Experimental Evidence on Attitudes Toward Inequality and Fairness*

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Many of our everyday life experiences suggest that humans are social individuals who care about themselves and others. Yet, for a long time, the economic discipline has focused on modeling the purely self-interested "homo economicus." In this review, we summarize the extensive experimental literature on deviations from such purely self-interested behavior, with a particular focus on attitudes toward inequality and fairness. This literature shows that many individuals are willing to forgo their own economic gain for a fairer distribution of resources. We further illustrate empirical evidence showing that people differ in what they consider to be fair, and how these fairness views vary within and across countries.

Keywords: Inequality, Social preferences, Fairness views and importance, Experimental evidence

1 Introduction

Historically, economic sciences have often depicted humans as primarily self-interested agents, whose actions are motivated by their own narrow material interests (Smith, 1776; Mill, 1844; Persky, 1995). Different parts of the economic literature focused on various trade-offs for such self-interested agents: the (micro) consumption literature focused on the trade-off between purchases of different goods and services for a given budget (e.g., Varian, 2014; Kreps, 2020); the labor and public economics literature focused on the contemporaneous trade-off between leisure and consumption (Hicks, 1932; Mirrlees, 1971); the micro financial literature and the macro literature focused on dilemmas between consumption and saving (Ramsey, 1928;

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Friedman, 1957; Fisher, 1930; Modigliani, Brumberg, et al., 1954); lastly, in the field of political economy, both policymakers and voters were modeled as purely self-interested. That is, policymakers would simply implement the policy that maximized chances of being re-elected. At the same time, voters would simply balance the cost of political participation against the benefits of implementing a policy weighted by the probability of being the pivotal voter (Downs, 1957; Riker and Ordeshook, 1968).

However, the view that individuals are purely self-interested in their decision-making was challenged by observations showing that they sometimes contribute to public goods and prioritize socially desirable actions even when costly for them. For example, charitable giving is quite common, and there is a relatively high degree of tax compliance – higher than the risks of being detected for fraud would predict (Andreoni et al., 1998). Moreover, observed rates of political participation cannot be reconciled with the minuscule probability of being the pivotal voter (Myerson, 2000). Therefore, such behaviors are not reconciled by models where individuals only care about their personal material gain (Bénabou and Tirole, 2006; Besley, 2006; Besley and Persson, 2011).

Already, Becker (1976) acknowledges that economic agents also have other concerns than their material self-interest. He emphasizes that we have the tools in economics to model and understand a whole range of motives and behaviors that are not purely based on self-interest. He discusses the usefulness of economic theory in studying a wide range of human behavior, including social and anti-social behaviors such as altruism, discrimination, and crime. Becker's analysis suggests that social behavior can be modeled as a rational decision, where the utility function includes self-interest and the welfare of others. As such, social behavior can be analyzed and understood within the already established rational choice framework (Varian, 2014; Kreps, 2020).

Using such a framework to include other concerns and behavior requires us to measure preferences over such concerns. However, for many years, the prevailing view among economists was that sound empirical work should be solely based on a limited set of measures (see Almås et al., 2024a, for a discussion). The prevalent view was that preferences could not be revealed directly by posing questions about concerns and tastes; instead, they could only be revealed through observed behavior. For example, preferences over consumption goods could only be revealed by observing consumption choices at different prices and income levels. Such an approach is often referred to as the revealed preference approach, going back to the seminal work by Samuelson (1938).

A sole focus on the revealed preference approach made it challenging to measure important aspects of decision-making, such as social norms and political preferences, as little observational data existed on these desiderata. It even made it difficult to measure preferences over consumption goods in contexts with little variation in prices and income.

The experimental approach solved this challenge by introducing controlled choice settings. The experimenter could control and randomly vary all aspects of the choice situations, allowing the creation of the necessary variation to reveal preferences over various goods. The early experiments in economics focused on agents in the market for consumption goods and services (e.g., Smith, 1962; Plott, 1986). However, later experiments were also extremely important for identifying social preferences and fairness concerns and for showing how individuals incorporate these motives in conjunction with material self-interests.

Early seminal contributions in this area focused on aversion against inequality and how inequality aversion can coexist with other motives such as self-interest and competitive behavior in a society (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Charness and Rabin, 2002). Economic experiments have further demonstrated that individuals consider participants' performances and production input when making distributive decisions and that many individuals seem to accept some inequalities as fair (e.g., Konow, 2000).

Inequality aversion and acceptance can also be related to the philosophical and social choice literature on distributive justice. The philosophical literature has debated principles of distributive justice (Box 1), while authors in the social choice literature have attempted to formulate corresponding redistribution principles in a mathematically rigorous way (Fleurbaey, 2008; Kolm, 1996; Roemer, 1998). This work also provides the groundwork for empirical applications using these principles to quantify the extent of unfairness in income distributions across countries and time (Hufe et al., 2022; Almås et al., 2011; Devooght, 2008; Almås, 2008; Bourguignon et al., 2007; Roemer et al., 2003; Aaberge et al., 2011; Lefranc et al., 2009). The philosophical and social choice literature are normative and suggest "best principles." Various experimental papers followed this normative discussion by studying the corresponding positive question: what do people find to be a fair income distribution?

In this chapter, we will review this experimental literature. In section 2, we will discuss important early contributions providing clear evidence of non-selfish behavior in different experiments, including ultimatum, dictator, public goods, and trust games. In section 3, we discuss some seminal work on inequality aversion and acceptance. This work suggests that some people are motivated by a desire to avoid inequalities. Other people, however, hold more nuanced fairness views, according to which they accept some inequalities as fair. In section 4, we will outline a theoretical framework that we find helpful to structure the discussion on the heterogeneity in fairness concerns. In section 5, we summarize the experimental evidence on the heterogeneity of fairness views both within and across countries. Last, we summarize and conclude in section 6.

2 Non-selfish behavior

Early evidence of non-selfish behavior in economics emerged from so-called ultimatum, dictator, public goods, and trust experiments. The results from these experiments showed that the behaviors of many participants were not consistent with purely self-interested motives.

First, in the so-called ultimatum game, the proposer offers a split of a sum of money to a responder (Güth et al., 1982; Forsythe et al., 1994). If the responder rejects the offer, neither participant receives anything. The evidence from these experiments showed that proposers typically offer around 40%, and responders reject offers below 20% in half of the cases (see Camerer, 2003, for a discussion of this evidence). These results suggest the existence of non-selfish concerns: if individuals were motivated by self-interest alone, proposers would offer as little as possible to responders, and responders would accept any positive amount offered. Generally, however, the design of the ultimatum game is not well suited to elicit the relevant trade-off between self-interest and concern for others. As proposers need to anticipate the responder's actions, strategic considerations enter the calculus and make it challenging to identify the relevant preferences cleanly.

Box 1: Equality of what? A summary of the philosophical discourse

In this box, we give a brief overview of the philosophical literature on the "currency of egalitarian justice." For the sake of brevity, we sidestep many other interesting philosophical debates, such as the question to whom egalitarian principles apply or in virtue of which features people should be treated as equals—see Arneson (2013) for a succinct introduction to these debates. The literature on the "currency of egalitarian justice" has debated the goods that need to be distributed equally from a justice perspective. The perspectives on this are manifold and the literature includes discussions on concepts such as legal rights, capabilities, initial resources, opportunities, social status, and many more. Importantly, most of these philosophical perspectives diverge from the idea that justice requires *equality of outcomes* in material goods such as income and wealth. The works of Rawls (1958) and Rawls (1971) provide the starting point of the modern discourse on distributive justice. In his view, a just society guarantees equal basic liberties across individuals, fair equality of opportunity for people with similar abilities and motivations, and any inequalities in society work to benefit the least advantaged. The last part is often integrated into economic analyses as the maximin principle. Nozick (1974) gives perspectives that deviate from those outlined in Rawls (1971). Nozick (1974) focuses on basic rights and proposes that any distribution of outcomes is just if it results from exchanges among informed and consenting individuals. Therefore, his work is one of the modern foundations for *libertarianism*, a philosophical position that makes redistribution incommensurable with the demands of justice. Furthermore, many other philosophical perspectives are discussing nuanced *intermediate positions* between *equality of outcomes* and the *libertarianism* endorsed by Nozick (1974). These include the works by Dworkin (1981a), Dworkin (1981b), Arneson (1989), and Cohen (1989), all of which distinguish between fair and unfair sources of inequality.

