

# **How Information About Economic Inequality Impacts Belief in Meritocracy: Evidence from a Randomized Survey Experiment in Australia, Indonesia and Mexico**

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## **ABSTRACT**

Most people misperceive economic inequality. Learning about actual levels of inequality and social mobility, research suggests, heightens concerns but may push people's policy preferences in any number of directions. This mixed empirical record, we argue, reflects the omission of a more fundamental question: under what conditions do people change their understanding of the meritocratic or non-meritocratic causes of inequality? To explore mechanisms of belief change we field a unique randomized survey experiment with representative populations in Australia, Indonesia, and Mexico—societies with varying levels of and popular beliefs about economic inequality. Our results highlight the importance of information, perceived social position, and self-interest. In Indonesia, information describing (high) income inequality and (low) social mobility rocked our participants' belief in meritocracy. The same information made less of a splash in Mexico, where unequal outcomes are commonly understood as the result of corruption and other non-meritocratic processes. In Australia, the impact of our information treatment was strongest when it provided justification for people's income position or when it corrected their perception of relative affluence. Our findings reveal asymmetric beliefs about poverty and wealth and heterogeneous responses to information. They are a call to rethink effective informational and policy interventions.

**Key words:** economic inequality; meritocracy; inequality beliefs; social mobility; survey experiment

## INTRODUCTION

Most of us are misinformed about inequality. Research documents how people tend to underestimate income inequality (Hauser and Norton 2017; Kuklinski et al. 2000; Osberg and Smeeding 2006) and misperceive social mobility (Alesina, Stantcheva, and Teso 2018; Cheng and Wen 2019). So, what happens when scholars correct our misperceptions? A series of recent survey experiments describes people's political response to learning about actual levels of income and wealth inequality. Together, they paint a complex picture of possible responses. Some studies find that providing accurate information about social mobility and income inequality heightens concerns about inequality (Alesina et al. 2018; Cruces, Perez-Truglia, and Tetaz 2013; Karadja, Mollerstrom, and Seim 2017; McCall et al. 2017), which sometimes increases support for income redistribution (Cruces et al. 2013; Nair 2018). Other studies suggest that learning about inequality may raise concerns but leaves policy preferences largely unaffected (Kuklinski et al. 2000; Kuziemko et al. 2015). Yet others find that learning about the level of inequality in their society may in fact make people more willing to accept large income differences (Trump 2017).

Three issues stand in the way of making sense of these seemingly contradictory accounts. First, many factors may keep a person from desiring income redistribution, even if they are concerned about economic inequality—among them racial resentment (Bobo 2017), limited trust in government (Alesina et al. 2018) or an understanding of inequalities as meritocratically deserved (Van Oorschot 2006). Extant research is not designed to adjudicate between these and other mechanisms linking information to beliefs about inequality. Second, generalizing findings is complicated by the fact that most are based on single-country studies and, with few notable exceptions, limited to the Western world (Hauser and Norton 2017).

Third and most crucially, the attitudinal focus of previous work has left unexplored how information impacts people's understanding of the *causes* of economic inequality. This omission is unfortunate given the documented importance of people's meritocratic and non-meritocratic beliefs about the causes of inequality (McCall 2013; Reynolds and Xian 2014). How we understand the root causes of poverty and wealth is the starting point of our politics and policy views on topics ranging from criminal justice to healthcare, taxation and income redistribution (Alesina et al. 2018; McCall 2013; Thompson and Bobo 2011; Van Oorschot 2006). Looking only at the effect of information on political attitudes leaves out the cognitive 'middleman.'

If beliefs about inequality reflect people's knowledge of the income distribution and social mobility rates, new and accurate information should lead them to correspondingly adjust their beliefs (cf. Hauser and Norton 2017; McCall et al. 2017). People however can challenge new information in two ways. Rather than take information about their society at face value, they may look at it as a source for justifying their societal position—or their grievances with it. If so, people at the upper end of the income distribution will interpret information in ways that signal meritocratic explanations of (their) success, while those at the lower end of the distribution, by contrast, interpret new information as signaling the non-meritocratic factors that landed them where they are (Alesina et al. 2018; Côté, House, and Willer 2015; Sands 2017). Alternatively, it

could be that responses to information about a person's place in society depend in particular on whether it corresponds to their preexisting beliefs or if it informs them that they are richer or poorer than they thought they were (Cruces et al. 2013; Karadja et al. 2017; Nair 2018).

To study the causal relationship between factual information and people's understanding of inequality, we develop a unique randomized survey experiment. Our innovation is threefold: we (1) design a between-subjects survey experiment with multiple treatments, (2) explicitly test different theoretical mechanism through which information may impact beliefs, and (3) replicate the experiment for three societies.

We field our study with representative populations in Australia, Indonesia, and Mexico—societies with varying levels of economic inequality, popular beliefs, and access to information. In these different contexts, we study the impact of two informational treatments, describing economic inequality in society (cf. Alesina et al. 2018; Kuziemko et al. 2015) and a person's place in their country's income distribution, respectively (cf. Cruces et al. 2013; Karadja et al. 2017; Nair 2018). We further distinguish between people's explanations of wealth and their understanding of the causes of poverty (cf. Piston 2018).

We find the strongest impact of information in Indonesia, where our treatment rocked people's belief in meritocracy. Participants in Mexico, where unequal outcomes are commonly understood as resulting from corruption and other non-meritocratic forces, were less responsive to information describing high levels of income inequality and low social mobility. In Australia, the impact of our informational treatment was strongest when it provided justification for people's income position or when it corrected their perception of relative affluence. Moreover, our findings question the implied symmetry in beliefs about poverty and wealth and complicate the dichotomy between meritocratic and non-meritocratic beliefs. They are an invitation to rethink mechanisms of belief change and their practical implications for designing effective informational and policy interventions.

The next sections give an overview of the literature on inequality beliefs, our country cases, and the theoretical mechanisms linking information to beliefs, before we present our study design, analytical approach, findings, and conclusions.

## **BACKGROUND**

Our research starts from the observation that most people do not know the extent of economic inequality characterizing their society. Studies suggest that people in America (Norton and Ariely 2011; Osberg and Smeeding 2006) and 39 other countries (Hauser and Norton 2017) greatly underestimate societal income differences, and that most Americans think there is more upward social mobility than there really is (Alesina et al. 2018; Kraus and Tan 2015). Some scholarship pushes back against these findings on methodological grounds (Cheng and Wen 2019; Swan et al. 2017). Asking respondents to estimate the income rank in adulthood of rich and poor children, Cheng and Wen (2019) find that Americans typically underestimate social mobility—a finding confirmed by Chambers, Swan and Heesacker (2015) and by European respondents in Alesina et al.'s cross-national study (2018). As Kuklinski et al. (2000:792) argue,

whatever the nature of people’s misperceptions, the take-away from this literature is that “people often are not *uninformed* about policy, as political scientists continue to emphasize, but *misinformed*.” That is, people hold incorrect views, and are often unaware of it.

