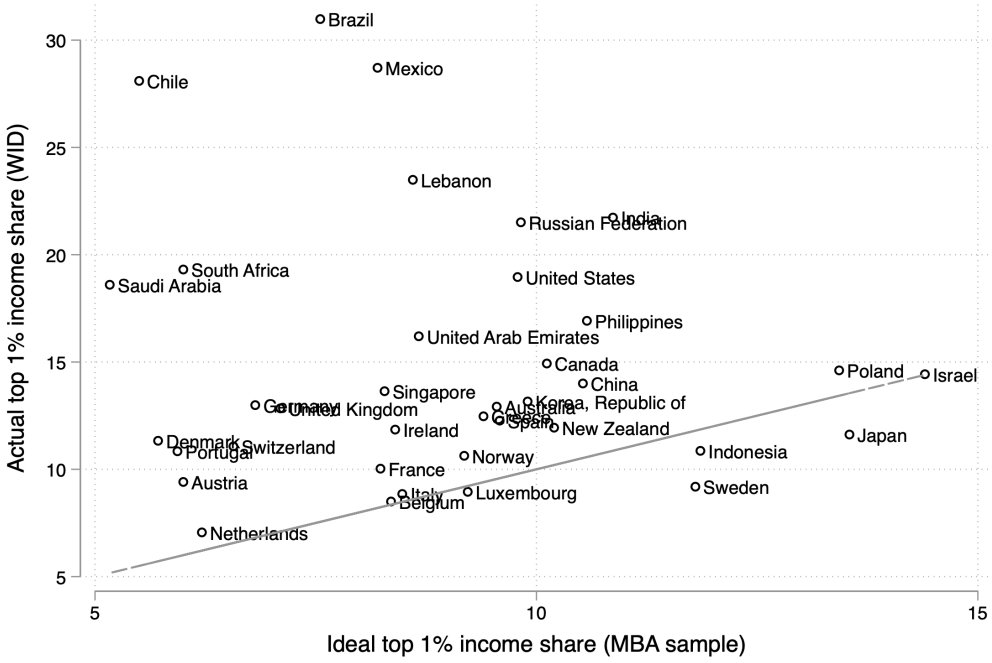

Figure A1: Actual vs. Ideal Top 1% Income Share (MBA sample, min 5 obs. per country)