Second, the dictator game eliminates the scope for strategic interactions and, therefore, is better suited to reveal participants' preferences over the trade-off between self-interest and concern for others (Kahneman et al., 1986; Forsythe et al., 1994). The dictator game is a simplified version of the ultimatum game where the responder (or "recipient") has no power to reject the offer of the proposer (or "dictator"). Meta-studies showed that dictators generally give around 25% in these experiments (Engel, 2011; Oosterbeek and Sloof, 2004; Cochard et al., 2021). These results again suggest the existence of non-selfish concerns: many participants give away part of their endowment, even though they could keep it all without consequence.

Third, in addition to the early evidence from the ultimatum and dictator games, the so-called public goods game also showed that individuals are not solely motivated by self-interest (Marwell and Ames, 1979). In the public goods game, participants dispose of an initial endowment, which they can use in two ways: they can keep resources at their current value to themselves, or they can contribute them to a public good where contributions are pooled and shared equally after being multiplied by a factor. The meta-study of Zelmer (2003) shows that participants, on average, contribute 38% to the public good, suggesting that people are willing to cooperate and sacrifice personal gain for the benefit of the group.

Lastly, the so-called trust game is another experiment showing behavior that contradicted the "homo economicus" version of individuals in economics (Berg et al., 1995). In the trust game, one participant sends some of their money to another, who can then return part of it. Johnson and Mislin (2011) provide a cross-country meta-analysis on trust games and find that the average share of resources sent by the first participant lies at around 50%, and that the second participant returns on average around 37% of the received amount, indicating that

trust and reciprocity play significant roles in economic interactions.

These early experiments highlighted that human behavior in economic settings often reflects fairness concerns, altruism, reciprocity, and cooperation, challenging the narrow focus on self-interest that dominated earlier economic models. While many of the studies mentioned above were based on rather selected groups of study participants, e.g., students on one subject (say economics) from one particular university, other studies show that the non-selfish behavior revealed through these experiments is also found across different populations and cultures (Henrich et al., 2001; Roth et al., 1991).

3 Inequality aversion and acceptance

The findings of non-selfish behavior discussed above motivated the development of new theories that significantly impacted the economics literature. The contributions by Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) bring forward a simple but powerful modification of standard models based on purely self-interested economic behavior. In particular, individuals are no longer assumed to solely care about their own material payoffs but also to potentially take inequality considerations into account when making distributional choices among themselves and others.

The frameworks of Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) share three key characteristics. First, inequality considerations are related to individuals' own payoff, i.e., individuals are not averse to inequality per se, but to situations in which their own payoff deviates from those of others. Second, individuals suffer when their own payoff is lower than others, i.e., they experience *disadvantageous inequalities* but are also worse off when they are ahead of others, i.e., they experience *advantageous inequalities*. Third, the normative reference point for the pay-off is equality between oneself and others. In Fehr and Schmidt (1999), inequality aversion operates through the individual comparison between one's own material payoff and the payoffs of all other individuals. In Bolton and Ockenfels (2000), inequality aversion operates through the comparison between one's own material payoff and the average payoff to all other individuals. The divergent formulations of inequality aversion in Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) have interesting implications for the nature of preferred equality. In the former model, utility is maximized at the point where all individuals earn the same as oneself. In contrast, in the latter model, inequalities within the group of others are irrelevant as long as the average payoff equals one's own payoff.[1]

Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) are seminal contributions because they provide a theoretical framework to incorporate non-selfish aspects of economic behavior. Further, their work had a significant impact on the economics discipline because their models can explain self-interested and non-selfish behaviors in various contexts. On the one hand, consider the ultimatum game described above. Even purely selfish proposers must account for the possibility that an inequality-averse responder would reject an unequal offer. Therefore, the presence of some inequality-averse responders drives proposals in the ultimatum game

[1] Further differences between Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) exist. For example, Fehr and Schmidt (1999) use a specific functional form where inequality aversion enters utility linearly and where utility losses from advantageous inequalities receive a lower weight than those from disadvantageous inequalities. In contrast, the analysis of Bolton and Ockenfels (2000) is based on a more general and continuous utility function.

toward equal splits. On the other hand, consider market games, where many proposers offer a split of the pie to only one responder. The responder, in turn, can accept or reject the best offer made by the proposers. A selfish proposer will try to win the bid by offering the full pie to the responder. Therefore, the presence of some selfish proposers drives proposals in the market game toward full transfers with a lot of inequality. Inequality-averse proposers recognize the impossibility of satisfying their desire for an equal distribution in the presence of self-interested proposers and, therefore, also behave as if they were purely driven by self-interest. Both behavioral patterns, i.e., non-selfish behavior in the ultimatum game and selfish behavior in the market game, are consistent with the theoretical predictions of Fehr and Schmidt (1999) and Bolton and Ockenfels (2000), illustrating their flexibility of predicting behavior in different contexts.

Following the seminal contributions by Fehr and Schmidt (1999) and Bolton and Ockenfels (2000), other motives have been brought forward as alternative or complementary explanations for the empirically observed behavior in specific experiments.

First, Charness and Rabin (2002) and Engelmann and Strobel (2004) posit that the focus on self-interest and inequality aversion neglects possible *efficiency* considerations. In particular, the authors argue that in simple distribution experiments among oneself and two other persons, the behavior of participants can also be rationalized by a combination of efficiency concerns (defined as a desire to maximize the size of the economic pie) and Rawlsian maximin preferences.

Second, other authors have pointed to *altruism* and *spitefulness* (or reverse altruism) as candidate motivations behind observed behavior. In contrast to inequality aversion, altruistic preferences do not operate through evaluating one's own payoff relative to others. Instead, both own and other payoffs are considered separately. In the case of altruism, others' payoff makes the subject better off regardless of whether it increases the gap to one's own payoff. In the case of spitefulness, others' payoff decreases the subjects' utility independent of one's own payoff. A rigorous representation of altruistic preferences is presented by Andreoni and Miller (2002). Levine (1998) introduces the possibility of spiteful behavior and investigates how the presence of altruistic and spiteful individuals can shape economic behavior.

Third, in contrast to the consequentialist models incorporating inequality aversion, altruism, and efficiency concerns, Rabin (1993), Dufwenberg and Kirchsteiger (2004), and Falk and Fischbacher (2006) highlight the role of *intentions and reciprocal behavior*. According to this interpretation, rejections of low offers in the ultimatum game are interpreted as reciprocal punishment of hurtful behavior and not based on a desire to reduce inequality.

Fourth, recent studies have explored various contexts and demonstrated that equality is not necessarily the same as *fairness*. Some inequalities may be seen as fair, whereas other inequalities may be seen as unfair. Especially when inequality reflects differences in performance, it becomes less clear that inequality aversion alone best captures people's fairness views. Instead, empirical evidence suggests that people tend to accept inequalities that result, at least in part, from productivity or effort differences between individuals. These results align with theories of distributive justice that argue individuals should be held accountable for some factors that contribute to differences in their life outcomes (Arneson, 1989; Dworkin, 1981a; Dworkin, 1981b; Cohen, 1989; Bossert and Fleurbaey, 1996; Roemer, 1998). For example, in his seminal study, Konow (2000) conducts an experiment involving a real-effort dictator game, where participants determine how to distribute earnings between two individuals based

on their performance in a production task. The author finds that participants generally prefer income allocations proportional to individual performances. This result suggests that people tend to accept some inequalities as fair, particularly if the differential choices of the involved parties can justify these inequalities.