One source of misinformation is the vantage point from which people see and experience the social world. While any given person’s perspective is as unique as it is uniquely biased, research suggests that socio-economic status systematically shapes people’s experiences with and perceptions of economic inequality (Dawtry, Sutton, and Sibley 2015): affluent individuals living in relative insulation from poverty have what Edmiston (2018) describes as a ‘poor sociological imagination,’ whereas those who traverse socio-economic lines are less likely to underestimate income inequality and more attuned to the non-meritocratic processes that shape life outcomes. This has its mirror image in the concentration and isolation of poverty: poor people often underestimate the extent of their poverty and relative disadvantage (Cruces et al. 2013), and may blame themselves for their circumstances (McCoy and Major 2007). Such misperceptions of inequality are exacerbated by socio-economic segregation: as the gap between the rich and poor grows, people’s biased vantage points become entrenched and normalized (Mijs 2018a, 2019).<sup>1</sup>

Another source of misinformation may come from news media. McCall (2013) shows that print media in the United States reported extensively on inequality, poverty and job insecurity between 1980 and 2010, but the trend in reporting did not correspond to trends in inequality; reporting declined while inequality grew. Other work raises doubts about the role of media in informing the public about inequality: comparing newspaper coverage of the economy with trends in public opinion, Hopkins, Kim and Kim (2017) suggest it is the former that follows the latter. Some scholars suggest that popular rather than news media really leave a mark on people’s perception of inequality, such as stories of the American dream and other tales of meritocracy in books, movies, and on TV (Larsen 2016). A recent study documents the rise of ‘rags-to-riches’ TV shows in America since the 2000s, and presents experimental evidence that watching such shows strengthens viewers’ beliefs in the American Dream, especially among those who were already so inclined (Kim 2019).

Whatever its causes, misinformation calls for intervention—a call that researchers have taken, with mixed results. In a series of survey experiments with representative samples of the population in America and other high-income countries, participants were given one of two types of information: 1) facts about social mobility and income inequality, sometimes expressly designed to depress people’s belief in meritocracy, and/or 2) information about the societal or international income distribution, informing participants of their relative economic position.

The first type of information increases citizens’ concerns about inequality (Alesina et al. 2018; Kuziemko et al. 2015), but the effect on support for social welfare and redistributive policies is less clear. Kuziemko et al. (2015), studying Americans’ support for redistribution,

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<sup>1</sup> As suggested by an anonymous reviewer, socially mobility constitutes another means through which a person experiences economic inequality. In fact, crossing socio-economic lines intergenerationally may be a countervailing force against social insulation.

find no effect, echoing Kuklinski et al.'s (2000) null finding of correcting misperceptions about welfare provision. Alesina et al. (2018) find that left-wing respondents in France, Italy, Sweden, UK and US who learned about low levels of social mobility in their society became more supportive of redistribution, but right-wing respondents did not. Trump (2017) finds that American and Swedish study participants who learned of the actual level of income inequality in their society became *more tolerant* of income inequality: those in the treatment group preferred larger income differences, by as much as 50 percent.

Evidence for the effect of providing the second type of information is more consistent. Nair (2018) finds that correcting American participants' perception of their rank in the global income distribution made them more supportive of foreign aid and more willing to donate to charities. Cruces, Perez-Truglia and Tetaz (2013), for a representative sample of the Buenos Aires population, find that poor people who overestimated their place in the income distribution become more supportive of income redistribution after learning how poor they are relative to others. However, relatively rich people who learned just how rich they are did not become more supportive of income redistribution. In fact, Karadja, Mollerstrom and Seim (2017) find, for their non-representative Swedish sample, that rich people who learned how rich they were became less likely to favor income redistribution.

In short, the combined record on informational treatments leaves wanting. A possible reason is that the focus on political attitudes hides more than it reveals. Such would be true if an informational treatment impacts belief about inequality but does not lead a person to change their politics. This scenario is suggested by work describing the political impact of economic self-interest (Cruces et al. 2013), racial resentment (Bobo 2017), and distrust in government (Alesina et al. 2018).

To the best of our knowledge only one study to date has experimentally evaluated the impact of information about inequality on people's understanding of the causes of inequality (McCall et al. 2017). They ask a representative sample of Americans about the importance of meritocratic (hard work, ambition) and non-meritocratic factors (parents' wealth and education) for getting ahead. One group of participants reads about baseball, the other learns that income growth in recent decades has been concentrated with the top 1 percent. The latter group comes to attribute more importance to non-meritocratic factors and less importance to meritocratic factors and is more likely to call on big business and on government to reduce inequality.

Our study follows where McCall et al. have led us, directly assessing how information impacts beliefs about inequality.

## **MECHANISMS PROMOTING OR HINDERING BELIEF CHANGE**

We consider three mechanisms linking information to inequality beliefs: salience, status justification, and correction. The assumption underlying much of the research describing misperceptions of inequality is that new and accurate information about social mobility and the income distribution should lead them to correspondingly adjust their beliefs (Hauser and Norton 2017; McCall et al. 2017; Cruces et al. 2013). The same expectation follows from McCall et al.'s

(2017:9593) opportunity model: “perceptions of increasing economic inequality of the kind that characterizes contemporary society spark skepticism about the existence of economic opportunity (...) [and] can weaken faith in the American Dream of upward mobility through hard work.” We however acknowledge that rather than correct beliefs or introduce new facts, information may also increase the *salience* of preexisting knowledge of non-meritocratic factors driving inequality, e.g. by priming their importance (cf. McCoy and Major 2007) or encouraging people to attend to a structural explanation for inequality.

*Hypothesis 1: factual information about economic inequality weakens belief in meritocracy.*

There are two theoretical reasons why people may challenge new information. Rather than take information about their society at face value, people may look at new information to *justify* their societal position or their grievances. If so, people at the upper end of the income distribution will interpret information as signaling a meritocratic explanation of (their) success, while people at the lower end of the distribution take new information to mean that non-meritocratic factors landed them where they are (Alesina et al. 2018). The need for justification may be especially strong when status competition is triggered by an increased awareness and visibility of income inequality, as suggested by field and survey experiments (Côté et al. 2015; Sands 2017).

*Hypothesis 2: factual information about economic inequality weakens belief in meritocracy for people at the lower end of the income distribution and strengthens belief in meritocracy at the upper end of the income distribution.*

Alternatively, it could be that people’s response to information about their place in society depends in particular on whether it corresponds to preexisting beliefs or if it informs them that they are, in relative terms, richer or poorer than they thought they were (cf. Cruces et al. 2013; Karadja et al. 2017; Nair 2018). Studies variably find that *correcting* participants’ underestimations of their social position may positively impact their concerns and demand for redistribution (Cruces et al. 2013), whereas correcting a person’s overestimation may have the reverse effect (Karadja et al. 2017). Other studies find no effect at all (Kuklinski et al. 2000; Nyhan and Reifler 2010).

*Hypothesis 3: factual information about economic inequality weakens belief in meritocracy for people who overestimated their relative income and strengthens belief in meritocracy for people who underestimated their relative income.*

In order to assess these mechanisms through which information may impact beliefs about inequality, we designed a randomized survey-experiment with two treatments, following Alesina et al. (2018)—arguably the most extensive study on the topic to date. Each treatment is an

informational intervention that provides participants with factual data about economic inequality in their society. The first informs participants about the level of wealth inequality and social mobility in their society (cf. Alesina et al. 2018). The second informs participants where they are in the national income distribution, based on their reported income (cf. Cruces et al. 2013). Each participant is randomly assigned to either treatment condition or a control condition and asked to give the most important reason for why people are rich and why people are poor.

We use the first treatment to test the salience mechanism (Hypothesis 1) in all three countries. We obtained self-reported income data for each participant in Australia and Indonesia, which allows us to test the justification mechanism (Hypothesis 2): is the informational treatment conditional on an individual's income position? In Australia, we were also able to collect pre-treatment data on participants' perception of their relative income position, allowing us to test the correction mechanism (Hypothesis 3): is the treatment effect conditional on participants underestimating or overestimating their income?

## **COUNTRY CONTEXT**

Our research is situated in three upper-middle to high-income countries: Indonesia, Mexico and Australia. Spanning three continents, the countries are the world's 4<sup>th</sup>, 10<sup>th</sup> and 50<sup>th</sup> most populous, respectively; representing some 420 million people, and over five percent of world GDP. Taken together, the three countries provide a fruitful basis for generalizing our results beyond the confines of the United States and Western European societies most commonly surveyed on the topic.

