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ABSTRACT

Distributional decisions regularly involve multiple payoff components. In a series of experiments involving over 3,300 subjects and 81,000 decisions, we find that—even when payoff components can be easily aggregated—many subjects exhibit narrow equity concerns, applying fairness preferences to a single component of payoffs. This behavior leads to preference reversals; subjects make different choices depending on which payoff component is used to denominate their decision. In our simplest setting, in which the two payoff components are small and large tokens, displaying narrow equity concerns is 63%–83% as prevalent as achieving equity in total payoffs and just as prevalent as applying the well-documented norm of a 50/50-split. Subjects also exhibit narrowly equity concerns over payoffs of time and money.

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A data appendix is available at http://www.nber.org/data-appendix/w25326

1 Introduction

Economists have generated a significant and growing body of research about how individuals choose to distribute resources between parties. How individual make such distributional decisions directly informs the types of tax policies and social welfare programs policy makers propose and constituents support; how employers allocate work, resources, and rewards among employees; how parties negotiate; how parents invest in their multiple children; and how individuals make payoff decisions in myriad other settings.

Central to this work is the role of fairness attitudes. Guided by a rich body of theoretical work (see, e.g., Rabin (1993), Fehr and Schmidt (1999), and Bolton and Ockenfels (2000)), economists have identified the empirical relevance of different notions of fairness and have investigated the underlying drivers of these fairness attitudes. This empirical work has taken a variety of forms. Some has focused on the tradeoff between equality and selfishness (see, e.g., results from the dictator game reviewed in Engel (2011)). Some has focused on the tradeoff between equality and efficiency (see, e.g., Engelmann and Strobel (2004) and Fehr, Naef and Schmidt (2006)). Some has focused on the source of inequities, such as luck versus one's own performance (see, e.g., Mollerstrom, Reme and Sørensen (2015), and Gee, Migueis and Parsa (2017)). More generally, this empirical work considers a variety of fairness principles, such as those involving "equality of opportunity," "equality of outcomes," and "equity" (see, e.g., Konow (2000) and Cappelen et al. (2007)). As evidence of the careful control employed by the experimental work on these topics, one common feature of these studies is a focus on a simplified decision environment that considers payoffs comprised of a single component (e.g., cash payoffs).

This focus on a single payoff component is key to many of the insights gleaned in this prior work. However, it leaves open many questions about how individuals make distributional decisions when outcomes depend on multiple payoff components. Since policy makers and individuals regularly make distributional decisions in settings with multiple payoff components (e.g., income, wealth, leisure time, access to resources such as healthcare and education), we want to develop an understanding of how they make choices in these settings.

We design an experiment in which subjects decide how to distribute payoffs in the presence of full information on two payoff components (i.e., small tokens and large tokens) with a clear, simple exchange rate between them (i.e., large tokens are worth twice as much as small tokens). The clear, simple exchange rate allows subjects to collapse the two payoff components into a single measure of total payoff value. One might hypothesize that this is exactly what subjects will do. If subjects were to do this consistently, prior work on a single payoff component might be sufficient to explain distributional decisions in settings with multiple payoff components, since it would suggest that individuals determine the total value of multiple components and apply their fairness preferences to that total payoff. For example, equity concerned subjects could choose to aggregate across small and large tokens to calculate the total payoffs and then achieve "overall

equity" by equalizing total payoffs, accounting for both types of tokens. While some subjects behave in this way, we find robust evidence that this is not the whole story.

Across a series of experiments involving more than 3,300 subjects making more than 81,000 decisions, we document that distributional decisions are not fully driven by overall equity concerns. Rather, subjects regularly choose to equalize payoffs on the component they are considering—achieving what we call "narrow equity"—even though this leads them to make systematic reversals in their distributional decisions when facing the same choice multiple times.

All of our study versions involve a subject deciding how to affect the payoffs of two study participants whose payoffs are comprised of two components. In our main study versions, payoffs are comprised of the small and large tokens described above, which are converted to cash at the end of the study. Subjects play in the role of third-party social planners. In each decision, they face a pair of study participants with randomly determined endowments of small and large tokens, and they choose one of three allocation options that adjust these endowments, generating final participant earnings. The endowment sets vary the participants' number of small and large tokens—and thus total monetary value—before the subject chooses an allocation. The allocation options remain the same across decisions in terms of how they affect participant earnings, but they are sometimes denominated in small tokens and sometimes denominated in large tokens.

Consistent with the "overall equity" hypothesis raised above, subjects often choose the allocation that equalizes participants' total payoffs, so that they end up with an equal amount of money (i.e., aggregating across both small and large tokens). In 28% to 48% of decisions, however, subjects forgo achieving overall equity to instead achieve narrow equity: equalizing only the component of payoffs they are asked to allocate (i.e., equalizing small tokens when their decision is denominated in small tokens and equalizing large tokens when their decision is denominated in large tokens). This pattern leads subjects to make different distributional decisions depending on the type of token they are asked to allocate. That is, we observe the same subject, facing the same endowment set, making different choices depending on whether their impact on payoffs is denominated in small tokens or large tokens. While the exact percentage of subjects who achieve narrow equity changes across endowment sets, we find that achieving narrow equity is 63%–83% as prevalent as achieving overall equity. We also find that achieving narrow equity is just as prevalent as the well-documented phenomenon of achieving a "50/50-split," choosing an allocation that affects both participants equally, ignoring any existing endowment differences.

Additional study versions document the robustness of narrow equity concerns by showing that narrow equity concerns persist in a study version with a cognitive screen, persist in settings with higher stakes, persist when subjects' choices affect their own payoffs, do not depend on whether allocations add to or subtract from endowments, and persist in environments without endowments. Along with the many design features we implement to bolster subject comprehension (see Section 2.4), all of these results point to subjects exhibiting narrow equity concerns even though

they are cognitively capable of determining which of the three allocation options achieves overall equity. While we are therefore confident that narrow equity is not chosen because subjects are *cognitively incapable* of achieving overall equity, this need not imply that narrow equity arises due to a *preference* for making only one payoff component equal. There is no reason for subjects to differentially care about cash payoffs resulting from small tokens rather than large tokens in our study, a design feature that is key to our identification strategy.[1] Instead of being a preference, narrow equity concerns may arise because focusing on the payoff component that one can influence allows individuals to apply notions of fairness to a slightly simplified decision-making environment.[2] More generally, the idea that people focus more on the dimension that they can influence is loosely related to the idea—explored by models like salience (Bordalo, Gennaioli and Shleifer, 2012, 2013), focusing (Kőszegi and Szeidl, 2013), and relative thinking (Bushong, Rabin and Schwartzstein, 2017)—that the variability along a dimension influences the degree to which people focus on that dimension.

Another set of study versions show that narrow equity concerns also arise when the payoff components are money and time (i.e., rather than small and large tokens). These study versions confirm the robustness of our results to considering payoff components that comprise budgets in practice. They also reveal that subjects are more likely to achieve narrow equity when considering time than when considering money, leading us to say that subjects are more inequity averse in time than in money.

The main contribution of this paper is in improving our understanding of how individuals make distributional decisions. Many distributional decisions involve multiple payoff components. In these settings, decisions cannot be fully explained by individuals aggregating across multiple relevant components of payoffs to achieve overall equity. Nor can they be fully explained by individuals ignoring differences in endowed components of payoffs and implementing 50/50-splits. By identifying the relevance of narrow equity concerns, we show that many individuals gravitate

[1] This distinguishes our findings from prior work in which subjects display differential fairness attitudes towards cash payments that might have come from different sources. For example, and as detailed in our discussion of future work, subjects may appear to care more about inequity arising from one source (e.g., effort) relative to another source (e.g., luck), but this need not be reflective of narrow equity. It could be that subjects differentially care about cash earned from effort relative to cash earned from luck.

[2] Much of the recent work on cognitive biases relates to how individuals update in environments with uncertainty (see, e.g., Enke and Zimmermann (2019) and Enke (2020)), and more closely related to some of our results, see the recent work in Ellis and Freeman (2020). We also note that the contribution of our paper is not to show the narrow bracketing exists, but rather to provide insight into how distributional decisions are influenced by multiple payoff components, which uncovers the role of narrow bracketing of equity concerns. Moreover, we show how it operates (i.e., individuals aim to achieve equity on the payoff component they can influence) and pursue an identification strategy that allows us to separately identify narrow equity from other fairness principles. For examples of work on narrow bracketing and aggregation failures in other contexts, often involving uncertainty or a series of choices, see Kahneman and Tversky (1979); Gneezy and Potters (1997); Read et al. (1999); Hsee et al. (2003); Barberis and Huang (2006); Barberis, Huang and Thaler (2006); Gottlieb and Mitchell (2015); Rabin and Weizsäcker (2009); Hayashi (2011); Ding (2012); Andreoni and Yan (2018); Davis and Leider (2018); Ellis and Freeman (2020).

towards achieving equity on the component of payoffs they are considering. That individuals choose to achieve narrow equity rather than overall equity in an exceedingly simple environment suggests that individuals may engage in similar patterns in more complex environments as well.

Our results make clear the importance of more work that directly examines how distributional decisions are influenced by multiple payoff components. Indeed, we think there are many rich, open avenues for future work, three of which we speak to with our results and detail below. The first relates to the potential role of simple "deontological" decision rules—which may complement the various fairness principles carefully examined by prior literature—in driving distributional decisions.[3] The second and third relate to the potential for narrow equity—and the extent to which individuals achieve narrow equity across different payoff components—to help explain other behavioral phenomena.