Box 2: Stakeholder versus impartial spectator designs

Most of the current evidence on people's fairness concerns is derived from modified versions of the dictator game. The dictator game can be designed in two versions. First, in the *stakeholder version* of this experiment, the payoff of the dictator is determined by their own distributional decision. Therefore, their distribution decision may be influenced by self-interest and fairness concerns. Second, in the *impartial spectator version* of this experiment, the dictator determines the payoffs to third parties but not themselves. Therefore, self-interest can be ruled out as a motivational factor, allowing a clear identification of fairness views. However, it does not allow for identifying the weight attached to fairness views relative to self-interest. Therefore, some of the identified fairness positions may be irrelevant to economic behavior, i.e., when fairness concerns are dwarfed by the economic self-interest of individuals. In this review, we discuss evidence from both stakeholder and impartial spectator designs. In general, the available evidence suggests they yield similar results for the prevalence of different fairness positions. For example, Cappelen et al. (2013a) show that the distribution of fairness views is similar regardless of whether they estimate the prevalence of fairness views based on a stakeholder or an impartial spectator design. Similarly, Fisman et al. (2007) use a 3-person stakeholder design to estimate preferences for giving (self vs. others) and social preferences (others vs. others) within the same experiment. Their results suggest that subjects apply the same distributive principles irrespective of whether the decision affects themselves (self vs. others) or an anonymous group of individuals (others vs. others).

4 A simple conceptual framework

The previous discussion highlights that people's attitudes toward inequality are influenced by self-interest, fairness concerns, and potentially other motives, such as an efficient allocation of resources (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Charness and Rabin, 2002; Andreoni and Miller, 2002; Fisman et al., 2007). In this section, we present a simple theoretical framework to capture these aspects within the rational choice set-up. The following exposition is based on previous work by Almås et al. (2024b) and the references cited therein.

4.1 Utility calculus

For illustrative purposes, consider the case of two individuals i, j who initially dispose of total resources R. Utility of individuals is denoted as follows:[2]

$$U_i = y_i - \beta_i \frac{\left(y_j - m_j^{k(i)}\right)^2}{2R} + \gamma_i e(y_i, y_j, R). \tag{1}$$

[2]Note that similar utility functions have been estimated in Cappelen et al. (2007) and Almås et al. (2010).

According to this formulation, the utility of individuals is determined by three additively separable terms: i) material self-interest, ii) fairness concerns, and iii) other distributional motives. First, individual i derives utility from own income y_i, reflecting standard preferences based on material self-interest. Second, individual i derives disutility if the income given to another person y_j deviates from what is considered a fair income for this person $m_j^{k(i)}$. Since individuals can hold different fairness positions k, m_j is not necessarily homogeneous across individuals. Further note that the disutility from deviations between the actual and the fair income is symmetric, i.e., positive deviations and negative deviations from the fair income are evaluated equally. In addition, the disutility increases more than proportionally in the absolute deviation, i.e. doubling the absolute difference between the actual and fair income more than doubles the associated utility loss. The relative importance of fairness views compared to the importance of material self-interest is determined by the parameter β_i. Third, we allow for a residual term that may capture other distributional motives. For example, if individuals were sensitive to efficiency concerns, $e()$ would take on a negative value if the sum of incomes allocated to i and j was less than the total available resources R. The relative importance of these other considerations is determined by the parameter γ_i.

The given formulation allows us to characterize individuals along three dimensions of heterogeneity:

1. The importance of the fairness views relative to self-interest β_i,

2. The importance of other distributional motives relative to fairness views γ_i/β_i,

3. The fairness position endorsed by the individual $m^{k(i)}$.

In this review, we especially focus on heterogeneity in the views of fairness, that is, what is considered a fair distribution of income $m^{k(i)}$. Readers with a particular interest in β_i and γ_i are referred to Fehr and Charness (forthcoming) and Almås et al. (2024b) who provide comprehensive reviews on the role of motives other than fairness in people's attitudes toward inequality.

4.2 A broad distinction of fairness positions

The insight that individuals can vary in their fairness positions k immediately raises the question of how to think about plausible reference points for a fair distribution of income. In this section, we give a brief overview of three broad fairness positions that figure prominently in the social choice literature and the experimental literature on fairness concerns.

To illustrate these fairness positions, we again consider the simple example of two individuals, i, j, where i and j are two arbitrary individuals of the population, which can potentially include the respondent itself. However, unlike many early studies on inequality aversion, we do not assume that resources drop like "manna from heaven." Instead, each individual produces and contributes some share of the available resources R.

In particular, each individual generates initial incomes y as a function of f and u:

$$y_i = g(f_i, u_i) \tag{2}$$

Box 3: Economic experiments versus vignette surveys

This review focuses on *experimental* evidence on attitudes towards inequality and fairness. However, there are alternative *survey-based* approaches that have been used to provide information on these attitudes. On the one hand, survey-based methods are often considered unreliable predictors of actual behavior. Since answers have no consequences in the real world, they are arguably more susceptible to social desirability biases and experimenter demand effects than incentivized experiments. However, the absence of incentives also implies that surveys are usually cheaper and can thus be scaled more easily to larger and more representative samples. In addition, surveys can relate more closely to real-life scenarios for which the appropriate design of an experiment would be prohibitively costly. There are i) direct and ii) indirect survey-based methods. Direct elicitation methods usually provide broad statements, e.g., "It is just if hard-working people earn more than others," and then ask respondents to rate their agreement with these statements. The simplicity of these statements makes them useful for large and multi-topic cross-country survey programs like the World Value Survey (WVS) or the European Social Survey (ESS); however, the high level of abstraction makes it often hard to interpret the associated answers meaningfully. Indirect elicitation methods based on vignettes address these concerns by providing specific and detailed scenarios that respondents evaluate. In such surveys, respondents are confronted with hypothetical situations. Based on the presented situation, the respondent can then make a distributional decision or rate the fairness of different proposed alternatives. Results from vignette surveys show that attitudes to inequality vary with the sources of inequality (Konow, 1996; Konow, 2001; Gaertner and Schwettmann, 2007). Interested readers are referred to Gaertner and Schokkaert (2012) for a comprehensive discussion of vignette surveys' methodological (dis)advantages and empirical evidence on fairness views derived from such studies.

We do not take a stance on the precise nature of f and u. They could be any factors contributing to the generation of income, including choices of individuals (e.g., working time, work intensity, risk-taking), individual characteristics (e.g., ability, work experience, parental background), or the prices at which they can sell their product in the market. Suffice it to say that we consider two factors to allow for the fact that some of these factors may constitute *fair sources of inequality* (f), and some of these factors may constitute *unfair sources of inequality* (u).

Existing literature has considered three broad ethical positions to describe the fair distribution of incomes between i and j. These positions vary in how they account for factors f and u in normative evaluations.

Egalitarian position (k=E): Egalitarians consider all inequalities unfair, regardless of how these inequalities come about. Therefore, the egalitarian position prescribes an equal distribution of resources between i and j, i.e., $m_i^E = \frac{1}{2}R$. Note that the fair share of income is insensitive to any individual differences in f and u.

Libertarian position (k=L): Libertarians consider all inequalities fair regardless of how these inequalities come about. Therefore, the libertarian position prescribes a distribution of income that corresponds to the initial distribution, i.e., $m_i^L = y_i = \frac{g(f_i,u_i)}{g(f_i,u_i)+g(f_j,u_j)}R$. Note that the fair share of income is sensitive to all individual differences in f and u.

Intermediate positions (k=I): People with intermediate positions consider some inequalities

fair and some inequalities unfair. Therefore, the intermediate position prescribes a distribution of income that varies with some input factors f but is insensitive to other input factors u, i.e., $m_i^I = \frac{g'(f_i)}{g'(f_i)+g'(f_j)}R$.

Note that the intermediate position subsumes a wide array of ethical accounts that vary in their definitions of f and u, i.e., by the factors they consider to determine individuals' legitimate income claims. For example, two important intermediate positions are *choice egalitarianism* (Roemer, 1998) and *meritocracy* (Miller, 1996).[3] Proponents of both positions believe that some sources of inequality should be considered fair, whereas other sources of inequality are unfair. However, the two positions differ in cutting f and u. In particular, choice egalitarians postulate that f should only comprise factors that are under the control of individuals, such as their effort. On the contrary, meritocrats postulate that f should comprise all factors that reflect the productivity of individuals. While the differences between both accounts appear subtle at first glance, choice egalitarianism and meritocracy have radically different implications for fair resource allocations. Among others, these differences become apparent when considering the role of ability differences rooted in genetic predispositions. Since individuals do not control their genetic predispositions, choice egalitarians would allocate genetically induced ability to u and correct for outcome differences based on this source of inequality. On the contrary, meritocrats focus on the productivity dimension and would admit genetically induced ability differences to f and oppose redistribution based on this source of inequality.