Our theoretical expectations admittedly derive almost exclusively from research in Western settings. Do people in non-Western countries respond to information about inequality in similar ways? Comparative studies of inequality beliefs describe important differences between Western and non-Western societies (Bucca 2016; Duru-Bellat and Tenret 2012; Larsen 2016; Telles and Bailey 2013; Whyte 2016). At the same time, they suggests that (1) inequality beliefs across societies are similarly understood in meritocratic and non-meritocratic terms (Bucca 2016; Telles and Bailey 2013), (2) varying more strongly *within* than *between* countries (Duru-Bellat and Tenret 2012; Larsen 2016), and, substantively, (3) cultural beliefs about social mobility in countries like China are so optimistic as to rival the American Dream (Whyte 2016).

Our three country cases are also different in important ways, which allows us to consider treatment heterogeneity in light of contextual variation. Most notably, our cases are marked by different levels and trends in economic inequality, as well as in citizen's understanding of inequality and access to information.

Indonesia combines moderate levels of inequality with a strong popular belief in equality of opportunity, promoted by its national government. It takes a middle position with regard to income inequality (Gini coefficient of 0.40), which has been on the rise since the Asian financial crisis ended around the turn of the century, when inequality was at a low of 0.30 (World Bank 2017). Evidence on how Indonesians perceive the causes of inequality is scarce, but a recent World Bank report suggests perceptions are a mix of meritocratic and non-meritocratic factors



(World Bank 2015). Corruption is a major problem (Transparency International 2018), but Indonesians maintain a high level of trust in government—at 83 percent or about twice the OECD average (OECD 2018). People generally underestimate the extent of economic inequality. What limited concerns they have are trumped by optimism about the future: a majority of Indonesians think highly of their economy (65 percent) and believes their children will be much better off (75 percent) (Pew Research Center 2019). Underlying their misinformation is the limited availability of factual information due to the country’s very recent transition from autocracy to democracy and continuing limits on free press as well as spotty television coverage and a low Internet penetration rate on the 13,000 islands that make up the Indonesian archipelago (Austin, Barnard, and Hutcheon 2016; Freedom House 2018; World Bank 2017).

Australia is characterized by low levels of income inequality (0.35), comparable to European societies, moderate belief in meritocracy, and good access to information (World Bank 2017). Australians underestimate income inequality (Norton et al. 2014) and until recently held stronger meritocratic beliefs, comparable to other Anglo-Saxon societies (Mijis 2018b). Recent evidence suggests income concentration is growing and so are people’s concerns (Ipsos 2016; Liddy 2019; Norton et al. 2014). This mixture of meritocratic beliefs and worries about inequality is well captured in a recent ABC News survey of 54,000 Australians: while half of respondents believe a person can escape poverty through hard work, a majority thinks the government is not doing enough to help the poor and 81 percent express concern about growing wealth inequality (Liddy 2019). Like Indonesians, two thirds of Australian respondents positively evaluate the economy, but only about a third believed future generations would be better off (Pew Research Center 2019).

Mexico presents a case of high economic inequality, at a level typical of Central and Latin American societies, and a widely shared popular understanding of structural inequality. As indexed by the Gini coefficient, income inequality in Mexico is the highest of the three countries (0.44), although it has fallen from a high (0.56) in the mid-nineties (World Bank 2017). Mexicans hold weak beliefs in meritocracy in comparison to the US and other Western countries, but slightly above-average compared to Latin American countries (Bucca 2016; Reynolds and Xian 2014; and see Telles and Bailey 2013). They are especially concerned with the functioning of their democracy (Díaz González Méndez 2016) and with corruption, which according to Transparency International (2018) cannot get much worse than it is in Mexico. Of the three countries, people in Mexico also have the most negative outlook on the economy and intergenerational mobility (Pew Research Center 2019). These concerns played an important part in the political campaign (*Movimiento Regeneración Nacional*) leading to President López Obrador’s election in 2019. As for access to information, Mexicans are avid consumers of TV, radio and Internet news (Austin et al. 2016).

In sum, economic inequality is highest in Mexico and most Mexicans are well aware of it. Because we designed our informational treatments as a shock to participants’ meritocratic beliefs, we expect its impact to be weaker when belief in structural inequality is stronger and when information about economic inequality is more readily available. In such scenarios, the

information we introduce is less novel, to the point of “preaching to the choir” (cf. Alesina et al. 2018:523). Conversely, we expect the impact of information to be strongest in Indonesia, where popular belief in meritocracy is strong and access to information limited.

*Hypothesis 4: the impact of factual information about economic inequality is highest in countries where popular belief in meritocracy is strong and access to information is limited, and weakest in countries where belief in meritocracy is weak and information is readily available.*

In what follows we discuss our data, research design and analytical strategy.

## DATA & METHODS

We ran our randomized survey experiment in Australia (N = 2,536), Indonesia (N = 2,765) and Mexico (N = 1,600) through survey firms YouGov, IPSOS and Lexia, respectively, from October to December 2017 with standing panels representative of the national population with Internet access, balanced by gender, age and location. Respondents were contacted primarily through e-mail; however, many respondents used a smart phone to complete the survey. We pre-registered the analysis with the American Economic Association RCT registry under numbers AEARCTR-0002534, AEARCTR-0002614 and AEARCTR-0002571.

Table 1 compares key characteristics of our sample and the country population based on World Development Indicators (World Bank 2017). In Australia, our sample is slightly poorer than the national population, which is likely due to the small financial compensation provided to respondents for completing online surveys which appeals less to higher-income individuals. Our samples of Indonesia and Mexico are skewed toward younger people and people with tertiary education; a common characteristic of Internet-based survey samples (Weinberg, Freese, and McElhattan 2014).

**Table 1.** *Survey sample and descriptive statistics of the national population (N = 6,901)*

Variable	Australia		Indonesia		Mexico	
	Sample	Population	Sample	Population	Sample	Population
Male	50	50	48	48	48	50
Tertiary educated	51	51	53	14	47	25
Urban dweller	81	85	65	55	78	80
Age 35 and up	71	72	27	47	44	50
Bottom two income quintiles	60	40	33	40	n/a	n/a
Observations	2,536		2,765		1,600	

*Note.* Numbers listed are percentages (male, tertiary educated, etc.) of the sample and population. Source: Authors’ empirical sample and World Bank (2017).

The survey consists of two sections: we first collect background characteristics (age, gender, education, location and income), then prompt participants to choose the factor they believe is most important in explaining why people are rich and why people are poor. Participants could choose from five listed factors for why people are rich (talented, work hard, lucky, come from a wealthy family, having a lot of connections) or poor (lack talent, don't work hard, unlucky, come from poor family, disability or disease), or provide another reason. The factors listed closely follow those included in the General Social Survey and International Social Survey Programme—the most common data sources in the study of inequality beliefs (McCall 2013; Reynolds and Xian 2014).

Between the first and second section of the survey, respondents were randomly allocated to one of two treatment groups or a control group.<sup>2</sup> By randomizing treatment, we can determine the effect of information by comparing differences in participants' responses between the treatment and control groups. Based on power calculations included in our pre-registration, we ensured that treatment and control groups in each country had a minimum of 800 participants such that the minimum detectable effect size is around 7.5 percentage points (power 0.8 and alpha 0.05). We fielded both treatments in Australia and Indonesia, but limited funds meant we were only able to field the first of the two treatments in Mexico.