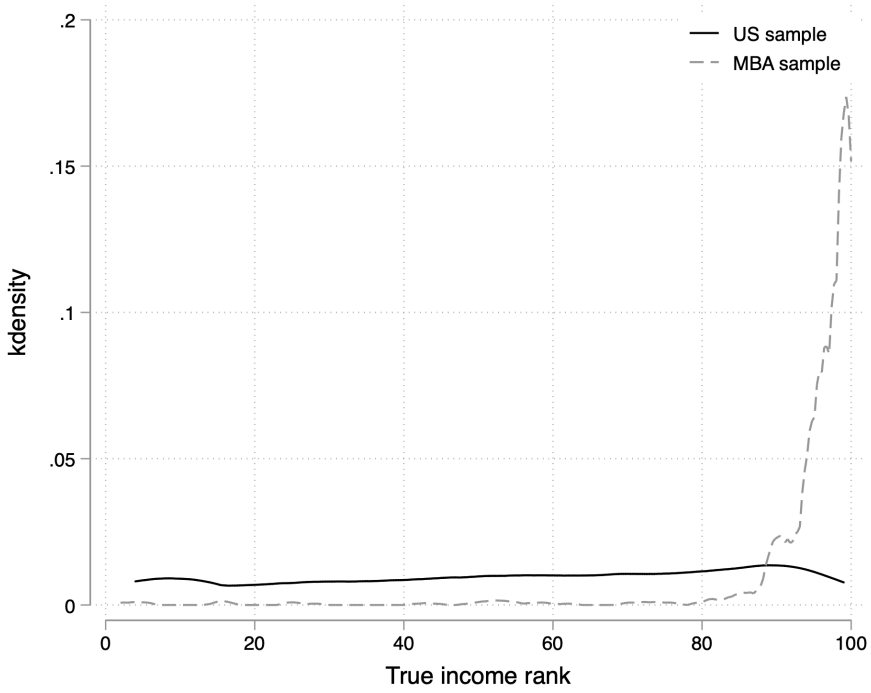

Figure A2: True income rank densities

Table A1: MBA vs. US Sample Means: Additional variables

	MBA Mean	US Mean	Diff.	US Obs.	MBA Obs.
Income					
Labor income (thousands USD)	170.00	48.46	121.54***	3810	967
Capital income (thousands USD)	26.98	22.21	4.77	3810	967
Total income (thousands USD)	196.98	70.67	126.31***	3810	967
Perceived rank	82.52	42.49	40.03***	3810	967
True rank	95.10	54.44	40.66***	3810	861
Top 1% richest	0.43	0.00	0.42***	3810	861
Top 5 % richest	0.80	0.07	0.73***	3810	861
Top 10 % richest	0.93	0.15	0.78***	3810	861
Family status					
Single	0.29	0.25	0.04**	3810	967
Living with partner	0.14	0.07	0.08***	3810	967
Married	0.55	0.50	0.05***	3810	967
Divorced	0.01	0.13	-0.11***	3810	967
Separated	0.00	0.01	-0.01**	3810	967
Widowed	0.00	0.05	-0.05***	3810	967
Number of children	0.50	1.29	-0.79***	3810	967
Employment status					
Full time	0.94	0.39	0.55***	3810	967
Part time	0.01	0.11	-0.09***	3810	967
Unemployed looking	0.03	0.06	-0.03***	3810	967
Unemployed not looking	0.01	0.06	-0.05***	3810	967
Retired	0.00	0.29	-0.29***	3810	967
Student	0.00	0.03	-0.03***	3810	967
Disabled	0.00	0.06	-0.06***	3810	967
Redistributive preferences					
Top 1% income share	8.49	12.33	-3.84***	3810	967
Income distribution (Gini)	0.30	0.36	-0.06***	3130	902
Top 1% income tax	38.12	39.50	-1.38**	3810	967
Tax progressivity index	0.05	0.04	0.01***	2665	822
Amount tax collected (% total income)	22.07	23.06	-0.99***	3810	967
Tax evasion is unfair (% population)	61.32	79.87	-18.55***	3810	967
Charity (vs. tax) preferences	49.60	62.42	-12.82***	3810	967
Political preferences					
Conservative (%)	0.12	0.34	-0.22***	3810	967
Center (%)	0.30	0.37	-0.07***	3810	967
Liberal (%)	0.57	0.28	0.29***	3810	967
Trust in government (1-4)	2.09	2.03	0.06***	3810	967
Political participation (0-18)	4.49	5.23	-0.74***	3810	967
Other variables					
Life satisfaction (0-10)	7.36	5.52	1.84***	3810	967
Expected life satisfaction (0-10)	8.20	6.09	2.11***	3810	967
Think about inequality (1-6)	3.88	3.38	0.50***	3809	967
Do better than parents financially (%)	0.76	0.49	0.27***	3810	967
Social mobility beliefs (0-20)	2.57	3.88	-1.30***	3810	967
Success due to effort vs. luck (0-10)	0.49	0.61	-0.12***	3810	967

Notes: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A2: Impact of Treatment on Distributional and Taxation Preferences (by Reference Group)

	Top 1%		99-91%		90-51%		Bot. 50%		Gini	Tax prog.	Char/tax
	(1) Share	(2) Tax	(3) Share	(4) Tax	(5) Share	(6) Tax	(7) Share	(8) Tax	(9) Index	(10) Index	(11) Index
Panel A: MBA											
Family	-2.34***	0.96	-0.92	1.13	0.68	0.68	2.57**	0.27	-0.03**	0.00	-7.36***
	(0.70)	(1.40)	(0.87)	(1.10)	(1.00)	(0.79)	(1.08)	(0.76)	(0.01)	(0.00)	(2.67)
Colleagues	-1.75**	1.27	-1.92**	0.23	1.27	-0.44	2.40**	-0.67	-0.03**	0.00	-3.78
	(0.74)	(1.42)	(0.82)	(1.10)	(1.00)	(0.75)	(1.11)	(0.75)	(0.01)	(0.00)	(2.73)
Classmates	-1.25	-1.89	-1.24	-1.45	1.39	-0.95	1.09	-0.51	-0.02	-0.00	-1.71
	(0.77)	(1.40)	(0.85)	(1.07)	(1.01)	(0.76)	(1.08)	(0.75)	(0.01)	(0.00)	(2.73)
Control Mean	9.81	38.23	21.44	31.15	40.98	21.23	27.77	12.18	0.32	0.05	53.06
Observations	967	967	967	967	967	967	967	967	902	822	967
Panel B: US											
Family	0.73	-1.39	0.39	-1.28*	-1.30*	0.05	0.18	1.32**	0.01	-0.01**	1.26
	(0.55)	(1.01)	(0.48)	(0.77)	(0.75)	(0.66)	(0.73)	(0.61)	(0.01)	(0.00)	(1.17)
Colleagues	0.16	-0.07	-0.00	-0.21	-1.22*	0.25	1.07	0.96	0.00	0.00	1.68
	(0.54)	(1.01)	(0.49)	(0.79)	(0.74)	(0.64)	(0.74)	(0.59)	(0.01)	(0.00)	(1.18)
Classmates	1.00*	0.58	0.93*	0.41	-1.83**	1.28*	-0.09	1.32**	0.01	-0.00	1.81
	(0.54)	(1.02)	(0.49)	(0.79)	(0.74)	(0.66)	(0.73)	(0.60)	(0.01)	(0.00)	(1.16)
Control Mean	11.91	39.79	18.37	31.38	41.49	21.53	28.24	12.30	0.36	0.05	61.17
Observations	3,810	3,810	3,810	3,810	3,810	3,810	3,810	3,810	3,130	2,665	3,810

Notes: OLS models reported. All regressions control for family status, number of children, employment, education, political preferences, trust in government and OECD residency status. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A3: Evidence on Comparative vs. Normative Channels

	Perceived rank (national)		Effort vs. luck (national)	
	(1)	(2)	(3)	(4)
Panel A: MBA sample				
Treated	-0.943		-0.030**	
	(1.286)		(0.015)	
Family		-1.050		-0.021
		(1.572)		(0.019)
Colleagues		0.118		-0.036*
		(1.489)		(0.020)
Classmates		-1.889		-0.035*
		(1.623)		(0.019)
Control Mean	82.86	82.86	0.51	0.51
Observations	967	967	967	967
Panel B: US sample				
Treated	4.528***		0.018*	
	(0.742)		(0.009)	
Family		4.145***		0.011
		(0.922)		(0.011)
Colleagues		4.628***		0.017
		(0.930)		(0.011)
Classmates		4.814***		0.026**
		(0.902)		(0.012)
Control Mean	38.95	38.95	0.60	0.60
Observations	3,810	3,810	3,810	3,810

Notes: OLS models reported. All regressions control for family status, number of children, employment, education, political preferences, trust in government and OECD residency status. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.