Furthermore, note that intermediate positions may vary in the function g' if f and u are not additively separable. For example, assume that the marginal return to working hours f varies by biological sex u, and more specifically that the marginal return for an additional hour of work is higher for men than for women. Proponents of intermediate positions now want to compute the fair income share of individuals based on their working hours f while neutralizing the influence of biological sex u. Since the impact of f and u is interdependent, one option to find fair shares in this situation is to fix u at a reference level to evaluate the income claims in light of f only. Unfortunately, however, the resulting income claims are not invariant to the chosen reference level of u. Evaluating f at the reference level for men will allow larger fair inequality based on working hours than evaluating f at the reference level for women. The described solution of fixing f at a reference level is known as the egalitarian-equivalent solution. However, alternatives to fixing u at a reference level are possible. The interested reader is referred to Fleurbaey (2008), Almås et al. (2011), and Bossert and Fleurbaey (1996) for detailed discussions.

[3] In this review, we use the term choice egalitarianism. In the social choice literature, this concept is often subsumed under the term "equality of opportunity." (see Roemer and Trannoy (2016) and Ramos and Van de gaer (2016) for comprehensive overviews of this literature and its underlying concepts).

5 Experimental evidence on fairness views

5.1 Prevalence of fairness positions

In this section, we discuss some early experimental evidence documenting the prevalence of the broad fairness positions discussed in the previous section.[4] We put these early contributions into their historical context and document how the literature has evolved towards more granular distinctions of different fairness positions.

The paper of Konow (2000) provides the starting point of this rapidly expanding literature. In this seminal contribution, Konow (2000) investigates the roles of self-interest, fairness concerns, and self-deception in the allocation decisions of individuals.

In particular, he focuses on what he calls the *accountability principle*. The accountability principle is a fairness position that belongs to the group of intermediate positions. According to this principle, entitlements vary in direct proportion to the value of the subject's discretionary variables relevant to their output. On the contrary, entitlement should not vary in the values of exogenous, non-discretionary variables. In light of its emphasis on "discretion," the accountability principle can be interpreted as a version of choice egalitarianism: factors under the control of individuals constitute fair sources of inequality, and non-controllable factors constitute unfair sources of inequality. This interpretation is also supported by the discussion of the accountability principle in Konow (1996), where he illustrates work effort as an example of discretionary variables and congenital handicaps as examples of non-discretionary variables.

Konow (2000) tests whether people make distributional decisions in line with the accountability principle. To this end, he conducts a dictator experiment that consists of a production phase and a distribution phase. Note that the production phase is a prerequisite for an experimental test of whether people's fairness views are sensitive to the productivity of individuals. In the production phase of Konow (2000), participants prepare letters for mailing. He considers two treatment arms. In one group, participants received the same monetary reward per letter such that the initial allocation was exclusively determined by the production of the participants. In another group, participants faced random variation in the monetary rewards per letter. In this group, the production phase is structured so that it is the price variation – and not any variation in productivity – that determines the initial income differences between participants.

In the distribution phase, participants are matched in pairs. The total amount of resources R is determined by the joint output of a pair, and dictators have the opportunity to redistribute income between the participants in a pair. To this end, dictators receive information on the initial incomes of participants. Further, dictators are informed whether initial allocations in a pair reflect the actual output of individuals (i.e., variation in f) or random variation in prices (i.e., variation in u). The accountability principle would predict that i) dictators make allocations proportional to output if the initial income distribution reflects differences in production f, and that ii) dictators make equal allocations if outcomes are determined by variation in prices u.

[4] See Box 3 as well as Almås et al. (2023b) and Trannoy (2016) for discussions of corresponding survey evidence.

Konow (2000) runs different versions of these experiments varying the dictator's involvement as a stakeholder. In the following discussion, we will only focus on results from the treatment arm where dictators act as impartial spectators, i.e., they have no monetary stakes in their distributional decisions (see also Box 4 for a methodological distinction between stakeholder and impartial spectator designs). Indeed, Konow (2000) finds support for the accountability principle in his sample of university students from the United States. In the treatment where income inequality is caused by differences in production, relative income allocations closely follow the relative output of the paired individuals. In the treatment where income inequality is caused by differences in prices, on the other hand, the majority of dictators allocate incomes by making equal splits.

In his study, Konow (2000) focuses on the accountability principle only. Therefore, he does not consider alternative fairness positions such as egalitarianism or libertarianism. Yet, his empirical results hint at heterogeneity in the expressed fairness views. For example, even when differences in production matter for income inequality, several dictator allocations are consistent with egalitarian positions since they split incomes equally regardless of the pair's relative outputs.

The work of Frohlich et al. (2004) partially addresses this shortcoming. The structure of their experiment is similar to Konow (2000). In the production phase, participants generate income in a proofreading task. In the distribution phase, dictators can redistribute incomes within matched pairs of participants. In contrast to Konow (2000), dictators are always stakeholders in decisions and face a trade-off between self-interest and equity concerns.

Frohlich et al. (2004) use the allocation decisions of dictators to cluster them into three distributional types: i) selfish dictators allocate most of their income to themselves (regardless of their relative output), ii) egalitarian dictators allocate incomes according to equal splits (regardless of their relative output), and iii) equitable dictators allocate incomes in proportion to their relative output. It is noteworthy that "equity" again conforms closely with the accountability principle invoked by Konow (2000): if dictators are equitable, they allocate incomes proportional to production.

The results of Frohlich et al. (2004) can be summarized as follows. In their sample of Canadian undergraduate students, 14 dictators act in line with pure self-interest. These dictators may have views on a fair income distribution; however, these views are behaviorally irrelevant since self-interested dictators do not attach any weight to them in their distributional decisions, i.e., they are characterized by $\beta_i = 0$ in the conceptual framework outlined above. Among the non-selfish dictators, Frohlich et al. (2004) find support for both the intermediate and the egalitarian positions. 30 dictator decisions are consistent with the accountability principle, and 19 dictator decisions are consistent with the egalitarian position. Further, 18 dictators cannot be clearly classified as their decisions do not conform to any of the considered distributive types, suggesting additional heterogeneity in fairness positions beyond the types considered by Frohlich et al. (2004).

While Frohlich et al. (2004) distinguish between intermediate ("accountability principle") and egalitarian positions, they do not consider the libertarian position, i.e., the normative stance that in this context classifies all determinants of initial incomes as fair. In fact, due to the experimental setup, they cannot distinguish between equitable and libertarian dictators. This is the case since the initial allocations in Frohlich et al. (2004) are exclusively determined by the discretionary choices of participants. Therefore, a choice to leave this initial allocation

unaltered is predicted by both the accountability principle and the libertarian position. This insight highlights the importance of a sufficiently rich income-generating process in the production phase, including variation in both f and u, to discriminate between different fairness positions.

Let us illustrate this issue more generally. First, consider a situation where the participants are identical with respect to both production (f) and their circumstances other than productivity (u). In this case, egalitarian, libertarian, and intermediate fairness positions imply the same fair distribution: both participants get an equal share of the total income. Second, consider a situation where the participants have different production (f) but face the same circumstances (u). In this case, libertarian and intermediate fairness positions imply the same fair distribution: both participants receive rewards in proportion to their production. On the contrary, the egalitarian position would demand equal splits. This situation echoes the experimental set-up in Frohlich et al. (2004) and illustrates why the authors cannot distinguish between intermediate and libertarian positions. The lack of variation in other factors than production leads to the congruence of intermediate and libertarian decisions. Third, consider a situation where the participants have the same production (f) but differ in their exogenously assigned circumstances (u). In this case, egalitarian and intermediate positions imply the same fair distribution: both participants get an equal share of the total income. On the contrary, the libertarian position would still demand maintaining the initial income distribution. Finally, consider a situation where the participants differ along both dimensions f and u. In this case, the predictions of all fairness positions differ, except for the unlikely case where productivity and rates of return are inversely related to yield an initial distribution of perfect equality.