First, our results point to a need for more work on rules that individuals use to make distributional decisions. Part of what makes the prior literature on fairness rich is its focus on how individuals are guided by various deeply held principles of fairness (e.g., such as those that relate to equality of outcomes versus equality of opportunity or equality-efficiency tradeoffs). However, there is much less work on the rules that individuals develop to help them make distributional decisions in complex environments. Our paper suggests that, rather than implementing fairness rules that aggregate over payoffs, such as overall equity, or that ignore endowments, such as a 50/50-split, many individuals focus on the component of payoffs they are asked to allocate. Building off of the deontological notions of fairness discussed in Andreoni et al. (2019), we note that a simple rule could explain choice reversals in our paradigm and in other paradigms where individuals adhere to one fairness principle in one setting but another fairness principle in another setting. Namely, individuals may follow a deontological rule: "Apply principles of fairness on dimensions you can easily control in a given decision environment."[4] Due to the complexity inherent in many distributional decisions, investigating the predictive power of such decision rules may be a particularly fruitful avenue for future work. We also stress that individuals do not appear to simply implement whichever rule is cognitively "easiest." Even in our setting, there is a cognitively easier decision-rule—appeal to the well-documented fairness principle of a 50/50-split and ignore endowments altogether—and yet evidence of narrow equity concerns persists.

Second, by employing identification strategies similar to ours, future work may pinpoint the extent to which narrow equity can help explain behavioral phenomena observed in the liter-

[3]Deontological ethics judge an action according to whether it adheres to a simple rule (or set of rules) rather than the ultimate consequences of an action (e.g.,"do not lie").

[4]Such a deontological rule could explain the prevalence of the 50/50-split across a range of contexts. If individuals focus on how they directly influence outcomes and ignore other factors, such as endowments and deservingness considerations, achieving a 50/50-split of available resources satisfies this rule. This rule is also consistent with individuals applying ex-ante fairness in ex-ante decisions and ex-post fairness in ex-post decisions (see Krawczyk and Lec (2010); Brock, Lange and Ozbay (2013); Cappelen et al. (2013); Trautmann and Wakker (2010); Trautmann and van de Kuilen (2016); Andreoni et al. (2019) for related findings).

ature. For example, it has long been hypothesized that some form of narrow bracketing may explain why individuals appear to care more about inequity in payoffs within an experiment than potential inequities in payoffs outside of the lab. However, other explanations—such as there being more uncertainty in payoffs outside of the lab—have prevented the prior literature from conclusively documenting narrow equity concerns.[5] That we document clear evidence of narrow equity concerns lends—in our view—long-awaited credence to this important hypothesis. It also makes clear the potential benefit of more work on narrow equity and whether it can explain the malleability of decisions as environments and reference groups change.[6]

Third, our results open up questions for future work related to whether narrow equity concerns differ across payoff components. Perhaps unsurprisingly, we find that subjects are equally likely to achieve narrow equity in small tokens as they are to achieve narrow equity in large tokens. However, in our additional experiments considering time and money, subjects are significantly more likely to achieve narrow equity in time than in money, which leads us to say that they are more inequity averse in time than in money. This last finding, as detailed in Section 5.3, could prove particularly helpful in unifying some findings about how choices differ across the domains of time and money. Relatedly, we hope future work examines the relative size of narrow equity concerns of many payoff components, particularly those considered to reflect measures of wellbeing, such as income, assets, education, and healthcare. In light of the compelling recent work on the relationship between fairness preferences and the acceptance of different types of inequality across societies (e.g., see Almås, Cappelen and Tungodden (Forthcoming)), identifying differential concerns for achieving narrow equity across these payoff components may help explain policy preferences and help us understand potential barriers to achieving broader societal equity.

The remainder of the paper proceeds as follows. Section 2 presents the experimental design of the main study version, the *Tokens* version, and Section 3 presents the corresponding results. Section 4 presents the design of six additional study versions in the same paradigm and presents their results. Section 5 presents the design and results of three additional study versions in which payoff components are money and time. Section 6 concludes with a broader discussion of how our results speak to a variety of behavior phenomena and empirical findings.

2 Design of the *Tokens* version

2.1 Design Overview

In the *Tokens* version, each subject faces decisions as a social planner. In each decision, the subject can influence the payoffs of two other study participants—called the first participant and the second participant—by making an allocation choice. Payoffs are comprised of two

[5]For prior work on the role of uncertainty in distributional decisions, see (Roth and Murnighan, 1982).

[6]For example, narrow bracketing of equity concerns may speak to prior work on the malleability of reference groups over which individuals apply their fairness preferences (McDonald et al., 2013; Schumacher et al., 2017; Fisman, Kuziemko and Vannutell, 2018; Bolton, Dimant and Schmidt, 2019).

components: "small tokens" (worth 1 cent) and "large tokens" (worth 2 cents).

In all decisions, the first participant is endowed with 140 small tokens and 70 large tokens, worth a total of \$2.80 (i.e., \$1.40 in small tokens and \$1.40 in large tokens). The second participant is randomly endowed with one of 13 combinations of small and large tokens, worth between \$2.00 and \$3.60. The possible endowment sets for the two participants are shown in Table 1 and Table B.1. We refer to each endowment set as a "scenario."[7] For reasons that will become clear in what follows, we pay particular attention to the endowment sets shown in Table 1, which we call our "main scenarios."

Each subject faces each scenario twice, once when making a small-token allocation decision and once when making a large-token allocation decision. In each small-token decision (see Appendix Figure D.3 for an example screenshot), the subject chooses between three options for taking away a total of 80 small tokens (i.e., \$0.80) from the two participants.[8] The options are to take away:

1. 20 small tokens from the first participant and 60 small tokens from the second participant (the "Favors1" allocation)
2. 40 small tokens from each (the "Equal" allocation)
3. 60 small tokens from the first participant and 20 small tokens from the second participant (the "Favors2" allocation)

Similarly, in each large-token decision (see Appendix Figure D.4 for an example screenshot), the subject chooses between three options for taking away a total of 40 large tokens (i.e., \$0.80) from the two participants. The options are to take away:

1. 10 small tokens from the first participant and 30 small tokens from the second participant (the "Favors1" allocation)
2. 20 small tokens from each (the "Equal" allocation)
3. 30 small tokens from the first participant and 10 small tokens from the second participant (the "Favors2" allocation)

Looking across the small-token and large-token decisions, we see that the three options are parallel in terms of their effects on payoffs. In both small-token and large-token decisions, the

[7] As shown in the final column of these tables, we label each scenario according to the extent to which the endowment favors the first or second participant. Relative to the first participant, the second participant is endowed fewer small tokens in "S-favors1" scenarios, more small tokens in "S-favors2" scenarios, an equal number of small tokens in "S-equal" scenarios, fewer large tokens in "L-favors1" scenarios, more large tokens in "L-favors2" scenarios, and an equal number of large tokens in "L-equal" scenarios.

[8] The options are named based on who they favor: the "Favors1" allocation takes away less money from the first participant, the "Equal" allocation takes away the same amount of money from both participants, and the "Favors2" allocation takes away less money from the second participant.

Table 1: Endowment sets for each main scenario in the *Tokens* version

Endowment For The First Participant (P1)	Endowment For The Second Participant (P2)	Endowment Difference (P1 – P2) in Small Tokens	Endowment Difference (P1 – P2) in Large Tokens	Endowment Difference (P1 – P2) in Total Payoffs	Labels
140 small tokens, 70 large tokens	140 small tokens, 70 large tokens	0	0	0 cents	**Scenario A:** S-equal, L-equal
140 small tokens, 70 large tokens	100 small tokens, 70 large tokens	+40	0	+40 cents	**Scenario B**: S-favors1, L-equal
140 small tokens, 70 large tokens	180 small tokens, 70 large tokens	−40	0	−40 cents	**Scenario C**: S-favors2, L-equal
140 small tokens, 70 large tokens	140 small tokens, 50 large tokens	0	+20	+40 cents	**Scenario D**: S-equal, L-favors1
140 small tokens, 70 large tokens	140 small tokens, 90 large tokens	0	−20	−40 cents	**Scenario E**: S-equal, L-favors2
140 small tokens, 70 large tokens	100 small tokens, 90 large tokens	+40	−20	0 cents	**Scenario F**: S-favors1, S-favors2
140 small tokens, 70 large tokens	180 small tokens, 50 large tokens	−40	+20	0 cents	**Scenario G**: S-favors2, L-favors1

The table displays the endowments for the first participant and for the second participant as well as the resulting endowment differences in each main scenario. Each small token is worth 1 cent, and each large token is worth 2 cents. In each small token decision, subjects choose between taking away from the first/second participant either: 20/60 small tokens, 40/40 small tokens, or 60/20 small tokens. In each large token decision, subjects choose between taking away from the first/second participant either: 10/30 large tokens, 20/20 large tokens, or 30/10 large tokens.

"Favors1" allocation takes away \$0.20 from the first participant and \$0.60 from the second participant; the "Equal" allocation takes away \$0.40 from each; and the "Favors2" allocation takes away \$0.60 from the first participant and \$0.20 from the second participant. As is explained in detail in what follows, we identify preferences for narrow equity by looking at a given scenario and examining how subjects' allocation choices change based on whether the allocation choice is denominated in small or large tokens.

2.2 Identification of Equity Concerns

To explore narrow equity, we need to formally define it, and it is also useful to define two other types of equity that subjects may aim to achieve in the experiment. In this section, we define *Overall Equity*, a *50/50-split*, and *Narrow Equity* and describe how we identify narrow equity concerns in our experiment.

An allocation choice achieves *Overall Equity* (O-equity) if both participants end up with equal monetary payoffs (i.e., aggregating over small and large tokens). Overall equity can be achieved in all of our "main scenarios," listed in Table 1. When the endowment set gives both participants \$2.80 (i.e., Scenarios A, F, and G), achieving overall equity requires choosing the "Equal" allocation. When endowments initially favor the first participant by \$0.40 (Scenarios B and D), achieving overall equity requires choosing the "Favors2" allocation, which offsets the

endowment inequity. When endowments initially favor the second participant by \$0.40 (Scenarios C and E), achieving overall equity requires choosing the "Favors1" allocation, which offsets the endowment inequity. Social planners motivated by outcome-based fairness would be drawn to overall equity in our setting, since it equalizes participants' earnings from the experiment.