Treatment group A received information about the level of income inequality and social mobility in their country (Figure 1A), participants in group B received information about their position in the income distribution (Figure 1B), and the control group received no information. The first treatment informed participants of the fact that “the richest 20 percent of people in [country] have [share] of the country's wealth; this leaves around [millions] people with only [1 – share] of the country's wealth.” For example, Australian participants who received the treatment were informed that the richest 20 percent have two-thirds of the country's wealth, which leaves 20 million people with only one-third of the country's wealth. Closely following Alesina et al. (2018), the descriptive information was accompanied by a pie chart which graphically summarized the information, and a qualitative statement informing participants of two stylized facts: “1. Only very few children from poor families ever become rich, the vast majority stay poor throughout their life; 2. Children born into rich families are extremely likely to remain rich when they grow up.” Rather than provide a detailed quantitative depiction of social mobility, we follow other scholars in favoring a qualitative design that is both factual and provides an informational ‘shock’ to participants (cf. Alesina et al. 2018; Kuziemko et al. 2015). Using narrative descriptions also meant we could present the same stylized facts to participants

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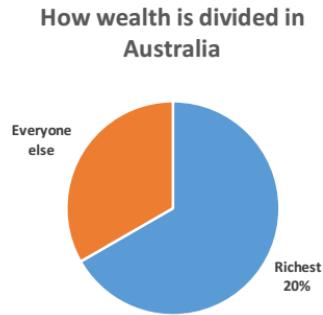
<sup>2</sup> Table A1 in Appendix A reports on post-allocation balance between the control and treatment groups. We find no statistical differences between control and treatment groups in Indonesia or Mexico, and only minor differences in Australia on two counts: participants in the control group are slightly more likely to be poor and less highly-educated than participants in the second treatment group, but not the first. To address possible issues related to imbalance between treatment and control groups, we add in a set of control variables as part of the robustness checks we report in Appendix C.

**Figure 1. Informational treatments.**

**TREATMENT GROUP A**

The richest 20% of people in Australia have two-thirds of the country's wealth.

This leaves around 20 million people with only one-third of the country's wealth.



Recent research shows:

FACT1 – Only very few children from poor Australian families ever become rich, the vast majority **stay poor** throughout their life.

FACT2 – Children born into rich Australian families are extremely likely to **remain rich** when they grow up.

**TREATMENT GROUP B**

**Based upon your reported income, your household is in the 'Middle'. This means around 10 million Australians are richer than you and 10 million Australians are poorer than you.**



Your household

across the three countries. Moreover, by replicating a previously-used treatment we are better able to speak directly to extant scholarship.

Treatment B informed Australian and Indonesian participants of their place in the income distribution. In Australia, participants were additionally asked which quintile their household would be in, prior to the allocation to treatment or control group. We follow other studies in giving participants quintiles to select from (Cruces et al. 2013; Karadja et al. 2017) rather than ask for an exact percentile, which is likely to produce a large margin of error. Using income data from the World Bank Open Data collection, we then compare participants' estimations to their actual position in the national income distribution in order to determine if they accurately, under (poorer than they thought) or overestimated (richer than they thought) their income.

### ***Analytical approach***

Our study is a between-subjects randomized survey experiment. To estimate the sample treatment effect of information, we compare differences in the average outcomes of interest between the treatment and control groups in each country. Randomization was stratified by age and gender to ensure treatment and control groups are balanced on these dimensions. The balance table in Appendix A illustrates that the treatment and control groups were balanced across most other dimensions as well. We conduct an OLS regression with a binary dependent variable (a linear probability model).<sup>3</sup> This involves creating a dummy variable for each treatment group ( $T_A$  and  $T_B$ ), which takes on the value “1” if the participant belongs to that particular treatment group and “0” if the person belongs to the control group. In addition, we create a dummy for each option provided with the questions about why people are rich and poor (see Table 2). For example, to understand the treatment effect on whether people selected hard work as the primary reason people are rich (or poor), we create a dummy variable which takes on the value “1” if the respondent selected the hard work option and “0” if the respondent does not select the hard work option. The linear probability model for each country can be written as follows:

$$Y_i = \alpha_{0i} + \alpha_{1i}T_A + \alpha_{2i}T_B + \gamma,$$

where  $Y_i$  is an indicator variable that takes on the value “1” for response  $i$  to this question and “0” for all other responses;  $\alpha_{0i}$  captures the share of participants in the control group who selected response  $i$  to this question;  $\alpha_{1i}$  is the average difference in the share of participants who selected response  $i$  to the question, comparing treatment group A and the control group (i.e. the effect of informational treatment A);  $\alpha_{2i}$  is the average difference in the share of participants selecting response  $i$ , comparing treatment group B and the control group (i.e. the effect of treatment B); and  $\gamma$  is the model error term. We also conduct robustness checks by adding controls into the regression model above, as well as weighting the results by the age and gender of the national population, as reported in Appendix C. Results are qualitatively equivalent to

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<sup>3</sup> As a robustness check, we conduct the same analysis using a logit regression and calculate the marginal effects of each of the treatments. The results are qualitatively equivalent and as such we only report OLS results in the paper.

those presented in the main text.

In evaluating the justification and correction mechanisms, below, we analyze the heterogeneous treatment effect of information by people’s actual position in the income distribution and whether they accurately, over or underestimated their position. Using a linear probability model, we interact the treatment dummy with the characteristic ( $\theta_i$ ) collected prior to the treatment. This can be written formally (for treatment group A) as:

$$Y_i = \alpha_{0i} + \alpha_{1i}T_A + \alpha_{2i}\theta_i + \alpha_{3i}T_A * \theta_i + \gamma,$$

where  $\alpha_{0i}$  captures the share of participants in the control group that selected answer  $i$  to this question who do not have the characteristic ( $\theta_i$ );  $\alpha_{1i}$  is the average difference between participants in treatment group and the control group with regard to the outcome of interest ( $Y_i$ ) among participants who do not have the characteristic ( $\theta_i$ );  $\alpha_{2i}$  is the mean level of characteristic ( $\theta_i$ ) among control group participants;  $\alpha_{3i}$  captures the interaction effect of the treatment on participants who have the characteristic ( $\theta_i$ ); and  $\gamma$  is the error term.

## FINDINGS

Table 2 gives the factors picked as most important reasons why people are rich or poor, by country. In Australia, a plurality of participants (45 percent) point to family wealth as the reason why people are rich, followed by connections (20 percent), effort (16 percent), luck (8 percent), talent (6 percent) and other factors (5 percent). Asked why people are poor, participants point to family poverty (33 percent), followed by disease and disability (22 percent), lack of effort (16 percent), bad luck (9 percent), lack of talent (8 percent), and a range of other factors (12 percent). In sum, 22 and 24 percent of participants, respectively, explained why people are rich or poor by reference to meritocratic factors, whereas about three-quarter of participants deemed non-meritocratic factors most important.

**Table 2.** *Most important reasons why people are rich or poor (N = 2,537)*

	Meritocratic		Non-meritocratic			
	Talent	Effort	Luck	Family	Network (Disability)	Other
<i>Rich</i>						
AU	6	16	8	45	20	5
IN	3	33	11	20	19	13
MX	2	10	2	14	27	43
<i>Poor</i>						
AU	8	16	9	33	22	13
IN	14	35	22	21	2	6
MX	4	11	4	40	2	27

*Note.* This table is based on respondents in the control group only. Numbers give the percentage of respondents who picked that factor when prompted, “in your opinion, which of the following

is the most important reason why people in [country] are rich/poor?” Attributions of why people are rich are given in the upper half of the table; attribution of why people are poor are given in the lower half of the table. Where numbers do not add up to 100, this is due to participants responding ‘don’t know.’ The factor mentioned most frequently in the ‘other’ category in Indonesia and Mexico was corruption. No single factor stands out in Australia.