The seminal study of Cappelen et al. (2007) improves on the experimental setup of Frohlich et al. (2004) by incorporating variation in both f and u in the income-generating process. As the previous studies by Konow (2000) and Frohlich et al. (2004), the experiment is based on a two-stage (stakeholder) dictator game where an investment phase precedes the distribution phase.

In the investment phase, participants are endowed with an initial amount of money, part of which they can invest (f) at an exogenously given rate of return (u). Participants with a high rate of return can quadruple their initial allocation, and participants with a low rate of return can double their initial allocation. In the distribution phase, participants are again grouped in pairs for the distributional decision of the dictator. The dictators have information on both the investment decision, f, and the rate of return, u.[5]

Cappelen et al. (2007) consider three fairness positions: the egalitarian position, the libertarian position, and the liberal-egalitarian position. The liberal-egalitarian position prescribes that a fair allocation of resources should vary proportionally with the investment choice of the participant but should be invariant to the exogenously assigned rate of return. Liberal-egalitarianism, therefore, resembles the accountability principle and can again be interpreted as a version of choice egalitarianism.

The authors then use a structural discrete choice model to estimate the relative frequency

[5]The focus on investment decisions instead of production is a departure from the studies of Konow (2000) and Frohlich et al. (2004). We abstract from this difference and compare these studies to illustrate the necessity of a sufficiently rich income-generating process to distinguish different fairness positions. However, we acknowledge that the prevalence of fairness positions may be different for investment and labor income.

of the considered fairness positions in their sample of Norwegian university students. Their results suggest that 44% are strict egalitarians, 38% are liberal egalitarians, and 18% of the dictators behave in accordance with the libertarian position. These results suggest considerable heterogeneity in the fairness positions held by the public. Both libertarian and egalitarian positions, which are polar opposites in how they account for the choice of investing and other factors in the income-generating process, garner support from substantial fractions of the participants.

While Cappelen et al. (2007) provide the first analysis to establish the prevalence of three different fairness positions, they still cannot distinguish more nuanced versions of the intermediate position. Among others, the intermediate position comprises both choice egalitarians and meritocrats. As discussed above, using the example of genetic endowments, meritocratic recommendations on a fair distribution of resources may be radically different from their choice-egalitarian analogs. In general, the meritocratic position tends to be more tolerant towards inequality as it allows for income differences based on any trait that influences the productivity of individuals, regardless of whether these factors are discretionary choices or not. Therefore, it may be useful to establish more nuanced distinctions between different intermediate positions.

Cappelen et al. (2010) address this concern in another two-stage dictator experiment. The production stage involves an income-generating process based on working time, individual productivity, and exogenously assigned prices. In particular, subjects can enroll voluntarily for a 10- or 30-minute version of the same experiment. This decision determines their working time. During their working time, they are asked to transcribe a text, where some randomly chosen participants are paid double the rate for each correctly transcribed word.

In the distribution phase, dictators are matched with a sequence of other participants. In each distributional decision, the dictator obtains information on the pair's working time, output, and the piece rate participants face. As in Cappelen et al. (2007), dictators make multiple distribution decisions to distinguish between four different fairness positions: egalitarianism, choice egalitarianism, meritocracy, and libertarianism. The authors conjecture that choice egalitarians would make their distributional decisions based on the chosen working time. Still, they would not hold individuals responsible for their productivity, assuming that productivity in this task would be interpreted as a non-discretionary pre-determined trait. On the contrary, meritocrats would make their distributional decision based on all output-relevant traits, i.e., the chosen working time and the participant's productivity.

Similar to Cappelen et al. (2007), the authors use a structural model to estimate the relative frequency of the considered fairness positions in a sample of Norwegian university students and recent alumni. Their results suggest that 24% in their sample are strict egalitarians, 7% are choice egalitarians, 41% are meritocrats, and 29% of the dictators behave in accordance with the libertarian position. This result suggests that the more inequality-accepting meritocratic position garners more support than the more inequality-averse choice-egalitarian position.

5.2 Other normative considerations

In this section, we provide a brief overview of some additional aspects that may inform individuals' fairness views. Up to this point, our discussion has focused on how people incorporate

the output-relevant choices of individuals into their fairness views. While these choices seem to be relevant for the fairness views of individuals, these judgments may also be informed by additional aspects that go beyond the mere distinction of effort, production, and exogenously given circumstances, such as prices.

Risk. An important dimension of heterogeneity among the large set of intermediate positions concerns the treatment of luck in risky choices (e.g., Lefranc et al., 2009; Lippert-Rasmussen, 2001). The dimension is particularly pertinent since many life decisions are inherently risky.

For example, consider the question of occupational choice and the associated consequences for lifetime income. There are many "lotteries" that individuals are exposed to on an involuntary basis, which constrains their occupational choice set and the subsequent evolution of their lifetime incomes. Such lotteries may include the genetic lottery (Harden, 2021), the lottery of the family one is born into (Coleman et al., 1966), or even the exposure to business cycles at the time of graduation (Wachter, 2020). The outcomes of such involuntary lotteries are commonly called *brute luck*.

There are other "lotteries" that individuals are exposed to based on their own volition. For example, consider individuals A, B, and C, who graduated from the same university program with an engineering degree and who can now choose between a career as a civil servant or a tech entrepreneur. Individual A chooses to become a civil servant, whereas individuals B and C choose entrepreneurship. Civil service is arguably a much less risky career than entrepreneurship, and the incomes of A, B, and C diverge soon after their occupational decisions. On the one hand, due to fortuitous market circumstances, B is very successful and outearns A by a large margin. On the other hand, C is very unlucky and earns much less than the well-paid civil servant A. Note that all individuals had access to the same lotteries, a low-risk career in civil service, and a high-risk career as entrepreneurs. The differences in outcomes based on lotteries chosen by individuals are commonly called *option luck*.[6]

How do people account for different shades of luck in their fairness views? Cappelen et al. (2013a) address this question by distinguishing between ex-ante compensation and ex-post compensation. First, according to the ex-ante view, there should be no compensation beyond initial brute luck. For example, there should be no redistribution between A, B, and C since they all had the same choice set available to them. Therefore, ex-ante compensators would always accept the resulting income distribution after the outcomes of the lotteries are revealed. Note, however, that ex-ante compensators are not necessarily libertarians since they may consider brute luck as an unfair source of inequality. Second, according to the ex-post view, full compensation for unlucky outcomes should be provided. For example, there should be full redistribution between A, B, and C irrespective of the fact that A has chosen a different career path than B and C, and that B and C were affected by different draws of entrepreneurial luck. There is also an intermediate position that conditions the fair distribution of income on the choices of individuals. For example, outcome differences between A and B/C differ because A has made a safe career choice. Therefore, the intermediate position would not redistribute from A to B/C, or vice versa. On the contrary, the outcomes of B and C do not differ due to differential occupational choices but because they had different draws in the lottery of entrepreneurial luck. Therefore, the intermediate position would fully equalize

[6] Related to this example, see also Yusof and Sartor (2024) for a detailed study of how people account for market luck in their fairness assessments.

outcomes between B and C.

To distinguish between these distributional types, Cappelen et al. (2013a) run a two-stage dictator experiment where a risk-taking phase precedes a distribution phase. Participants face four decisions between a risky lottery and safe alternatives with varying values. In the distribution phase, dictators are matched with the risk-taking decisions of multiple participants. Thus, each dictator makes allocations for pairs of participants that vary in the decisions of the participants and the exogenously assigned value of the safe option.

Similar to Konow (2000), the authors run a stakeholder and an impartial spectator version of this experiment. In turn, they use a structural model to estimate the prevalence of different fairness positions in a sample of Norwegian university students. In the following discussion, we will present results from the impartial spectator version only. However, results for the prevalence of fairness positions are very similar in both versions (see also our discussion in Box 4).