We define a *50/50-split* as choosing the "Equal" allocation, which takes away the same amount of money (i.e., the same number of tokens) from both participants. It is always possible to achieve a 50/50-split in our experiment, since it does not depend on—and, as an equity concept, ignores—endowments. As in other work, subjects may be drawn to a 50/50-split.[9] However, subjects who always adhere to a 50/50-split would *not* exhibit narrow equity concerns since a 50/50-split involves choosing the Equal allocation, regardless of whether it is a small-token or large-token decision. Thus, for evidence of narrow equity concerns to arise in our environment, subjects must have both the desire and ability to account for—to some degree—inequities in endowments.

An allocation choice achieves *Narrow Equity* (N-equity) if it achieves equity on the component of payoffs the social planner can control with their allocation choice. That is, an allocation achieves narrow equity if the two participants end up with the same number of small tokens when a subject makes a small-token decision or if the two participants end up with the same number of large tokens when a subject makes a large-token decision. Narrow equity can be achieved in all of our main scenarios, listed in Table 1, and in some of our additional scenarios.[10] While narrow equity is not an equity concept directly explored by prior literature—indeed, identifying it is what motivated our current study—we posit that individuals might be drawn to narrow equity as a way of simplifying their decision-making process while still countering some inequity in endowments. Subjects who choose to achieve narrow equity account for endowments but focus primarily on achieving equity on the component being asked about in their allocation decision. This reflects a narrow focus on (or an overweighting of) small-tokens when making small-token decisions and large-tokens when making large-token decisions.

Table 2 shows which of these three types of equity result from each of the three allocation options available to subjects in our main scenarios. The table also makes transparent our strategy for identifying evidence of narrow equity.

[9] In our design, the "Equal" allocation is always the middle option of a subjects' three choices. This means that we do not separate a preference for a 50/50-split from a preference for the middle option that might arise for other reasons. If subjects choose the middle option for other reasons, it may look like they care more about achieving a 50/50-split than they actually do. (That said, only 10% of subjects always choose the "Equal" allocation in all their decisions of our *Tokens* version). Importantly, however, we are not interested in a choice of a 50/50-split per se, as our focus is on identifying choices for narrow equity, defined next. Nevertheless, the potential preference for a 50/50-split motivates some of our experimental design choices, highlighted in what follows.

[10] We can also define narrow equity and overall equity as follows. If, after the allocation decision has been made, T_i is the total payoff of participant i, S_i is the number of small tokens held by participant i, and L_i is the number of large tokens held by participant i, then the difference in final payoffs is: $T_1 - T_2 = (S_1 - S_2) * 1$ *cent*$+(L_1 - L_2)*2$ *cents*. We say that $T_1 - T_2 = 0$ implies overall equity, $S_1 - S_2 = 0$ implies narrow equity in small-token decisions, and $L_1 - L_2 = 0$ implies narrow equity in large-token decisions.

Table 2: Equity achieved from allocations in each main scenario in *Tokens* version

	Small-Token Allocations:			**Large-Token Allocations:**		
	Favors1	Equal	Favors2	Favors1	Equal	Favors1
Scenario A: S-equal, L-equal		O-equity, 50/50-split, N-equity			O-equity, 50/50-split, N-equity	
Scenario B: S-favors1, L-equal		50/50-split	O-equity, N-equity		50/50-split, N-equity	O-equity
Scenario C: S-favors2, L-equal	O-equity, N-equity	50/50-split		O-equity	50/50-split, N-equity	
Scenario D: S-equal, L-favors1		50/50-split, N-equity	O-equity		50/50-split	O-equity, N-equity
Scenario E: S-equal, L-favors2	O-equity	50/50-split, N-equity		O-equity, N-equity	50/50-split	
Scenario F: S-favors1, L-favors2		O-equity, 50/50-split	N-equity	N-equity	O-equity, 50/50-split	
Scenario G: S-favors2, L-favors1	N-equity	O-equity, 50/50-split			O-equity, 50/50-split	N-equity

The table shows the type of equity arising from each possible allocation that a social planner may choose in each of the main scenarios (see Table 1 for details on the endowments in each main scenario). The Favors1 allocation takes away 20/60 cents from the first/second participant, the Equal allocation takes away 40/40 cents from the first/second participant, and the Favors2 allocation takes 60/20 cents from the first/second participant. Small-Token allocations take away these cents by taking away the corresponding number of small tokens, and Large-Token allocations take away these cents by taking away the corresponding number of large tokens. O-equity implies that both participants end up with equal total payoffs. N-equity implies that both participants end up with equal numbers of small (large) tokens from small-token (large-token) decision. A 50/50-split implies that a small-token (large-token) decision takes away an equal number of small (large) tokens from both participants—regardless of how many tokens they end up with.

Consider Scenario A, in which endowments are identical across the two participants. The "Equal" allocation, which preserves this equity, achieves all three types of equity, and this does not vary by whether subjects make small-token or large-token decisions. In scenarios B–G, in contrast, which choice achieves narrow equity depends on whether the subject is making a small-token or a large-token decision.[11] For each of these scenarios, we compare choices in small-token decisions and large-token decisions to investigate whether the distribution of choices changes and, in particular, to observe whether subjects gravitate towards the choice that achieves

[11]The choice that achieves the other types of equity does not change with the type of token. Because each of the allocations—"Favors1," "Equal," and "Favors2"—are monetarily equivalent going from small-token to large-token decisions, which allocation achieves overall equity in a scenario does not depend on the type of token. Similarly, a 50/50-split always involves choosing the "Equal" allocation and does not depend on the type of token.

narrow equity. This pattern would involve subjects who face the same endowment set and allocation options making systematically different choices when they are allocating small-tokens and allocating large-tokens, despite the two questions being monetarily equivalent.

For example, consider Scenario B. Subjects who do not exhibit concerns for narrow equity should be *equally* likely to choose the Favors2 small-token allocation and the Favors2 large-token allocation. On the other hand, subjects who display a preference for narrow equity would be *more likely* to choose the Favors2 small-token allocation than the Favors2 large-token allocation, since the former achieves narrow equity and the latter does not. Similarly, these subjects would be *less likely* to choose the Equal small-token allocation than the Equal large-token allocation, since the latter achieves narrow equity and the former does not. More generally, for each of the main scenarios B–G, we can examine whether subjects' choices gravitate toward the allocation that achieves narrow equity when they make small-token and large-token allocation decisions.

2.3 Design Rationales Related to Identification

A few features of our design are of note, as they help to separate our results from alternative explanations. First, we focus our primary analysis on our main scenarios (Scenarios A–G) so that we can observe whether subjects choose to achieve narrow equity in settings where it is possible to achieve overall equity. Subjects who care primarily about achieving overall equity should not respond to which choice achieves narrow equity when overall equity is possible. That said, we show the robustness of our results to the additional scenarios in which overall equity cannot be achieved.[12]

Second, we place subjects in the role of social planners, both to explore how individuals make distributional decisions from a social planner perspective (e.g., such as when policy makers design social programs or when employers decide how to distribute rewards or resources among employees) and to avoid confounds introduced by the well-documented role of self-serving motives on fairness attitudes (Konow, 2000, 2009; Croson and Gneezy, 2009; Haisley and Weber, 2010; Karadja, Mollerstrom and Seim, 2017). That said, we confirm the robustness of our results to environments where subjects make decisions from the first-party perspective, as shown in Section 4.7.

Third, to exclude other fairness considerations that may come into play once individuals have some control over their outcomes (Krawczyk, 2010; Cappelen et al., 2013; Mollerstrom, Reme and Sørensen, 2015; Akbaş, Ariely and Yuksel, 2016; Gee, Migueis and Parsa, 2017), subjects know that the endowments given to the participants are chosen randomly in each decision.[13]

[12] We note, however, that showing the prevalence of narrow equity concerns when overall equity cannot be achieved could be viewed as a weaker test of the prevalence of narrow equity concerns.

[13] See, also, the related literature that examines how "earning the right" to be a dictator in the dictator game influences generosity (i.e., the entitlement effect; see Hoffman et al. (1994) for early evidence and Engel (2011) for a review) as well as work where such an entitlement effect is absent (e.g., see the ultimatum game in Demiral and Mollerstrom (2018)).

Fourth, given the compelling literature on ex-ante versus ex-post principles of fairness (Krawczyk and Lec, 2010; Brock, Lange and Ozbay, 2013; Cappelen et al., 2013; Trautmann and Wakker, 2010; Trautmann and van de Kuilen, 2016; Andreoni et al., 2019) as well as work on the role of uncertainty in distributional decisions (Roth and Murnighan, 1982), subjects make all decisions in the ex-post frame and are provided with full information that allows them to equalize—with certainty—total payoffs between the two participants.

Fifth, one could imagine an alternative definition of "overall equity" that includes components of payoffs from outside of the laboratory, such as differences in income, wealth, or access to health care and other resources. In this case, it would be infeasible to identify narrow equity concerns versus overall equity concerns, since we cannot elicit beliefs and preferences over all possible components in a way that would allow us to identify what overall equity concerns should imply for distributional preferences in our experiment. Consequently, we instead test whether individuals have narrow equity concerns (over small tokens when making small-token decisions or large tokens when making large-token decisions) relative to *broader* equity concerns that would take into account participants' final earnings determined by the number of small and large tokens.