In Indonesia, a substantially larger percentage of participants, 36 and 49 respectively, pointed to meritocratic factors to explain why people are rich or poor. In explaining wealth, the most important factor named was effort (33 percent), followed by family wealth (20 percent), connections (19 percent), corruption and other factors (13 percent), luck (11 percent), and talent (3 percent). In explaining why people are poor, the factor most picked was lack of effort (35 percent), followed by bad luck (22 percent), family poverty (21 percent), lack of talent (14 percent), and other factors (6 percent), and disease or disability (2 percent).

In Mexico, by contrast, only a small percentage of participants, 12 and 15 percent, respectively, referred to meritocratic factors in explaining why people are rich or poor. According to Mexicans, the most important reasons why people are rich are corruption and other factors (47 percent), followed by connections (27 percent), family wealth (14 percent), effort (10 percent), talent (2 percent) and luck (2 percent). The most important reasons why people are poor is family poverty (40 percent), followed by other factors (27 percent), lack of effort (11 percent), lack of talent (4 percent), bad luck (4 percent) and disease and disability (2 percent).

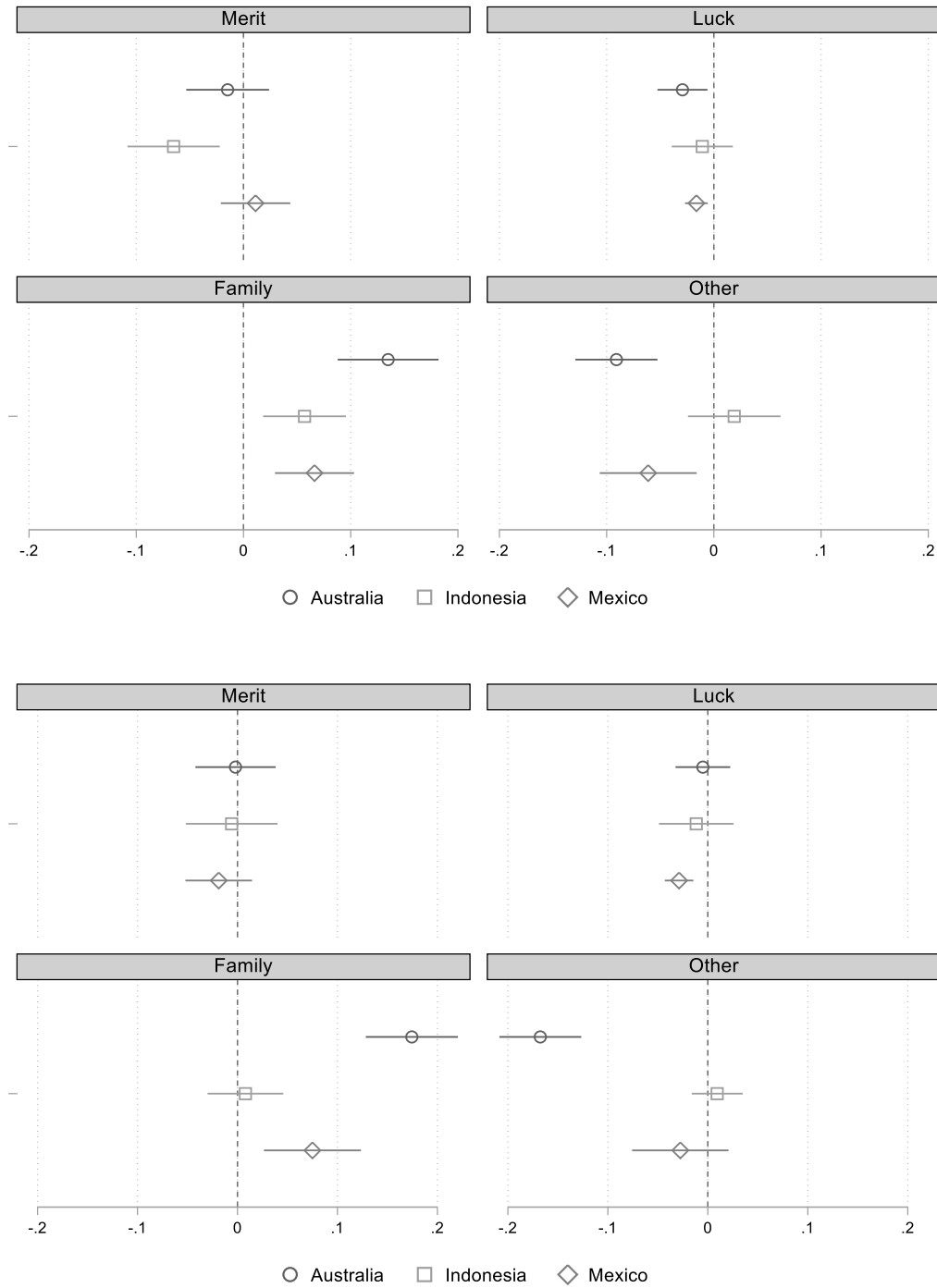
In what follows we present evidence to evaluate three mechanisms whereby information may lead people to change their beliefs about the causes of economic inequality. For ease of presentation, we collapse the response categories into four: merit (talent + effort), luck, family, and other non-meritocratic factors (network/disability + corruption and other written-in responses). Full results are reported in Appendix B.

### ***Mechanism 1: Salience***

In this section we evaluate the evidence for a salience mechanism linking information to people’s understanding of why people are poor and why people are rich. If information about structural inequality and low social mobility increases the topic’s salience, we would expect people to attribute wealth and poverty to non-meritocratic forces (Hypothesis 1). To assess the effect of the informational treatment, we compare the responses of participants in the treatment group that received this information with those of participants in the control group, by country. Figure 2 gives the treatment effect expressed as the percentage point difference between the treated and the control for each factor.

In Australia, we find that participants in the treatment group were 3 and 9 percentage points less likely, respectively, than those in the control group to attribute economic success to luck or other non-meritocratic factors. At the same time, participants in the treatment group were 14 percentage points more likely than those in the control condition (59 percent as compared to 45 percent) to report that people are rich because they come from a wealthy family. We find no significant differences between the two groups regarding meritocratic attributions. Turning to participants’ explanations of why people are poor, we find a similar pattern marked by a decrease

**Figure 2.** Effect of information about inequality and mobility on why people are rich (top) and poor (bottom) in Australia, Indonesia and Mexico.



*Note.* Point estimates (with 95% confidence intervals) give the absolute difference between the treatment and control group in the proportion of respondents who picked that factor when prompted, “in your opinion, which of the following is the most important reason why people in [country] are [rich/poor]?” Full results provided in the Appendix, Table B1.



in the importance given to other factors in favor of family background: participants in the treatment group are more likely, by about 17 percentage points (50 vs. 33 percent) to attribute a person's poverty to coming from a poor family.

Among Indonesian participants, we find a similar positive treatment effect on attributions of a person's wealth to family factors (24 as compared to 20 percent). Mirroring this positive treatment effect, participants in the treatment group were less likely to attribute wealth to merit (29 vs. 36 percent). However, we find no significant treatment effect with regard to Indonesians' explanations of poverty.

In Mexico, as in Australia and Indonesia, we find a positive treatment effect on the importance given to family wealth: participants in the treatment condition were about 7 percentage points more likely (21 vs. 14 percent) to attribute a person's riches to their family. The stronger attribution to family wealth comes at the expense of the perceived importance of luck and other non-meritocratic factors. Explanations of why people are poor in Mexico follow the same pattern: participants in the treatment group were more likely than those in the control condition to consider family background (48 vs. 40 percent) instead of bad luck (2 vs. 4 percent).