The results suggest that 43% of dictators adhere to the ex-ante view, i.e., these individuals do not redistribute across individuals since they faced the same set of lotteries. 30% endorse the ex-post view and redistribute fully regardless of whether people engage in risky lotteries or not. 27% take the intermediate position and only redistribute among individuals who make similar decisions. Importantly, most participants account for ex-post considerations in their fairness views: a total of 57% redistribute between lucky and unlucky risk-takers, like entrepreneurs B and C in our example.

In a recent study, Andreoni et al. (2020) suggest that the prevalence of ex-post considerations increases as uncertainty resolves. In particular, they run a multi-stage experiment where participants have to allocate lottery tickets across individuals. Initially, most participants make allocations consistent with the ex-ante view, i.e., they allocate lottery tickets equally across individuals. In the subsequent stages, participants receive more information about which lottery tickets are likely to be winning tickets, and they have the opportunity to reallocate tickets based on this information. In response, many participants alter their allocation to maintain equal chances of winning across participants. However, the resulting distribution of tickets then is inconsistent with the ex-ante odds based on which they had made their initial allocation. The tendency of people to move their ethical stance from an ex-ante perspective to an ex-post perspective may have important implications for the design of public policies and insurance markets. For example, it suggests that people endorse "equal-opportunity" policies that give everyone a fair chance in life. However, these "equal-opportunity" policies may have to be complemented by additional redistributive schemes to account for new information as the vagaries of life unfold.

Further, in another study, Mollerstrom et al. (2015) show that the importance of risky choices for fairness views may not be domain-specific: risky choices in one domain, e.g., lifestyle choices like smoking, affect how people think about fair claims of individuals in other domains, e.g., professional success.

In particular, they set up a two-stage dictator game with a risk-taking stage and a distribution stage. In the risk-taking stage, participants receive an initial endowment and face an equiprobable lottery with three events. In the first event, they would keep their endowment; in the other two events, they would lose it. However, they have an insurance option for one of the latter events, i.e., they can avoid the total loss at a cost that is half the price of their

initial endowment.

In the distribution phase, dictators act as impartial spectators and make distributional decisions on several cases that do not involve themselves. In each situation, the spectator is informed about the insurance choices of participants, the events drawn in the lottery, and the resulting earnings for both participants in the pair.

In turn, they use a structural model to classify dictators into four fairness positions: egalitarians, libertarians, luck egalitarians, and choice compensators. Egalitarians remedy income inequality from both brute and option luck; on the contrary, libertarians accept income inequality from both brute and option luck. Luck egalitarians and choice compensators take intermediate positions. Luck egalitarians compensate for brute luck but not option luck. Choice compensators compensate for brute luck only if the victims have insured against bad luck attached to other events. That is, they condition their compensation decision on participants' insurance choices even if these choices are not payoff-relevant.

Their results suggest that about one-third of the participants adhere to egalitarianism, libertarianism, or choice compensation, respectively. The share of luck egalitarians, however, seems negligible. The prevalence of choice compensators suggests that people's risky choices in one domain of life inform how society thinks about their legitimate claims in other domains of life as well.

Needs. Up to this point, we have focused our discussion on the distribution of resources in relation to people's performance and choices. This focus, however, neglects the question of whether fairness views are sensitive to people's material needs. For example, Frankfurt (1987) famously argued that "[...] what is important from the point of view of morality is not that everyone should have the same but that each should have enough."

While needs have received considerable attention in the philosophical discourse (Frankfurt, 1987; Parfit, 1997) and in survey investigations on fairness views (Hülle et al., 2018), the experimental literature on how needs considerations influence people's fairness views is much less comprehensive.

One exception is the study of Cappelen et al. (2013b). Their study is again based on a two-stage experiment. In the production stage, participants transcribe a text. Their initial allocations are determined by their task productivity and an exogenously assigned price rate. Importantly, production takes place in Norway, Germany, Uganda, and Tanzania, i.e., two high-income and two low-income countries.

In the distribution stage, participants are matched in pairs, and (stakeholder) dictators make distributional decisions knowing about the price assigned to the other participant, their production, and their nationality.

The authors consider three fairness positions: the egalitarian position, the meritocratic position, and the libertarian position. However, they also allow for an additional distributive motive if participants from high-income countries are paired with participants from low-income countries. In this case, they assume that need considerations would be reflected in a full income transfer from high-income to low-income participants.

In line with previous studies, they find significant heterogeneity in fairness positions: roughly one-third of participants adhere to the egalitarian, meritocratic, and libertarian positions, respectively.

Further, they estimate how participants trade-off considerations based on productivity to considerations based on needs. In general, considerations based on productivity dominate. However, a non-negligible share of dictators seems strongly driven by needs considerations. In high-income countries, 17% of participants attach more weight to needs considerations than productivity. In low-income countries, the corresponding share is 34%.

Social identity. Next to the question of which fairness principles people endorse, it is important to assess how people apply these principles across social groups. Do people weigh fairness concerns equally strongly when the recipient does not belong to their immediate social circle? Do people extend their fairness concerns to people in other countries or to their compatriots only? These questions gain particular importance with the increasing heterogeneity and polarization of societies (Alesina et al., 2020).

Müller (2019) addresses these questions by conducting a dictator game similar to Fisman et al. (2007). In contrast to standard dictator games, Müller (2019) provides dictators with information on whether the recipient belongs to the "in-group" or the "out-group." Group membership was assigned based on preferences for paintings by Paul Klee or Wassily Kandinsky, i.e., a criterion that is arguably orthogonal to other characteristics influencing the recipient's deservingness. The results of this analysis show that dictators retain 90% of the resources if the recipient belongs to the "out-group," but only 81% if the recipient belongs to the "in-group." This suggests that people put less weight on the income of others if they differ in social identity.[7]

5.3 Separability between sources of inequality

In this subsection, we review a body of recent papers investigating how people incorporate the intertwined nature of fair and unfair sources of inequality in their fairness views. There are at least two reasons for such a link between f and u. First, the income-generating function $g(f, u)$ is not separable in f and u. Second, the observable characteristics we may want to assign as f are a function of u, and vice versa.

For example, in his seminal work Konow (2000) establishes the accountability principle by distinguishing between what he refers to as discretionary factors, like work hours, and what he calls non-discretionary factors, like biological sex. The accountability principle requires that income differences reflect differences in working hours, whereas the influence of biological sex on income distributions should be nullified. In real life, however, the influence of biological sex and working hours on earnings are deeply intertwined: gender discrimination in the labor market profoundly distorts the labor supply incentives for women in many countries, leading to pronounced differences in production choices like working hours. This raises the question of

[7] These results are also confirmed in recent surveys constructed to study moral universalism (Enke et al., 2022a; Enke et al., 2022b; Cappelen et al., 2025). In these surveys, the authors document significant "in-group" favoritism preferred allocations.

how people account for the correlation between sources of inequality in their fairness views.[8]

Andre (forthcoming) sets up a two-stage impartial spectator experiment in which participants are assigned piece rates to complete a task. In turn, they can freely decide how many tasks to complete. Therefore, the participant's initial income is determined by production f and an exogenously assigned piece rate u. The control group learns about their assigned piece rate after they have completed their tasks. Therefore, the assigned piece rate is behaviorally irrelevant for this group. On the contrary, the treatment group learns about their exogenously assigned piece rate before choosing how many tasks to complete. This knowledge establishes a link between f and u in the treatment group since the participants' awareness about the piece rates alters the economic incentives to engage in production activities.

In the distribution phase, impartial spectators are informed about the production and earnings of participants. Further, spectators know that a lottery determines piece rates. Based on this information, spectators reallocate income to establish their preferred income distribution. This experimental set-up allows Andre (forthcoming) to investigate whether spectators compensate participants for their discouragement through disadvantageous economic circumstances. If spectators considered the correlation between piece rates and work effort unfair, their relative income allocations in the treatment group would be less sensitive to the relative share of completed tasks than in the control group.

The results of Andre (forthcoming) suggest that spectators hold individuals accountable for their production choices f, regardless of whether non-discretionary factors u influence these choices or not. In the control group, the spectator's relative income allocation rises monotonically with the relative share of completed tasks. The results in the treatment group are virtually indistinguishable from the control group, i.e., spectators do not become less sensitive to output-relevant choices even if these choices are influenced by disadvantageous economic incentives.