Sixth, payoffs in our experiment are comprised of two components, but we only allow subjects to influence one component of payoffs in each decision. One reason for this is to match settings outside of the laboratory in which individuals are rarely able to achieve equity on all dimensions that influence utility simultaneously.[14] Moreover, allowing subjects to influence both payoff components in a single decision would make it hard to separately identify narrow equity concerns from a preference for overall equity. To see this, consider an *alternative* design in which social planners could choose a small-token allocation and a large-token allocation in each decision. In this alternative design, subjects could avoid ever facing a tradeoff between overall equity and narrow equity by always choosing the small-token allocation that equalizes small tokens and the large-token allocation that equalizes large tokens, which would in turn guarantee that total payoffs are equal. In contrast, many of our scenarios force subjects to choose between achieving narrow equity and achieving overall equity.[15]

Seventh, to be able to separately identify a desire to achieve narrow equity from the well-documented preference for a 50/50-split (see, e.g., Andreoni and Bernheim (2009) and Jakiela (2013)), subjects' decisions involve making adjustments to existing endowments.[16] By contrast,

[14]For example, employers may determine the equity in pay among their workers but not the equity in wealth or even equity in income when accounting for secondary income streams such as from stocks or a family member's job.

[15]For example, consider a small-token decision in Scenario G. A subject who wants to achieve overall equity (or a 50/50-split) should choose the Equal small-token allocation, since there is no endowment difference in total payoffs. However, a subject who desires to achieve narrow equity should choose the Favors1 small-token allocation to offset the endowment of small tokens that favors the second participant. More generally, as evident in Table 2, which allocation achieves narrow equity is frequently different from the allocation that achieves overall equity.

[16]For example, consider a small-token decision in Scenario B. While a subject who wants to achieve narrow

consider an *alternative* design in which subjects chose small-token outcomes directly in a setting without existing endowments of small tokens. In this alternative design, choosing a 50/50-split would always achieve narrow equity and vice versa, rendering it infeasible to separate a preference for a 50/50-split from narrow equity concerns. That said, we consider settings without existing endowments as well, as discussed in Section 4.8.

2.4 Design Rationales Relating to Simplicity

Our decision environment is not free of complexity, and it does not intend to be. The purpose of our investigation is to understand how individuals make decisions in the presence of multiple payoffs, and thus in the presence of any complexity introduced by the existence of multiple payoff components. We also note that some complexity, such as having existing endowments of each payoff component, is required to separate narrow equity concerns from other explanations.

Despite the need for some complexity, we sought to construct a *relatively* simple decision environment to provide a conservative, clean test of the potential relevance of narrow equity concerns in the complex decision environments that individuals face outside of the laboratory. This goal informed the following five design decisions.

First, while multiple payoff components are necessary, we choose the minimal number that satisfies this criteria: two. Second, as described in Appendix D.1, social planners receive detailed instructions and have to correctly answer several understanding questions about how their choices influenced the payments for the pair of participants before proceeding with the study. Third, as evident in the examples shown in Appendix Figures D.3 and D.4, decision screens clearly display the endowment differences across participants. Fourth, each social planner was randomized to face 13 small-token allocation decisions first or 13 large-token allocation decisions first, which helps to ensure that subjects notice when they are making small-token decisions and when they are making large-token decisions.[17] Fifth, subjects choose between the same three predetermined allocation options for each decision, dramatically simplifying the decisions for subjects. In particular, they do not have to calculate the exact difference between the two participants' endowments in order to achieve overall equity in the main scenarios. Rather, to achieve overall equity, the subject simply has to: choose the allocation that favors the participant who is at a disadvantage in endowments or choose the Equal allocation if the monetary value of the endowments is initially equal. While we do not highlight this feature to subjects—to mitigate against potential experimenter demand effects—the allocation options do not vary across decisions, making this design feature more apparent. This choice also guards against subjects failing to achieve overall equity or narrow equity due to small estimation errors.

equity should choose the Favors2 allocation to offset the endowment favoring the first participant, a social planner who wants to achieve a 50/50-split should choose the Equal Allocation. More generally, as evident in Table 2, which allocation achieves narrow equity frequently differs from the Equal allocation that achieves a 50/50-split.

[17] In Section 4.2, we show that our results are robust to the considering only the first set of decisions.

2.5 Implementation

In February 2018, 400 Amazon Mechanical Turk workers completed the *Tokens* version of our study (see Appendix D.1 for screenshots). As noted above, prior to making their choices, social planners had to correctly answer several understanding questions about how their choices influenced the payments for the pair of participants. Each social planner was then randomized to face 13 small-token allocation decisions first or 13 large-token allocation decisions first. Within each set of 13 decisions, the order of the endowments for the second participant was also randomized. After making all 26 decisions, social planners filled out a short demographic survey. Social planners received $4 for completing the study, and additional payments were distributed from the choice that was randomly selected to count for two future study participants. Prior to making their decisions, social planners were informed of this payment procedure.

3 Results of the *Tokens* version

Section 3.1 explores whether individuals have narrow equity concerns by comparing small-token and large-token decisions within each main scenario. To examine the strength of these narrow equity concerns, and to show how they compare to the strength of concerns for other forms of equity, Section 3.2 explores how often subjects achieve each of these equity concepts.

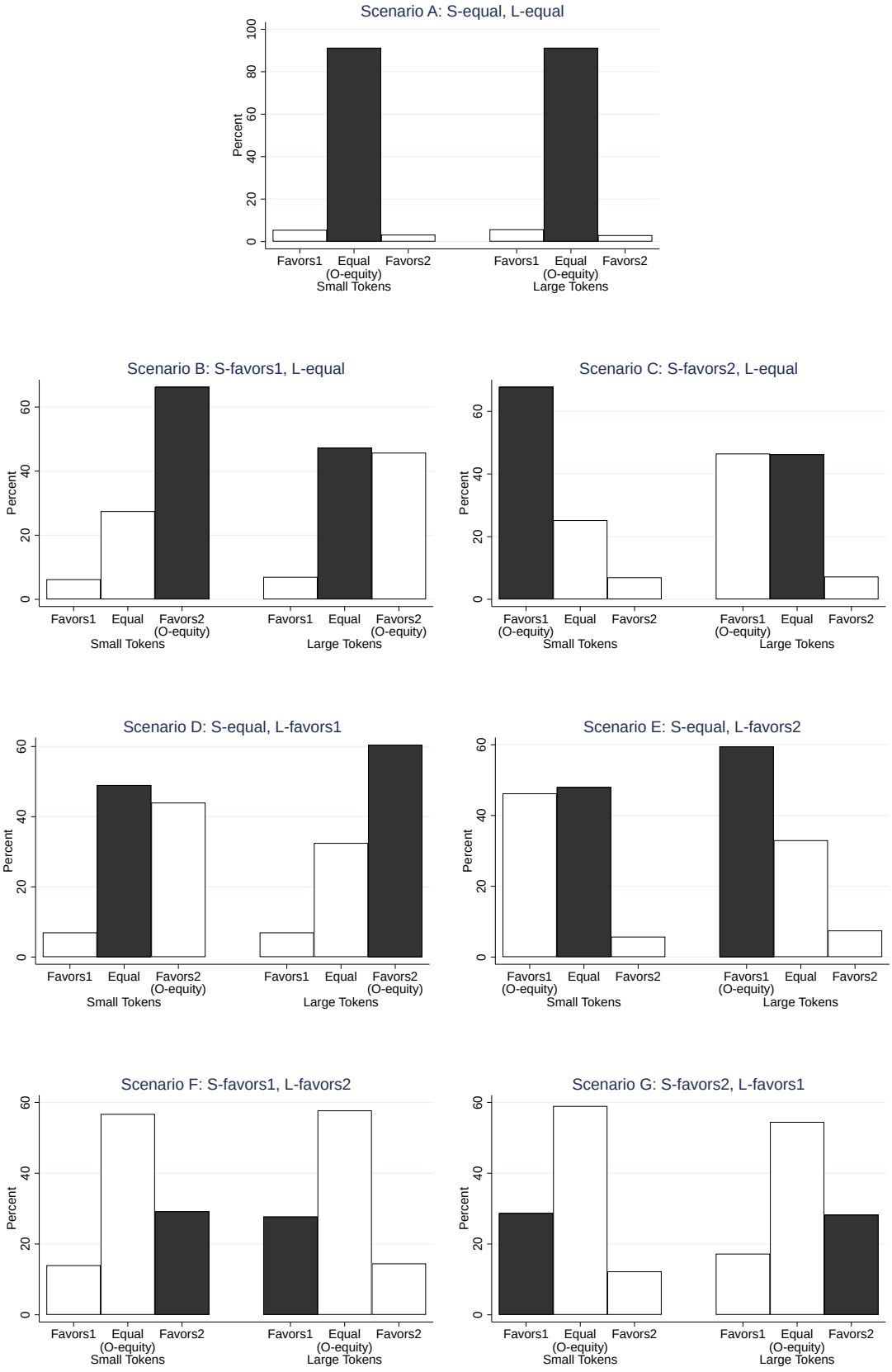
3.1 Identifying narrow equity concerns

Figure 1 displays distributions of allocation choices in each main scenario. The three bars on the left of each panel display the distribution of small-token allocation choices while the three bars on the right of each panel display the distribution of large-token allocation choices. The allocation that achieves overall equity (O-equity) is indicated on the horizontal axis of each histogram. The allocation that achieves narrow equity (N-equity) is shaded in black.

We start by considering scenario A (S-equal, L-equal) where the first and second participants have identical endowments of small tokens and identical endowments of large tokens. This is the only main scenario in which the allocation that achieves narrow equity does not differ between small-token and large-token allocations. Results from this scenario show that subjects favor equity: subjects choose the Equal allocation 91% of the time, both when making small-token decisions and when making large-tokens decisions. Put differently, nearly all subjects choose the allocation that achieves all three types of equity (i.e., overall equity, the 50/50-split, and narrow equity) over the other allocation options (i.e., the Favors1 or Favors2 allocations) that do not achieve any of these types of equity.