In sum, we find consistent evidence across the three countries that participants who received the informational treatment were more likely to attribute a person's riches to the non-meritocratic advantage of coming from a wealthy family, in line with an increased salience of inequality (cf. Hypothesis 1). Interestingly, and not in line with expectations, the impact of information is expressed mainly in a strengthening of beliefs about the importance of non-meritocratic factors. Only in Indonesia do we find evidence of a symmetric weakening of meritocratic beliefs following the informational treatment (cf. Hypothesis 4). In Mexico and Australia, treatment effects are expressed as a shift *within* the set of structural factors participants deem most important, from luck and other non-meritocratic factors (corruption, connections, disability) to family background. We find a comparable treatment effect on explanations of why people are poor in our Australian and Mexican experiment, but not in Indonesia, indicating a marked difference in participants' willingness to change their beliefs about poverty vis-à-vis wealth. We discuss the implications in the conclusion.

### ***Mechanism 2: Justification***

In this section we evaluate the evidence for a process whereby, rather than take information about their society at face value, people look at new information as a source for justifying their societal position. If so, people at the upper end of the income distribution should interpret information in ways that signal meritocratic explanations of (their) success, whereas people at the lower end of the distribution, by contrast, interpret new information as signaling the non-meritocratic process that landed them where they are (Hypothesis 2).

We test this mechanism by breaking down the experimental evidence by participants' income quintile for the two countries where we obtained reliable income data. Dividing our sample into subgroups limits our statistical power. We therefore opt to discuss patterns when they shed light on a justification mechanism, even if they are only indicative due to the smaller

sample size. Figures 3A and 3B give the estimated treatment effect by income quintile for the Australian experiment, for participants' attributions of wealth and poverty, respectively. Participants in the lowest income quintile who received the informational treatment were more likely, by about 17 percentage points (60 vs. 43 percent) to attribute a person's riches to their family wealth, and less likely to attribute being rich to luck or other non-meritocratic factors (Figure 3, top). Participant in the second-to-lowest quintile who received the treatment were similarly keener to attribute being rich to coming from wealth, by 17 percentage points, and a little less likely to attribute economic success to other non-meritocratic factors. As expected, the pattern is distinctly different for participants in the top two income quintile groups, neither of which significantly attributes more importance to family background. Instead, they attribute more importance to merit, albeit not at a statistically significant level.

Australians' attributions of wealth thus indicate a heterogeneous treatment effect whereby the impact of information varies with participants' income (cf. Hypothesis 2). We find some indications of such pattern with regard to participants' explanations of why people are poor, although it is much less expressed (Figure 3, bottom). Treated participants in all but the highest income quintile attributed more importance to family poverty, by as much as 25 percentage points, and less importance to disease and disability, by as much as 17 percentage points.

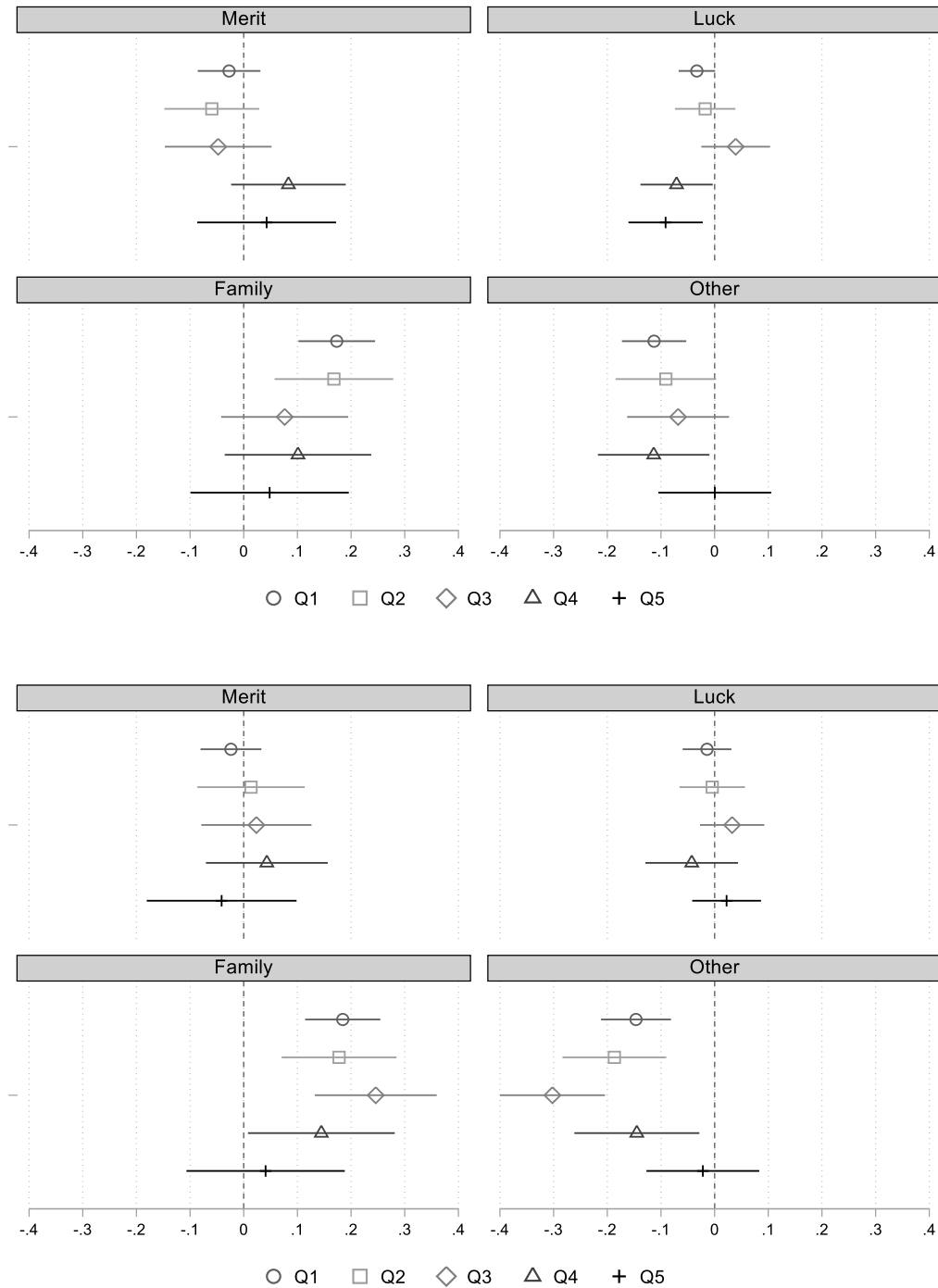
In Indonesia, the results are not very informative given that we find only a few significant differences between participants in the treatment and control group (full results in Appendix B, Table B3). The evidence with regard to Indonesians' explanations of economic success is as follows: participants in the middle and second highest quintile who received the treatment were more likely to attribute economic success to family wealth by 8 percentage points and 14 percentage points, respectively; and participants in the highest quintile who received the informational treatment were less likely to say it reflects luck and more likely to point to other non-meritocratic factors. We find no clear pattern either for Indonesians' explanations of why people are poor. In line with our expectations, participants in the lowest income quintile who received the treatment attributed more importance to luck. Contrary to expectations however, treated participants in the second lowest income quintile attributed more importance to merit and less to family poverty, and participants in the second highest income quintile did the reverse.<sup>4</sup>

In sum, our evidence in support for the justification mechanism is limited to Australians' explanations of why people are rich. Explanations of wealth varied with participants' own income position in the expected direction: people at the lower end of the income distribution who learned about the extent of social mobility and wealth inequality in their society were more likely

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<sup>4</sup> We also tested the justification mechanism by drawing on our second experimental treatment (explored more fully in the next section), which informed participants of their relative standing in their country's income distribution. We find a pattern very similar to what is described above for the respective countries: in the Australian experiment, participants' explanations of wealth follow the expected pattern but their explanations of poverty do not; in the Indonesian experiment, the few statistically significant differences between the treated and controls provide no support for the hypothesized mechanism.