In further analyses, Andre (forthcoming) provides suggestive evidence that the documented insensitivity may be driven by spectators' uncertainty about the participants' counterfactual behavior if they had faced comparable economic incentives. In another treatment, he shows that relative income allocations become less sensitive to the relative share of completed tasks if spectators are provided with evidence that participants increase their work effort when facing higher piece rates.

An alternative explanation for the insensitivity documented in Andre (forthcoming) is rooted in the cost of effort exertion. For example, it may be true that people would like to compensate individuals for the effect of disadvantageous economic circumstances on their output-relevant choices. However, they may balance this concern with the additional effort costs expended by people in advantageous economic circumstances. That is, the insensitivity of impartial spectators to the origins of output-relevant choices could be explained by the fact that fairness concerns do not apply to income but extend to participants' utility.

This hypothesis is investigated in a recent paper by Bhattacharya and Mollerstrom (2022). The authors set up a two-stage impartial spectator experiment. In the production phase,

[8] Notably, this question has also resonated in the philosophical discourse. Barry (2005) and Roemer (1998) both put forward versions of choice egalitarianism. However, they disagree on how to account for the correlation between, and implicit endogeneity of, choices and circumstances. Barry (2005) deems this correlation a fair source of inequality whereas Roemer (1998) deems it an unfair source of inequality.

participants are exogeneously assigned to a high-earner or a low-earner status. Further, they are exogenously assigned to an employment status: they either have to complete an encoding task or wait without any production activity. Thus, participants may vary in two dimensions: their remuneration and their working time. Note that the experiment assigns both remuneration and working time exogenously, i.e., economic incentives cannot influence the production activities of participants. In turn, participants are grouped in pairs, and impartial spectators can redistribute initial earnings allocations.

If spectators would fully compensate participants for the influence of non-discretionary factors, they would equalize earnings in all scenarios. In contrast to this hypothesis, Bhattacharya and Mollerstrom (2022) show that impartial spectators are less likely to redistribute between high- and low-earning participants when the low-earning participant is not allowed to engage in productive activities.

This finding could be rationalized by spectators who aim to offset the disutility from working by allocating higher income shares to the exogenously determined working population. To investigate this hypothesis, Bhattacharya and Mollerstrom (2022) elicit the perceived utility cost of working on the encoding task and compute the share of spectators who equalize (perceived) utility instead of income. However, they find that only 16% of spectators who accept exogenously assigned earnings differences between working and non-working individuals can be classified as utility equalizers, leaving considerable scope for alternative explanations. Further analyses of Bhattacharya and Mollerstrom (2022) suggest that the lack of redistribution between working and non-working individuals may be driven by the fact that working status elevates the importance of initial income allocations as a reference point.

The work of Preuss et al. (2024) supports the conjecture of Andre (forthcoming) that people face uncertainty about the contributions of fair and unfair sources of inequality if f and u are intertwined in the income-generation process. In particular, the authors set up a two-stage impartial spectator experiment where participants are matched in pairs after an initial production stage. Before presenting the pairs to impartial spectators, they allow non-discretionary factors u to influence initial income allocations in two distinct ways. In the first treatment group, a lottery determines the probability of whether the initial income allocation is determined by a coin flip or the participants' output. In the second treatment group, the initial income allocation is determined by the participants' output multiplied by an exogenously assigned productivity factor. Note that the influence of u is independent of participants' production choices f in the first group, while it is intertwined with these choices in the second group. In both treatment groups, the authors allow for differences in the quantitative extent to which circumstances u determine the initial income allocation.

The results show that the sensitivity of spectator allocations to the importance of circumstances is less pronounced in the second treatment group, i.e., when the influence of u is intertwined with f through the exogenously assigned productivity multiplier. In further analyses, Preuss et al. (2024) significantly reduce the gap between both treatment groups by providing spectators with concrete information about the quantitative importance of u in the respective scenarios. These findings lead them to conclude that spectators face an inferential challenge when there is uncertainty about the precise role of unfair sources of inequality in the income-generating process.

5.4 Study samples

In this subsection, we discuss evidence for the heterogeneity of fairness views across different population groups. Most of the early studies on fairness views were conducted through lab experiments where the subject pool consisted of university students in high-income countries (e.g., Konow, 2000; Cappelen et al., 2007; Cappelen et al., 2010). Consequently, these studies could not speak to the heterogeneity of fairness views in different population groups, let alone document the heterogeneity of fairness views across countries with different economic and cultural characteristics.

More recent studies address this shortcoming by documenting fairness views in representative population samples. The shift towards representative population samples is catalyzed by a methodological shift from (stakeholder) dictator experiments to impartial spectator designs (see also Box 4). Impartial spectators only make distributional decisions but do not engage in productive activities. This separation between the working and the distribution stage significantly reduces the cost of eliciting fairness views, allowing researchers to collect data from larger and more representative samples. The following discussion is based on evidence from both stakeholder and impartial spectator designs. While the shift to impartial spectator designs undoubtedly supported the trend toward more diverse study samples, we will also discuss earlier attempts to document the heterogeneity of fairness views.

Country and cultural context. Konow et al. (2020) provide a comprehensive study in which they test the sensitivity of fairness views to various contextual factors. The experimental design closely traces the setup in Konow (2000). At the production stage, participants prepare letters for mailing, and their initial income allocations may vary by their task performance. At the distribution stage, impartial spectators make distributional decisions on pairs of individuals. Again, these experimental procedures are implemented on samples of university students. In contrast to Konow (2000), however, students are now sampled from universities in the US and Japan, allowing Konow et al. (2020) to document heterogeneity in fairness views across two countries. While the US and Japan are both highly industrialized countries, they provide an interesting contrast since Japan is arguably a less individualistic but more collectivist society than the US.

The findings on the US sample closely resemble the results of Konow (2000). In the impartial spectator treatment, the overwhelming share of income allocations aligns with the accountability principle. This result is interesting in its own right since it speaks to the intertemporal stability of fairness views across different generations of impartial spectators. Further, Konow et al. (2020) show that income allocations of the Japanese sample do not vary in comparison to the US analog. This result indicates the portability of reference points for fair income allocations across these two cultural contexts.

The study of Cappelen et al. (2013b) shows that reference points for fair income allocations may be portable across some contexts but are far from universal. Their study is conducted on student samples from Uganda, Tanzania, Norway, and Germany, allowing them to trace differences in the prevalence of fairness positions across respondents from low-income and high-income countries. Their results show that the share of libertarian respondents is broadly comparable in the low- and high-income samples. However, respondents from low-income countries are less likely to be meritocratic and more likely to make income allocations consis-

tent with the egalitarian fairness position. Further, their income allocations are more sensitive to need considerations, pointing to the relevance of self-serving biases in fairness views.[9]

The studies of Konow et al. (2020) and Cappelen et al. (2013b) are both based on samples of young and highly-educated individuals. Therefore, they might overstate the cross-cultural similarity of fairness views. This concern is addressed in more recent studies using impartial spectator designs to collect data from representative population samples.

Almås et al. (2020) conduct a two-stage dictator experiment with impartial spectator samples that are representative of the populations in the US and Norway. In the production phase, a non-representative set of workers complete a series of tasks. In the distribution phase, impartial spectators get a chance to implement their preferred income distribution between pairs of workers. In the first treatment arm, initial income allocations are determined by a lottery; in the second treatment arm, initial income allocations are determined by workers' productivity in the production phase. These two treatment arms allow Almås et al. (2020) to estimate the prevalence of different fairness positions in both the US and Norway, i.e., two countries with very different levels of inequality and welfare state institutions.

The authors find that American and Norwegian spectators vary considerably in assessing the fairness of income distributions. On the one hand, both countries have similar shares of meritocrats ($\approx 40\%$). On the other hand, the US is characterized by a considerably lower share of egalitarians than Norway ($\approx 15\%$ vs. $\approx 35\%$) and correspondingly by a higher share of libertarians. Importantly, Almås et al. (2020) further show that the US and Norway are broadly comparable in their sensitivity to efficiency considerations.