Figure 1: *Tokens* version, allocation choices for each main scenario

Black shaded bar indicates allocation that achieves narrow equity



In scenarios B–G, the allocation choice that achieves narrow equity differs across small and large token decisions. In scenarios B and C, the endowments of large tokens are equal and the endowments of small tokens differ, implying that the Equal allocation achieves narrow equity in large-token but not in small-token decisions. In scenarios D and E, the endowments of small tokens are equal and the endowments of large tokens differ, implying that the Equal allocation achieves narrow equity in small-token but not in large-token decisions. In scenarios F and G, the endowments of small and large tokens differ, with one payoff component favoring the first participant and the other favoring the second participant, implying that when the Favors1 allocation achieves narrow equity in one payoff component the Favors2 allocation achieves narrow equity in the other payoff component. These scenarios allow us to test for narrow equity concerns by examining whether—within each of these scenario—subjects are more likely to choose an allocation when it achieves narrow equity than when it does not, even though its implications on total payoffs are equivalent in both cases. If subjects do not respond to narrow equity, the distribution of choices should be the same for small and large tokens in each these scenarios.

Comparing across the small-token and large-token decisions within each scenario B–G, we see that subjects' choices systematically gravitate towards the option that achieves narrow equity. For each type of token in each scenario, the bar shared in black is substantially higher than its counterpart in the distribution of choices for the other type of token. Subjects systematically choose to achieve narrow equity.

Consider, for example, scenario B (S-favors1, L-equal), in which both participants are endowed with the same number of large tokens but the first participant is endowed with more small tokens. The Favors1 allocation, which does not achieve any of the three types of equity in this scenario, is chosen 6%–7% of time, regardless of the type of token. We see a divergence in the frequency that the Favors2 and Equal allocations are chosen, however, based on the type of token. For both small and large tokens, the Favors2 allocation achieves overall equity (because it offsets the existing inequity in payoffs) and the Equal allocation achieves a 50/50-split. For subjects making a small-token decision, Favors2 also achieves narrow equity—offsetting the existing inequity in small tokens—and is chosen 66% of the time. For subjects making a large-token decision, however, Favors2 does not achieve narrow equity—since it introduces inequity in large tokens—and is only chosen 47% of the time. For subjects making a small-token decision, the Equal allocation only achieves a 50/50-split and is chosen 28% of the time. For subjects making a large-token decision, the Equal allocation also achieves narrow equity—preserving the initial equity in large tokens—and is chosen 47% of the time. This pattern of choices reflects a desire to achieve narrow equity and also arises in all of the other scenarios C–G.

Table 3 shows that these changes in allocation choices are statistically significant. It presents regression results from linear probability models of the likelihood an allocation is chosen on whether that allocation achieves narrow equity (i.e., equalizes small tokens when making small-

token decisions or large-tokens when making large-token decisions). The first three columns show the likelihood that the subject chooses Favors1, Equal, and Favors2, and the fourth column shows the likelihood that the subject chooses the allocation that achieves overall equity. All regressions include scenario fixed effects, so that we identify concern for narrow equity holding fixed the endowments of the participants, and cluster standard errors at the subject level to account for the fact that subjects make multiple decisions. Subjects clearly display narrow equity concerns: allocations are 15–18 percentage points more likely to be chosen when they achieve narrow equity as compared to allocations *with identical payoff consequences* that do not achieve narrow equity.

Table 3: *Tokens* version, main regression results

	linear probability model of choosing:			
	Favors1 allocation (1)	Equal allocation (2)	Favors2 allocation (3)	O-equity allocation (4)
N-equity $\Longrightarrow$ *Favors1 allocation*	0.15***			
	(0.02)			
N-equity $\Longrightarrow$ *Equal allocation*		0.18***		
		(0.02)		
N-equity $\Longrightarrow$ *Favors2 allocation*			0.17***	
			(0.02)	
N-equity $\Longrightarrow$ *O-equity allocation*				0.18***
Scenario FEs	yes	yes	yes	yes
N	5600	5600	5600	5600

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered by subject and shown in parentheses. The results are from a linear probability model of choosing the allocation noted in the column header. ***N-equity* $\Longrightarrow$ *X* allocation** is an indicator for the allocation that achieves N-equity being the X allocation. Scenario FEs include indicators for Scenarios A–G. Data are from the decisions of subjects in Scenarios A–G of the *Tokens* version of our study.

3.2 Measuring the strength of narrow equity concerns

Results in Section 3.1 show that narrow equity concerns substantially and significantly influence which allocations subjects choose. These results compare how subjects make choices within a scenario, holding fixed the particular endowments of both participants. In this subsection, we group similar decisions together to gain further insight into the extent to which subjects favor narrow equity relative to overall equity and a 50/50-split.

In particular, we reorganize the decisions subjects make according to the types of equity tradeoffs involved in each decision. This generates four groups of decisions. The frequency with which subjects choose to achieve the various forms of equity in each group of decisions is shown in Figure 2. Results are shown separately for small-token and large-token allocation decisions.

The first group of decisions involves no tradeoffs between any of the three types of equity. These are the decisions in scenario A. The "Group 1" panel restates the result noted above:

Regardless of the type of token, subjects choose the Equal allocation, achieving all three forms of equity, 91% of the time.

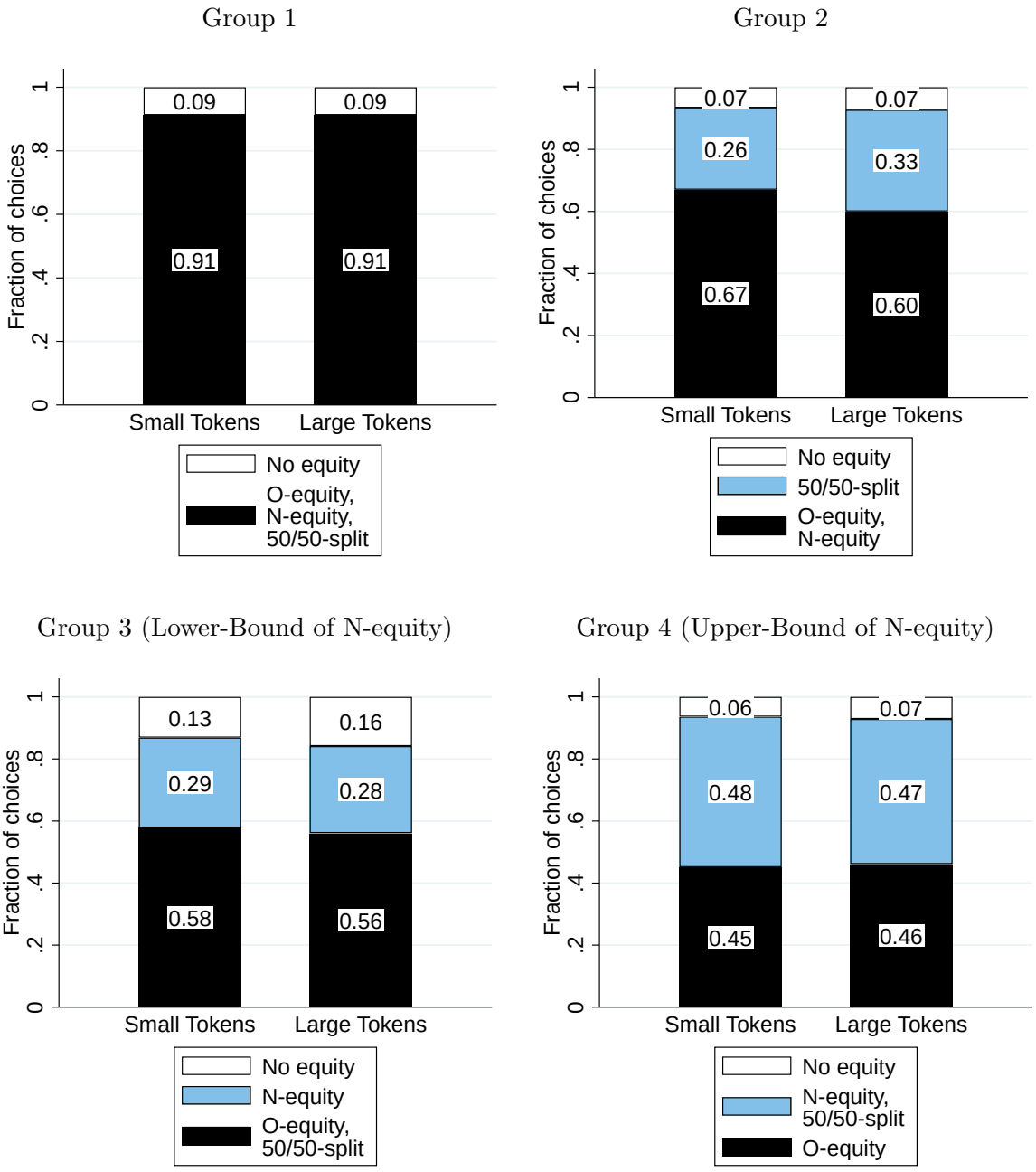
The second group of decisions involves choosing between achieving a 50/50-split with one allocation choice or achieving both narrow equity and overall equity with a different allocation choice. This includes the small-token decision in scenarios B and C and the large-token decisions in scenarios D and E. In each of these decisions, there is an inequity in endowments, and subjects are choosing to allocate the type of token that is unequal. They can choose the Equal allocation that achieves a 50/50-split but maintains the inequity; choose to undo that inequity, achieving both narrow equity and overall equity; or they can compound the inequity. The "Group 2" panel shows that subjects choose the 50/50-split 26–33% of the time and choose to achieve narrow and overall equity 60–67% of the time. That a quarter to a third of choices choose to achieve the 50/50-split is consistent with prior literature.[18]

The third group of decisions involves choosing between achieving narrow equity with one allocation choice and achieving both a 50/50-split and overall equity with a different allocation choice. This includes all of the decisions in scenarios F and G. In these decisions, there is no endowment difference in total payoffs because of offsetting inequities in small and large tokens. Subjects can achieve a 50/50-split and overall equity by choosing the Equal allocation; they can introduce inequity in overall payoffs by equalizing the number of small tokens or large tokens that subjects end up with, achieving narrow equity; or they can introduce inequity by compounding the inequity on the component of payoffs they can control. The "Group 3" panel shows that subjects choose narrow equity 28–29% of the time and choose to achieve a 50/50-split and overall equity 56–58% of the time.