**Figure 3.** *Effect of information about inequality and mobility on why people are rich (top) or poor (bottom) in Australia.*



*Note.* Point estimates (with 95% confidence intervals) give the absolute difference between the treatment and control group in the proportion of respondents who picked that factor when prompted, “in your opinion, which of the following is the most important reason why people in Australia are [rich/poor]?” Full results provided in the Appendix, Table B2.

to attribute economic success to non-meritocratic factors than participants at the upper end of the income distribution who received the same treatment. We find no evidence in support of the justification mechanism when considering Australians' explanations of why people are poor, or when looking at either aspect of the Indonesian experiment.

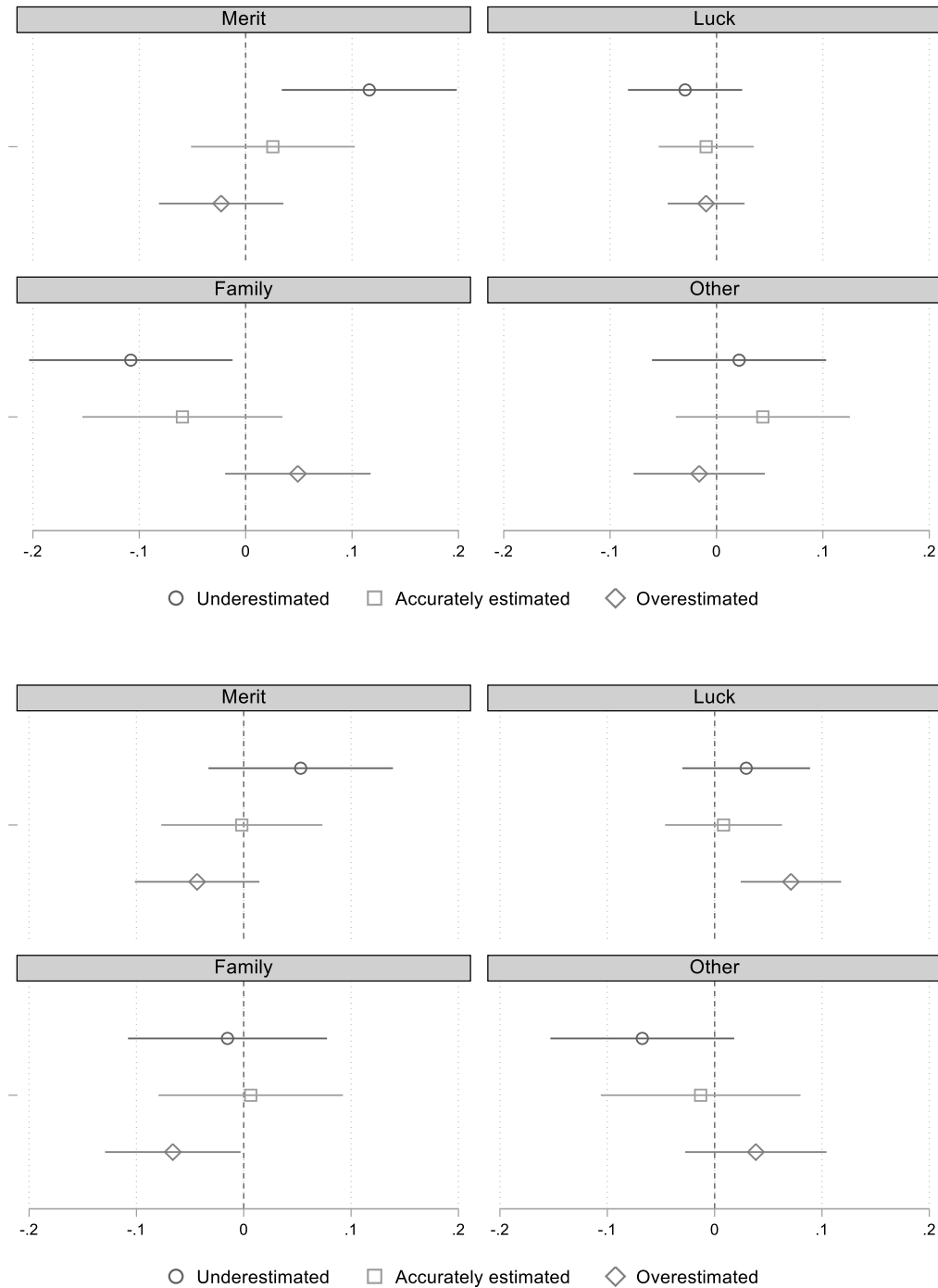
### ***Mechanism 3: Correction***

In this section we consider the possibility that people's response to information depends on how it relates to preexisting beliefs. Here we draw on the second experimental treatment, which informs participants where they stand in the national income distribution. Participants in Australia reported on their perceived position prior to being selected into the treatment or control group, meaning we can evaluate whether the information they received corresponded to perception. Drawing on these data, we compare possible treatment effects between respondents who underestimated their income position, those who overestimated their relative income, and those whose perceptions were spot-on. If the impact of information hinges on a correction mechanism, we would expect to see participants who learn they are higher up the social ladder to attribute economic success to meritocratic factors, whereas participants who learn they are poorer than they thought should be especially keen to attribute (their) poverty to non-meritocratic forces (Hypothesis 3). Figure 4 gives the estimated treatment effect for each condition for participants' attributions of a person's wealth (A) and poverty (B).

We find two significant treatment effects for Australians' explanations of economic success: participants who received the treatment and who had underestimated their position in the income distribution are more likely, by 12 percentage points (34 vs. 22 percent), than participants in the control condition to attribute economic success to merit, and 11 percentage points less likely (39 vs. 50 percent) to attribute a person's wealth to their family fortune. Most other differences between treated and controls are in the expected direction, but none of these are statistically significant at  $p < .10$ .

Turning to explanations of why people are poor, we find that treated participants who overestimated their relative income are more likely, by 7 percentage points to highlight the role of bad luck (17 vs. 10 percent) and less likely, albeit not at a statistically significant level, to attribute a person's poverty to a lack of merit. Unexpectedly, they are also less likely to attribute being poor to family background than participants in the control group, by about 7 percentage points (26 vs. 33 percent), although family background does remain the factor most picked by participants in either group. In sum, we find evidence in support of a correction mechanism with regard to Australian participants' attributions of wealth (cf. Hypothesis 3), and mixed evidence with regard to their explanations of why people are poor.

**Figure 4.** *Effect of correcting beliefs about people’s position in the distribution on why people are rich (top) and poor (bottom) in Australia.*



*Note.* Point estimates (with 95% confidence intervals) give the absolute difference between the treatment and control group in the proportion of respondents who picked that factor when prompted, “in your opinion, which of the following is the most important reason why people in Australia are [rich/poor]?” Full results are provided in the Appendix, Table B4.

## CONCLUSIONS

Prior research describes how people underestimate the level of economic inequality and misperceive the extent of social mobility characterizing their society (Hauser and Norton 2017; Alesina et al. 2018; Cheng and Wen 2019), be it because of the class-biased vantage point through which they perceive and experience social life (Dawtry et al. 2015; Mijis 2019), inaccurate news reporting (McCall 2013) or the perpetuation of meritocratic myths in popular media (Kim 2019). In this paper, we ask if and how people change their beliefs about the causes of inequality when presented with factual information. Based on randomized survey experiments in Australia, Indonesia and Mexico, we find support for three mechanisms through which people's beliefs about inequality change depending on the information presented to them.