Almås et al. (2023a) presents an extensive experimental survey that included more than 65,000 participants in 60 countries. They show that the meritocratic fairness view is most dominant in Western countries, whereas they find less support for this view, and more support for the libertarian in some, and more support for the egalitarian in other, non-Western societies.

Age. Almås et al. (2010) implement a two-stage dictator experiment in a sample of Norwegian children in grades 5-13 to document the evolution of fairness views during adolescence. In the production phase, children can collect points in a computer task that are multiplied by an exogenously assigned price rate. In the distribution phase, dictators receive information on the output shares, exogenously assigned prices, and total earnings before making distributional decisions between themselves and anonymous children from the same grade.

Based on this experimental set-up, Almås et al. (2010) document that children become significantly more accepting of inequality as they grow up. This increase in inequality acceptance is especially driven by a higher sensitivity to the discretionary production choices of individuals. While $\approx 65\%$ of 5-graders are egalitarians, this share drops by 40 percentage points when children are in grade 13. Correspondingly, the share of meritocrats increases from $\approx 5\%$ to $\approx 43\%$. Almås et al. (2010) suggest the increasing distinction between different sources of inequality may be due to the increased exposure to relevant social experiences as children grow older.

[9] See also Amasino et al. (2024) who demonstrate that self-serving biases are linked to people's selective attention on different factors of the income-generating function. For example, people advantaged by lucky circumstances focus more on outcomes that incorporate luck while disadvantaged people focus more on discretionary production choices net of luck.

The findings of Cappelen et al. (2010) suggest that the relevance of social environments for fairness views is not limited to adolescents but may continue in adulthood. Their analysis sample consists of students and alumni of the same university. In the subsample of students, $\approx 25\%$ of participants are classified as libertarians. In the subsample of alumni, this share increases substantially to $\approx 45\%$. The sudden tendency towards libertarianism is consistent with the conjecture that exposure to the actual labor market leads to stronger acceptance of income allocations generated by the market.

Socio-economic differences. Almås et al. (2017) address the question of whether the fairness views of adolescents vary with the socio-economic background of their parents. To this end, they implement a two-stage experiment. In the production phase, children in grade 9 complete a computer-based task. In the distribution phase, they make two distributional decisions. First, they make distributional decisions as stakeholders regarding income allocations between themselves and another child. Second, they make distributional decisions as impartial spectators for a pair of randomly drawn participants that vary in their output. The first decision allows Almås et al. (2017) to estimate the extent of self-interest; the second decision allows the authors to estimate whether participants uphold egalitarian or meritocratic fairness positions. Further, they leverage the Norwegian data environment and link the experimental data to administrative information on the parent's education and income. This data link allows them to analyze heterogeneity in children's fairness views depending on their socio-economic background.

Results show that children from low SES backgrounds are significantly more likely to be egalitarian. Whereas more than 50% of low SES children can be classified as egalitarians, the corresponding share is only $\approx 20\%$ for high and middle SES children. Importantly, the authors also find that the likelihood of behaving in an egalitarian fashion increases for low-productivity children, again pointing to the importance of self-serving biases in fairness views.

The study of Jakiela (2015) shows that fairness views also vary across SES groups in the context of a developing country. In this study, the author investigates whether individuals from poorer rural communities are characterized by more egalitarian fairness positions than other populations. To this end, she runs a series of dictator experiments in rural communities in Kenya. She divides the sample into four treatment groups that vary by whether resources are generated by a lottery or individual effort and whether the resources are generated by the dictator or the anonymous recipient.

In the first step, Jakiela (2015) rejects the hypothesis that dictators, on average, split resources equally. This result, however, does not prove that rural Kenyans adhere to non-egalitarian fairness positions since the experimental setup in the (stakeholder) dictator game does not allow to distinguish between self-interest and fairness concerns (see Box 4). Therefore, she tests the sensitivity of the dictator's allocations to the income-generating process, i.e., whether resources are generated by effort instead of a lottery. Since income allocations of egalitarians are not sensitive to either f or u, the hypothesis of egalitarian fairness positions would be rejected if dictators retained more resources when they generated these resources through their efforts or if they gave away more resources when the recipient generated these resources through their efforts.

The analysis shows that allocations of dictators in rural Kenya are not changed by whether

the initial income allocation is generated by f or u. This result stands in stark contrast to a comparison sample of US university students where dictators retain more resources when they generate these resources through effort and where dictators give away more resources when the recipient generates them through their efforts. Importantly, the author conducts various heterogeneity analyses across more developed and less developed communities in Kenya and the education level of respondents. The results suggest that dictator behavior becomes more similar to the behavior of the US sample in more developed communities and when they are more educated. This suggests that the fairness positions of people in Kenya become less egalitarian and more sensitive to output-relevant choices if they have a higher socioeconomic status.

Box 4: Fairness preferences versus preferences for redistribution

A related literature focuses on preferences for redistribution instead of fairness preferences. This literature is mostly survey-based and studies how individual characteristics and beliefs influence inequality aversion and the support for inequality-reducing policy interventions. Studies on preferences for redistribution can be informative for fairness preferences. For example, several articles in this literature study how individual beliefs about the role of non-discretionary circumstances in the income-generating process (e.g., parental income, gender, skin color, etc.) influence distributional preferences (Alesina et al., 2018; Settele, 2022; Haaland and Roth, 2023). In general, the results of these studies tend to be consistent with insights from the experimental literature that people are averse to inequality if it is believed to be driven by non-discretionary factors. However, these studies also show that such inequality-aversion may not translate into demand for inequality-reducing policies if people are pessimistic about the government's effectiveness in implementing these policies. We refer interested readers to Alesina and Giuliano (2011) and Mengel and Weidenholzer (2023) who provide comprehensive summaries of this literature.

6 Conclusion

We have reviewed the experimental literature on attitudes toward inequality and fairness. The evidence from this literature shows that i) people are in general not only motivated by their material self-interest, ii) many individuals are motivated by fairness concerns, and iii) there are differences across people and across countries in what people find to be fair.

Although inequality aversion seems important in some contexts – particularly where resources are "manna from heaven", many experiments also reveal inequality acceptance – particularly in situations where available resources are linked to effort or productivity. However, across the contexts that we have considered, there are also other prevalent fairness positions, such as the egalitarian, that holds that all inequalities are unfair regardless of how they come about, and the libertarian, that holds that market allocations are fair and equalizing policies should be limited regardless of how inequality comes about.

Although we have recently seen a substantial body of research mapping and studying fairness views across different population groups, we still see a need for future contributions to enhance our understanding of fairness views, support for redistributional policies, and the perceptions and misperceptions that people have.

In particular, we see a need for future studies connecting fairness preferences to observable parameters that can be linked to policy. As most existing studies study factors that may be hard to observe in many contexts, such as "luck", "effort", and "productivity", there is a need to identify fairness views related to observable characteristics such as returns to education, hours worked, and gender.

Furthermore, in order to study perceived unfairness – something that may be of utmost importance in order to understand the political tensions observed in many societies today – there is a need to link the identified fairness views to perceptions about inequality. In particular, the fairness views related to observable characteristics should then be linked to beliefs about the importance of the same characteristics. For example, if people find gender inequalities unfair, but those explained by hours worked and education fair, the same people would perceive existing inequalities unfair only if: i) they believe that some of the inequalities could be explained by gender, and/or ii) they believe that inequalities due to education and hours worked are reduced or eliminated by existing policies. Therefore, in order to understand perceived unfairness, there is a need to link fairness views to corresponding data about beliefs.

While the experimental methodology has opened up very useful ways to study fairness views and preferences for redistribution, we believe that surveys with hypothetical experiments or questions would, in some contexts, constitute good tools to reveal preferences and views. In particular, when survey questions are formulated as concrete real choices, it may reveal true preferences although the choices are not incentivized. For example, Hufe and Weishaar (forthcoming) study data from a pilot study testing whether hypothetical and incentivized versions of distributional tasks reveal the same set of preferences for the United States' population. In the context they study, the results from the hypothetical version of the questions align closely with those of the incentivized versions. As hypothetical surveys are often much easier and less expensive to roll out than incentivized experiments, it would be extremely useful to see more studies helping to characterize in what contexts such surveys would reveal preferences and beliefs just as well as incentivized experiments.

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