The fourth group of decisions involves choosing between achieving overall equity with one allocation choice and achieving both a 50/50-split and narrow equity with a different allocation choice. This includes the large-token decision in scenarios B and C and the small-token decision in scenarios D and E. In each of these decisions, there is an inequity in one type of token, but subjects are choosing to allocate the type of token that is initially equal. Subjects can achieve a 50/50-split and narrow equity by choosing the Equal allocation; achieve overall equity by creating inequity on the component they can control to offset the inequity in the other component; or generate a compounding inequity on the component they can control. The "Group 4" panel shows that subjects choose the 50/50-split and narrow equity 47–48% of the time and choose to achieve overall equity 45–46% of the time.

[18]Related to our earlier discussion in the Introduction, but not emphasized in what follows, one could consider this evidence for 50/50-split as evidence for another form of very narrow bracketing of equity concerns in which subjects bracket around the impact their choice has on payoffs (i.e., bracketing around what they control) and ignore endowments altogether. As noted above, however, the 50/50-split is also the middle choice, so to the extent that subjects gravitate towards that choice for other reasons, this form of narrow bracketing might be overstated.

Figure 2: *Tokens* version, allocation choices



Taken together, these results help to benchmark the prevalence of narrow equity concerns relative to the prevalence of choosing a 50/50-split and overall equity. First, comparing results from Group 2 to those from Group 3, we see that subjects choose to achieve narrow equity on its own just as often as they choose to achieve a 50/50-split on its own (28–29% versus 26–33%). Second, comparing results from Group 3 to those from Group 4, we see that subjects choose to achieve narrow equity on its own roughly 63% as often as they achieve overall equity alone (28–29% versus 45–46%) and to achieve narrow equity with a 50/50-split roughly 83% as often

as they achieve overall equity with a 50/50-split (47–48% versus 56–58%). Third, subjects favor narrow equity over overall equity anywhere from 28% to 48% of the time. This interpretation relies on a "lower-bound" estimate of the extent to which subjects favor narrow equity over overall equity in Group 3 (since any preference for a 50/50-split pushes towards choosing overall equity rather than narrow equity) and an "upper bound" estimate of the extent to which subjects favor narrow equity over overall equity in Group 4 (since any preference for a 50/50-split pushes towards choosing narrow equity rather than overall equity).

These results are also evident on the subject-level. The percentage of subjects who choose narrow equity at least once is 95% in the Group 1 decisions, 84% in the Group 2 decisions, 58% in the Group 3 decisions, and 72% in the Group 4 decisions.

Together these results highlight that the prevalence of narrow equity is substantial, even when benchmarked against a 50/50-split (one of the most well-documented fairness norms or heuristics) or against overall equity.

4 Additional Results

In this section, we present: robustness tests of the results discussed above, results from additional scenarios of our *Tokens* version, and the design and results from six additional versions of our study built off of the *Tokens* version. All of these additional results display the robustness of narrow equity concerns.

The first set of additional results are robustness tests, exploring the same scenarios from the *Tokens* version discussed above. They show narrow equity concerns among subjects who appear more attentive (see Section 4.1) and among the first set of decisions subjects see, relying on between-subject variation only (see Section 4.2). The second set of additional results show narrow equity concerns in the additional scenarios that do not allow subjects to achieve overall equity (see Section 4.3). The third set of additional results come from six new study versions. The first four new study versions document the persistence of narrow equity concerns in environments: with cognitive screening questions at the beginning of the study (see results from the *Tokens, Cognitive Screen* version in Section 4.4), with higher stakes (see results from the *Tokens, High Stakes* version in Section 4.5), where subjects add rather than subtract from existing endowments (see results from the *Tokens, Addition* version in Section 4.6), and where subjects' choices affect their own payoffs rather than just others' payoffs (see results from the *Tokens, First Person* version in Section 4.7). The last two new study versions explore narrow equity when it is conflated with a 50/50-split in environments without endowments (see a discussion of the *Tokens, Final Allocations 1* version and the *Tokens, Final Allocations 2* version in Section 4.8).

4.1 Do narrow equity concerns persist among attentive subjects?

To examine whether narrow equity concerns persist among "attentive" subjects, we reproduce the specifications shown in Table 3 when considering sample restrictions.

In the follow-up survey that subjects complete after making all decisions, they are asked to indicate their agreement on a scale from 1 (strongly disagree) to 5 (strongly agree) with the following three statements: (i) "I made each decision in this study carefully," (ii) "I made each decision in this study randomly," and (iii) "I understood what my decisions meant for my payment and the payments of my participants." First, in Panel 1 of Appendix Table A.1, we exclude the 6.75% of subjects who appear inattentive because they indicate disagreement when asked whether they were careful in (i), agreement when asked whether they were random in (ii), or disagreement when asked about their understanding in (iii). Evidence for narrow equity concerns remain substantial and significant when excluding these subjects.

Second, in Panel 2 of Appendix Table A.1, we consider the set of subjects who always choose the Equal allocation in Scenario A (i.e., both when making small-token large-token decisions). Scenario A is similar to an attention check because—unless participants have preferences against equity—they should always choose the Equal allocation in Scenario A. Narrow equity concerns remain just as significant—and if anything are slightly stronger—when we exclude the 12.5% of participants who do not always choose the Equal allocation in Scenario A.

Finally, Panel 3 confirms that narrow equity concerns again remain just as significant—and if anything are slightly stronger—when we exclude the 15% of the subjects who were excluded in either Panel A or in Panel B.

4.2 Do narrow equity concerns persist when identified between subjects?

Recall that subjects are randomly assigned to make all 13 small-token decisions and then make all 13 large-token decisions or vice versa. This procedure allows us to look for narrow equity concerns in a between-subjects analysis by focusing on the first set of 13 decisions subjects face. Panel 4 of Appendix Table A.1 shows that narrow equity concerns remain just as significant—and if anything are slightly stronger—when only considering this first set of decisions.

4.3 Do narrow equity concerns persist in the additional scenarios that do not allow overall equity to be achieved?

When considering the additional scenarios, detailed in Appendix Table B.1 and Appendix Table B.2, our previous approach for identifying narrow equity concerns is not tractable. In these scenarios, there is no variation between small and large token decisions in whether the Favors1 allocation or the Favors2 allocation achieves narrow equity within a scenario, so we cannot ask whether subjects are more likely to choose those allocations when they are associated with narrow equity. Similarly, overall equity can never be achieved in the additional scenarios, so we cannot ask whether participants are more likely to choose overall equity when it is associated with narrow equity.

That said, the additional scenarios allow us to provide some additional evidence for narrow

equity. First, as shown in Appendix Figure A.1, across all scenarios, the most commonly chosen allocation is always the one that achieves narrow equity. Second, for Scenarios H–M, narrow equity is associated with the Equal allocation when making decisions involving one payoff component but not the other (e.g., when making small-token decisions but not large token decisions, or vice versa). This allows us to ask whether the Equal allocation is more likely to be chosen in these scenarios when it is associated with narrow equity. Regression results from a specification that matches Column 2 of Table 3 reveals that the Equal allocation is 6 percentage points more likely to be chosen when it is associated with N-equity ($p < 0.01$).

4.4 Do narrow equity concerns persist after a cognitive screen?

As detailed in Section 2.3, to identify narrow equity, some complexity in the decision environment is required, such as having more than one component of payoffs (by definition) and having initial endowments (to separate narrow equity concerns from a preference for a 50/50-split). Individuals may gravitate towards narrow equity because of a desire or need to simplify the decision environment. Whether our results reflect a "desire" (e.g., because thinking is costly and individuals are happy to avoid those costs) or a "need" (e.g., because individuals are cognitively incapable of understanding how to achieve overall equity) may thus be of interest.

On one hand, regardless of whether our results reflect a desire or need, it is interesting that individuals achieve narrow equity, even when a simpler option (i.e., the 50/50-split) is also available to subjects. On the other hand, as detailed in Section 2.4, we designed our experiment to be as simple as possible to mitigate the possibility that individuals achieve narrow equity because they are *cognitively incapable* of achieving overall equity.

Nevertheless, to further investigate the possibility that subjects were cognitively incapable of achieving overall equity, we designed the *Tokens, Cognitive Screen* version. Full design and implementation details are described in Appendix D.2, but the overview is as follows. The *Tokens, Cognitive Screen* version asks subjects to make exactly the same small-token and large-token decisions as in the *Tokens* version *only if* they first pass a cognitive screen. In particular, prior to making choices in *Tokens, Cognitive Screen*, subjects are asked three screening questions that require them to correctly report the monetary value of: (1) 50 small tokens, (2) 100 large tokens, and (3) the sum of 140 small tokens and 40 large tokens. Subjects who answer any of these questions incorrectly are screened out of our study and do not participate.[19]

While 2,677 of the 3,359 subjects discussed in this paper (including those recruited for our main *Tokens* version and six of our other study versions) were recruited before the COVID-19 pandemic, we ran the *Tokens, Cognitive Screen* version in July 2020, during the pandemic. During the pandemic, researchers have become increasingly concerned about the quality of data

[19]Subjects who are screened out receive a $3.00 completion payment; subjects who answer all of these questions correctly make 26 choices and receive a $4.00 completion payment. The difference in completion payments is known to subjects when they are answering the screening questions.

from Amazon Mechanical Turk. We observe evidence that is consistent with these concerns. First, only 71% of 400 participants recruited for the *Tokens, Cognitive Screen* version correctly answered all three screening questions; in two versions run before the pandemic that utilized the same cognitive screening questions (see Section 4.8 and Appendix C.1), 84% of 400 subjects recruited for one version and 85% of 400 subjects recruited for another version correctly answered all three screening questions. Second, while 85% of participants in our main *Tokens* version remained after we excluded subjects who failed either of our attention checks (see discussion in Section 4.1), and while similar percentages are observed to pass these attention checks in our other study versions run before the pandemic, only 41% of the 284 participants who correctly answered all three screening questions in our *Tokens, Cognitive Screen* version *also* passed both of our attention checks.