We find evidence of an inequality salience mechanism in each society. Participants in Australia, Indonesia and Mexico who learned about actual levels of (high) income inequality and (low) social mobility in their society were more likely to explain wealth and poverty as determined by the family people are born in, compared to participants in the control group who relied on preexisting beliefs about inequality.

Not all participants however took the information provided at face value, nor did they interpret the data the same way. In Australia, but not in Indonesia, we find evidence of a justification mechanism whereby participants' attributions of economic success varied with their own income position: people at the lower end of the income distribution who received factual information about economic inequality, or who learned of their (low) place in the income distribution, were more likely than those who did not to attribute economic success to family resources and to de-emphasize the role of merit, luck, and other non-meritocratic factors. Participants at the upper end of the income distribution instead attributed economic success to merit and downplayed the role of luck.

The third mechanism we evaluated is whether participants' beliefs about inequality changed after learning they had under or overestimated their income position. The only country where we could test this mechanism was Australia, where we find that participants who had underestimated their income became more likely to attribute economic success to merit and downplay the importance of family wealth. Turning to participants' explanations of why people are poor, we find that those who had overestimated their relative income were less likely to blame poverty on a lack of merit (albeit not at a statistically significant level), more likely to emphasize bad luck, and, unexpectedly, to deemphasize the role of family background.

Our findings provide new insights into the link between information and beliefs about inequality. They confirm that information has the potential to change people's minds (Hauser and Norton 2017; McCall et al. 2017). At the same time, we show how participants' interests shape how they take in new information. Our findings suggest people have a need to justify their economic position in terms of the meritocratic and non-meritocratic factors that led them to where they are on the social ladder. Rather than expressing a general interest in justifying the social hierarchy, people's responses are patterned by their own social position. When provided with information about economic inequality, people on the lower rungs of the social ladder take

it to describe unfair, non-meritocratic, forces, whereas people on the higher rungs make the same information tell a meritocratic tale. These findings add a new dimension to the documented differences in economic perceptions and experiences of the rich and poor (Dawtry et al. 2015; Edmiston 2018): their embodied experiences may also make them see the social world differently. It is an open question whether this reflects a cognitive process (cf. Mijis 2018a, 2019) or if people's variable responses are motivated mainly by vested interest (Côté et al. 2015; Sands 2017).

Our study also highlights similarities and differences between societies not previously studied in this context. We find similarity in people's willingness to partially update their beliefs in all three societies, echoing findings of informational treatments on American and European participants' concerns about inequality (Alesina et al. 2018; McCall et al. 2017). These similarities bolster confidence in the potential for informational interventions, all the more given the large variation in national levels of economic inequality, the direction in which inequality is trending, and the likely differences in information about inequality that citizens have access to.

At the same time, it is highly unlikely that the informational treatment meant the same thing to our participants in the three countries, given vastly different political, cultural, and economic contexts. In Indonesia, we find both the strongest popular belief in meritocracy and the largest shift from meritocratic to non-meritocratic explanations of economic success in response to learning about economic inequality. This finding is in line with our hypothesis that factual information about economic inequality produces the largest shock when belief in equality of opportunity and economic progress is high, and free press and access to information are limited.

It should be noted however that our treatment had no impact on Indonesians' beliefs about poverty, a fact that is especially stark given that almost half of our Indonesian participants believe people are poor because of a lack of talent or effort. Why were their beliefs about wealth more subject to change than their beliefs about poverty? Whereas our informational treatment addresses both distributional inequality and social (im)mobility, scholarship has described how individuals tend to focus "upward" (Day and Fiske 2019:366) and disregard the logical implication that one person's upward mobility requires another's descent. Triggered by a heightened awareness of inequality, following our informational treatment (cf. Côté et al. 2015; Sands 2017), this asymmetric response may reflect a status maintenance mechanism Fiske (2012) characterizes as "envy up, scorn down": our treatment gave pointed direction to Indonesians' envy of the rich, but the information we provided left unabated their scorn for the poor.

In Australia and Mexico, where beliefs about meritocracy are less strong, economic expectations less optimistic, and information about inequality readily available, our treatment has a more moderate impact: rather than a change from meritocratic to structural, we see a shift within the set of structural factors participants picked, from luck and other non-meritocratic factors to a more pointed and precise emphasis on family background.<sup>5</sup> Unlike in Indonesia, the treatment has a similar impact on participants' explanations of why people are rich or poor.

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<sup>5</sup> We thank an anonymous reviewer for suggesting this description of our treatment effect.

Comparing Mexico and Australia, effect sizes are smaller in the former than the latter by a factor two, in line with our hypothesis that information about economic inequality has less impact in societies where inequality is highly visible and its non-meritocratic sources are well-known (Gimpelson and Treisman 2018; Hauser and Norton 2017). Corruption stands out as the main such sources. Transparency International (2018) counts Mexico among the countries where citizens perceive corruption to be the worst; echoing our participants, 43 percent of whom indicated corruption as the main reason why people are rich.

Our results highlight the importance of studying heterogeneity in baseline beliefs about inequality as well as access to information in assessing whether people are willing to reconsider their beliefs based on new information. Informational treatments need not have symmetrical effects, reflective of the fact that belief in meritocracy and structural inequality is not necessarily incompatible, nor zero sum: people can, and often do, believe in the importance of hard work and talent while appreciating also the role of family background and other non-meritocratic factors in shaping life outcomes (McCall 2013; Mijs 2018a). Our results also question the implied symmetry in popular beliefs about poverty and wealth. As scholars of the welfare state have long observed, public beliefs about the deservingness of those in need may be wholly disconnected from attitudes toward taxing those at the top (Piston 2018; Van Oorschot 2006).

The practical implication is that interventions aimed at attitudinal and behavioral change need to take seriously the cognitive middleman: it may not be viable to generate support for redistributive policies without first addressing the beliefs (about inequality) that underlie people's politics. Our findings suggest that information about social mobility and income inequality can effectively alert the public to the "undeserving rich" (cf. McCall 2013). Generating policy support for the poor may require another approach altogether, as does reaching people at the upper rungs of the social ladder, whose experiences and self-interest motivate them to see signs of meritocratic even where none are present. As other research suggests, it is easier to make people feel poor than to appreciate their affluence, and more challenging yet to question the meritocratic nature of their economic success (Condon and Wichowsky 2020; Fiske 2012). Perhaps a more fruitful way forward is to design informational treatments to describe accurately, effectively, and emphatically the structural barriers faced by people in need.

Our study is not without its limitations. Our focus on the causal pathway from information to beliefs about inequality means we cannot empirically explore the impact of beliefs on attitudes. Instead, we rely on studies describing the links between inequality beliefs and policy views (Alesina et al. 2018; Van Oorschot 2006). Two other limitations follow from methodological choices. First, we relied on Internet samples, which we acknowledge are biased toward younger and highly-educated citizens. Given the paucity of studies on this topic in Mexico and Indonesia, we think the benefits outweigh this limitation. Second, we asked our participants to choose the most important reason why people are rich or poor, rather than list, rank or evaluate a range of factors. Taking a forced-choice approach saves costly survey time and compels participants to more explicitly weigh alternatives against one another than a list of Likert scale response categories would. It also means our measurement is not as sensitive to



picking up on treatment effects as alternative measures (cf. McCall et al. 2017). That is, with force-choice responses we can identify an effect of information only when a participants' (updated) latent ranking of factors leads them to pick a different first choice. Changes in the order of importance or the distance between various factors go unnoticed. As such, our results should be taken as conservative estimators of the treatment effect of information on economic inequality. We hope these reflections provide directions for future research and new methodological strategies for identifying the impact of information on people's beliefs about inequality, and their political ramifications.

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