While the clearly lower-quality sample in the pandemic period might be worrisome if our main results relied on the post-pandemic data (which they do not), it also serves as a natural stress test of our results. First, in our *Tokens, Cognitive Screen* version run during the pandemic, it is clear that both our screening questions and attention checks have "bite." Second, we can examine if and how evidence for narrow equity changes as the noise in the data changes (which might be of particular interest if one speculated that our main results were driven by noise). Third, we can still ask whether evidence for narrow equity concerns arise when we confirm that participants are cognitively capable of achieving overall equity, the main goal of this study version.

Panel 1 of Appendix Table A.2 makes clear that evidence for narrow equity concerns remain statistically significant and substantial, with effect sizes of 9–13 percentage points, among subjects in the *Tokens, Cognitive Screen* version who answered all of the cognitive screening questions correctly. Panel 1 of Appendix Table A.3 further shows that our results remain statistically significant and substantial, with even larger effect sizes of 18–21 percentage points, when we mitigate noise by restricting to the set of subjects who also passed both of our attention checks. As a reference, recall that, in our main *Tokens* study version, we observe effect sizes of 15–18 percentage points when considering all subjects (see Table 3) and effect sizes of 17–20 percentage points when considering the subjects who passed both attention checks (See Appendix Table A.1). Thus, not only do our results persist across all of these sample restrictions, the magnitudes of our results for narrow equity concerns *increase* when we restrict to subjects who appear more attentive and cognitively capable. This is the opposite of what one would expect if our results were instead driven by noise or cognitive incapability.

4.5 Do narrow equity concerns persist with higher stakes?

In the *Tokens* version, each decision—when taking into account endowments and allocations—determines how to distribute anywhere from \$4 to \$5.60 between two participants. Both when comparing to the completion fee of \$4 from the *Tokens* version and when comparing to the typical hourly wage on MTurk of \$6 an hour, we view these decisions as having meaningful

payoff consequences.[20] Nonetheless, to further investigate whether evidence for Narrow Equity concerns persists in decisions in which the payoff consequences are larger, we designed the *Tokens, High Stakes* version.

Design and implementation details are fully described in Appendix D.3 (see Appendix Table B.3 for the scenario details), but we outline the two important features of this new study version here. First, just as in the *Tokens* version, subjects make many decisions involving small tokens worth 1 cent and large tokens worth 2 cents. We refer to these decisions as the "baseline" decisions. Second, unlike the *Tokens* version, subjects also make many decisions with stakes that are five times higher: small tokens are worth 5 cents and large tokens are worth 10 cents, and thus subjects determine how to distribute anywhere from \$20 to \$28. We refer to these as the "high stakes" decisions.

More specifically, subjects face Scenarios B–G (i.e., all the main scenarios except Scenario A) four times: once when making a small-token baseline decision, once when making a large-token baseline decision, once when making a small-token high-stakes decision, and once when making a large-token high-stakes decision. The value of the tokens is always highlighted in high-stakes decisions to help ensure that participants notice that their decisions are over tokens five times as valuable (see Appendix Figure D.11). Subjects also face Scenario A two times: once when making a small-token baseline decision and once when making a large-token baseline decision. We do not have subjects make high-stakes decisions involving Scenario A so that—like the *Tokens* version—subjects make a total of 26 allocation decisions.

Panels 1 and 2 of Appendix Table A.2 present the results for the high-stakes decisions and the baseline decisions, respectively. First, as seen in Panel 1, evidence for narrow equity concerns persists with stakes that are five-times larger. Second, as seen in Panel 2, evidence for narrow equity concerns again persist with decisions that most closely mirror those in our *Tokens* version. Third, comparing across Panel 1 and Panel 2, the extent of concern for narrow equity does not statistically significantly differ with stakes. Fourth, Panels 1 and 2 of Appendix Table A.3 show that evidence for narrow equity persists—and strengthens—when we focus on the set of participants who pass both our attention checks.[21]

[20] See Hara et al. (2018) for a detailed discussion. They reference prior literature that estimates average hourly wages on MTurk ranging from \$1–\$6, and they note that estimates are very sensitive to whether one accounts for unpaid work on MTurk (e.g., time searching for tasks and the completion of tasks that are rejected). Their average estimates are \$6 per hour average when ignoring unpaid work time and only \$3 per hour when accounting for unpaid work time.

[21] The latter results may be of particular interest since the *Tokens, High Stakes* version (and the *Tokens, Adding* version discussed next) were run in April 2020, during the COVID-19 pandemic and thus (as detailed in Section 4.4) may reflect more noise than our main *Tokens* study and our other six study versions run before the pandemic. We also note that given the goal of the *Tokens, High Stakes* version and the *Tokens, Adding* version were to show robustness, and given the substantially higher subject payments required by the design of these two studies, we only recruited half as many subjects for these versions as we did in our other studies. The smaller samples could lead to noisier data as well.

4.6 Do narrow equity concerns persist when social planners add to endowments?

Many distributional decisions (e.g., taxation) involve "taking away" money from individuals, as we have social planners do in our studies described thus far. Of course, not all decisions involve taking away—other distributional decisions (e.g., giving end-of-year bonuses to employees) involve "giving" additional money to individuals. One might wonder if narrow equity concerns persist in "giving" decisions. To investigate this, we designed and ran the *Tokens, Adding* version.

Design and implementation details are fully described in Appendix D.4 (see Appendix Table B.4 for the scenario details), but we note that the *Tokens, Adding* version follows the same structure as the *Tokens, High Stakes* version described above except that the "high stakes" decisions are replaced with "adding" decisions. The six small-token and six large-token adding decisions involve the same endowments as in Scenarios B–G detailed in Table 1. All that varies is that the allocation decisions now involve giving participants—rather than taking away—80 small tokens (in small-token decisions) and 40 large tokens (in large-token decisions). In particular, the options are to give: (1) \$0.20 to the first participant and \$0.60 to the second participant in the Favors2 allocation; (2) \$0.40 to each in the Equal allocation; or (3) \$0.60 to the first participant and \$0.20 to the second participant in the Favors1 allocation.

Panels 3 and 4 of Appendix Table A.2 present the results for the adding decisions and the baseline decisions from this study, respectively. First, as seen in Panel 3, evidence for narrow equity concerns persists in the adding decisions. Second, as seen in Panel 4, evidence for narrow equity concerns again persists with decisions that most closely mirror those in our *Tokens* version. Third, comparing across Panel 3 and Panel 4, the extent of concern for narrow equity does not systematically differ with whether subjects add to or subtract from endowments. Fourth, Panels 3 and 4 of Appendix Table A.3 show that evidence for narrow equity persists—and strengthens—when we focus on the set of participants who pass both our attention checks.[22]

4.7 Do narrow equity concerns persist in first-person decisions?

Many distributional decisions occur from the perspective of a third-party social planner (e.g., policy makers deciding how to tax their constituents, employers distributing bonus payments between their employees). Of course, other distributional decisions occur from a first-party perspective. To investigate whether narrow equity concerns persist when subjects have direct financial incentives to choose certain options, we designed the *Tokens, First Person* version.

Design and implementation details are described in Appendix D.5 (see Appendix Table B.5 for the scenario details), but we note that the *Tokens, First Person* version is nearly identical to the *Tokens* version except that the decision-making subject is assigned the role of the first

[22] Again, these last results may be of particular interest given that the comments about the timing and sample size of the *Tokens, High Stakes* version, described in Footnote 21, also apply for the *Tokens, Adding* version.

participant rather than to the role of a third-party social planner. Thus choosing the Favors1 allocation is the most privately beneficial, choosing the Favors2 is the least privately beneficial, and choosing the Equal allocation is always in-between.

Panel 5 of Appendix Table A.2 presents the corresponding results. From the (suppressed) scenario fixed effects, subjects clearly favor the more selfish allocations, consistent with the vast literature on self-serving views of fairness mentioned earlier.[23] We nonetheless observe substantial evidence for narrow equity concerns. Moreover, Panel 5 of Appendix Table A.3 shows that evidence for narrow equity persists—and that the effect sizes approximately doubles and become comparable to the effect sizes from our main *Tokens* version—when we focus on the set of participants who pass both our attention checks. This latter finding in part reflects the fact that our second attention check—which restricts to the set of participants who always choose the Equal allocation in Scenario A—should not be interpreted as an attention check here. This is because it screens out the most selfish subjects in the *Tokens, First Person* version, since they would choose the Favors1 allocation in Scenario A (and, indeed, in all scenarios). Consequently, these results show that the prevalence of narrow equity in first-party decisions among subjects who are willing to make a private sacrifice to achieve equity is similar to the prevalence for narrow equity in the decisions of third-party social planners.

4.8 Do narrow equity concerns persist in environments without endowments?

Many distributional decisions occur in settings in which endowments are explicitly relevant (e.g., the provision of public goods and tax policy often take into account individuals' existing endowments of time and money), and all distributional decisions occur in settings in which endowments are at least implicitly relevant (i.e., individuals vary in terms of their wealth, available time, access to resources, etc.) In addition, as noted in Section 2.3 and shown in Section 3.1, endowments are necessary to our identification strategy of narrow equity concerns and for separating narrow equity concerns from a desire to achieve a 50/50-split.[24]

That said, for those interested in examining whether narrow equity concerns—even if confounded with a 50/50-split—persist in environments without endowments, please see two additional study versions (run due to the interest others expressed in seeing them) in Appendix C.1. We observe evidence for narrow equity concerns in these environments, across a range of decisions from both the social planner and first-party perspectives.

[23] The scenario fixed effects range from 0.41–0.63 when considering the Favors1 allocation, from 0.21–0.46 when considering the Equal allocation, and from 0.03–0.16 when considering the Favors2 allocation, highlighting that subjects are more likely to choose an allocation when it benefits them more.

[24] Absent existing endowments of small (large) tokens, achieving a 50/50-split of small (large) tokens guarantees an equal number of small (large) tokens across participants and thus guarantees that narrow equity is achieved.

5 Do narrow equity concerns arise over money and time?

The *Tokens* versions of our study allow us to investigate distribution decisions in a setting with a clear, simple exchange rate between the two payoff components: large tokens are worth twice as much as small tokens. This exchange rate allows us to easily aggregate to overall payoffs so we know which allocation choice achieves overall equity.

An alternative approach to defining the exchange rate between multiple payoff components is to *elicit* the exchange rate. While this obviously introduces more noise and makes corresponding inferences more challenging, it serves as useful way to test for narrow equity concerns among other payoff components, while still assessing the extent to which individuals favor narrow equity to overall equity.

We use this alternative approach to examine whether evidence for narrow equity concerns arise over two important components of payoffs that are particularly relevant outside of the laboratory: money and time. In particular, we ran three *Money & Time* versions of our study. In Section 5.1, we provide overviews of these designs. In Section 5.2, we highlight the results of these versions, which confirm the relevance of narrow equity concerns over money and time and show that narrow equity concerns are greater in time than in money. In Section 5.3, we discuss how these results may help to explain myriad behavioral phenomenon related to time and money and highlight related avenues for future work.

5.1 Design Overview

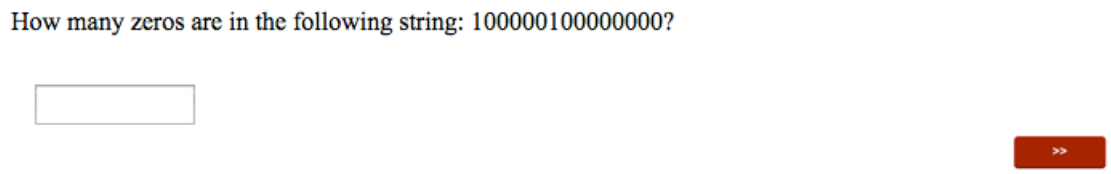
The *Money & Time* version is very similar to the *Tokens* version, with subjects in the role of a social planner making decisions that affect two study participants with exogenously determined endowments. Rather than endowments and allocation decisions involving small tokens and large tokens, however, subjects decide how much money to take away from participants' endowments of money and how much time to take away from participants' endowments of time.

Thus, going from the *Tokens* version to the *Money & Time* version requires two fundamental experimental design changes. First, to use time as one of the components of payoffs, we need a way to control the time of participants. Second, we need to elicit an exchange rate between money and time so that subjects are able to aggregate them into total payoffs, and so we can be confident that total payoffs aggregated in this way can be set equal to each other to achieve overall equity.

To manipulate the amount of time participants have in our study, we require participants to complete a particular number of "time-burning" tasks to receive any payment from participating in the study. Completing one time-burning task requires correctly counting how many times "0" appears in a string of 15 numbers that are each either a "0" or a "1" (see Figure 3 for an example task). We see this task as an ideal way of imposing a time cost as these tasks: (i) take time, (ii) must be done to complete the study, and (iii) do not allow participants to engage in

other activities while they are being completed. Moreover, just as we can take away money from endowments, we can take away time by increasing the number of tasks participants must do to complete the study. That taking away time in our study is achieved by having participants do tasks means that one could interpret time in our study as "time spent working" or, alternatively, just "work." We welcome the reader to view our results about time as instead being about work. Many of the phenomena that we believe narrow equity concerns can help explain, discussed in depth in Section 5.3, are explicitly about money and work, and work is a major use of time and an important one in contributing to overall budgets.

Figure 3: Screenshot of example time-burning task



To establish an exchange rate between money and time, we ask each social planner—using three incentivized multiple price lists—the monetary sacrifice that is equivalent to having to complete additional time-burning tasks. These price lists mirror those used in our prior work in which we establish exchange rates between money for self and money for charity (Exley, 2016, 2020; Exley and Kessler, 2020). In eliciting subject-specific exchange rates between money and time, we make a number of assumptions that are discussed in Appendix C.2. That discussion aims to reassure the reader that it is reasonable to treat each subject's elicited exchange rate as consistent across decisions and thus that we can view the choices in the *Money & Time* versions as having similar features as the *Tokens* versions (with the personalized exchange rate replacing the 2-to-1 exchange rate imposed between small and large tokens). While readers could still have concerns about the exchange rate that are related to the notion that trading-off units of money and units of time is just generally difficult (for any number of reasons), it is worth noting that this difficulty is likely to be an important—and possibly unavoidable—feature of decisions involving money and time outside of our laboratory paradigm. More generally, we view the elicitation of exchange rates as an important way to improve our understanding of differences in decisions involving money and time.[25]

In the *Money & Time* versions, the first participant is always endowed with 200 cents in money and $T - 60t$ in time, where $T - 60t$ units of time refers to the total amount of the time

[25] Absent the attempt to measure exchange rates, a natural explanation for differences between money and time decisions could be that participants value the available amounts of money and time differently. Consequently, despite any potential downsides of eliciting exchanging rates, we view it as clearly superior to simply making assumptions about the exchange rate, or ignoring the need for an exchange rate (e.g., implicitly assuming an exchange rate of 1), across multiple payoff components.

first participant has available (denoted as T) minus the amount of time that associated with having to complete 60 time-burning tasks (denoted as $60t$). As in the *Tokens* version, the second participant is randomly endowed with one of 13 combinations of money and time. As shown in Appendix Table B.6, the structure of these scenarios mirror those in the *Tokens* version.

Subjects make decisions in each scenario twice: once when making a time decision and once when making a money decision. In each time decision, subjects chose how to take away time from the two participants by choosing between three allocation options. The options are to take away:

1. $10t$ from the first participant, requiring the first participant to complete an additional 10 time-burning tasks, and $50t$ from the second participant, requiring the second participant to complete an additional 50 time-burning tasks (the "Favors1" allocation)

2. $30t$ from each, requiring each to complete an additional 30 time-burning tasks (the "Equal" allocation)

3. $50t$ from the first participant, requiring the first participant to complete an additional 50 time-burning tasks, and $10t$ from the second participant, requiring the second participant to complete an additional 10 time-burning tasks (the "Favors2" allocation)

Similarly, in each money decision, subjects chose how to take away money from the two participants by choosing between three options. The options are to take away:

1. M_{10} cents from the first participant and M_{50} cents from second participant (the "Favors1" allocation)

2. M_{30} cents from each (the "Equal" allocation)

3. M_{50} cents from the first participant and M_{10} cents from second participant (the "Favors2" allocation)

As described in Appendix C.2, the parameters M_{10}, M_{30}, and M_{50} are identified at the subject level using multiple price lists to make the allocation choices in the money decisions equivalent to the allocation choices in the time decisions from the perspective of the social planner.[26]

One final design feature of our *Money & Time* version is of note. In addition to choosing how much money or time to take from each participant, subjects were asked to indicate the social appropriateness of making each choice on a 4-point scale from "very socially inappropriate" to "very socially appropriate" (see Appendix Figure D.45 for an example of this decision screen).

[26]When eliciting these personal exchange rates, we require $M_{10} + M_{50} = 2 * M_{30}$ and $M_{10} < M_{30} < M_{50}$, so that the three allocation require the same total amount of money to be taken away across all three allocation options and for the three allocation options to be different.

Following the procedure in Krupka and Weber (2013), subjects were told that one potential choice from one decision would randomly be selected for payment and that they would receive a $1.00 bonus for correctly reporting the modal social appropriateness response for that choice.

In total, we ran three study versions involving money and time. The second is the *Money & Time, First Person* version. Its scenarios are the same as in the *Money & Time* version of our study, but subjects make the decisions in these scenarios from the first-person rather than social planner perspective. See Appendix Table B.7 for details of the scenarios and see Appendix D.9 for design and implementation details.

The third version is the *Money & Time, Uncertain Endowments* version. Its scenarios are *similar, but not identical* to those in the *Money & Time* version. More specifically, the endowments in this study build off of the set of endowments in the *Money & Time* version in which endowments are equal for one or more components of payoffs. Endowments that were equal in the *Money & Time* version are equal *in expectation* in the *Money & Time, Uncertain Endowments* versions. See Appendix Table B.8 for details of the scenarios and see Appendix D.10 for design and implementation details.

5.2 Results

Starting with the *Money & Time* version, Appendix Figure A.2 shows the distribution of money and time decisions in each of the main scenarios. As with Figure 1, the black bars indicate which allocations achieve narrow equity in each scenario. Not only do the money allocations and time allocations differ quite substantially, this difference is in line with narrow equity concerns.

Within a scenario, each allocation (i.e., the Favors1, Equal, or Favors2 allocation) is more likely to be chosen when it achieves narrow equity. Panel 1 of Appendix Table A.4 also confirms that this evidence for narrow equity over money and time is statistically significant and corresponds to effect sizes of 14 to 18 percentage points in the *Money & Time* version.

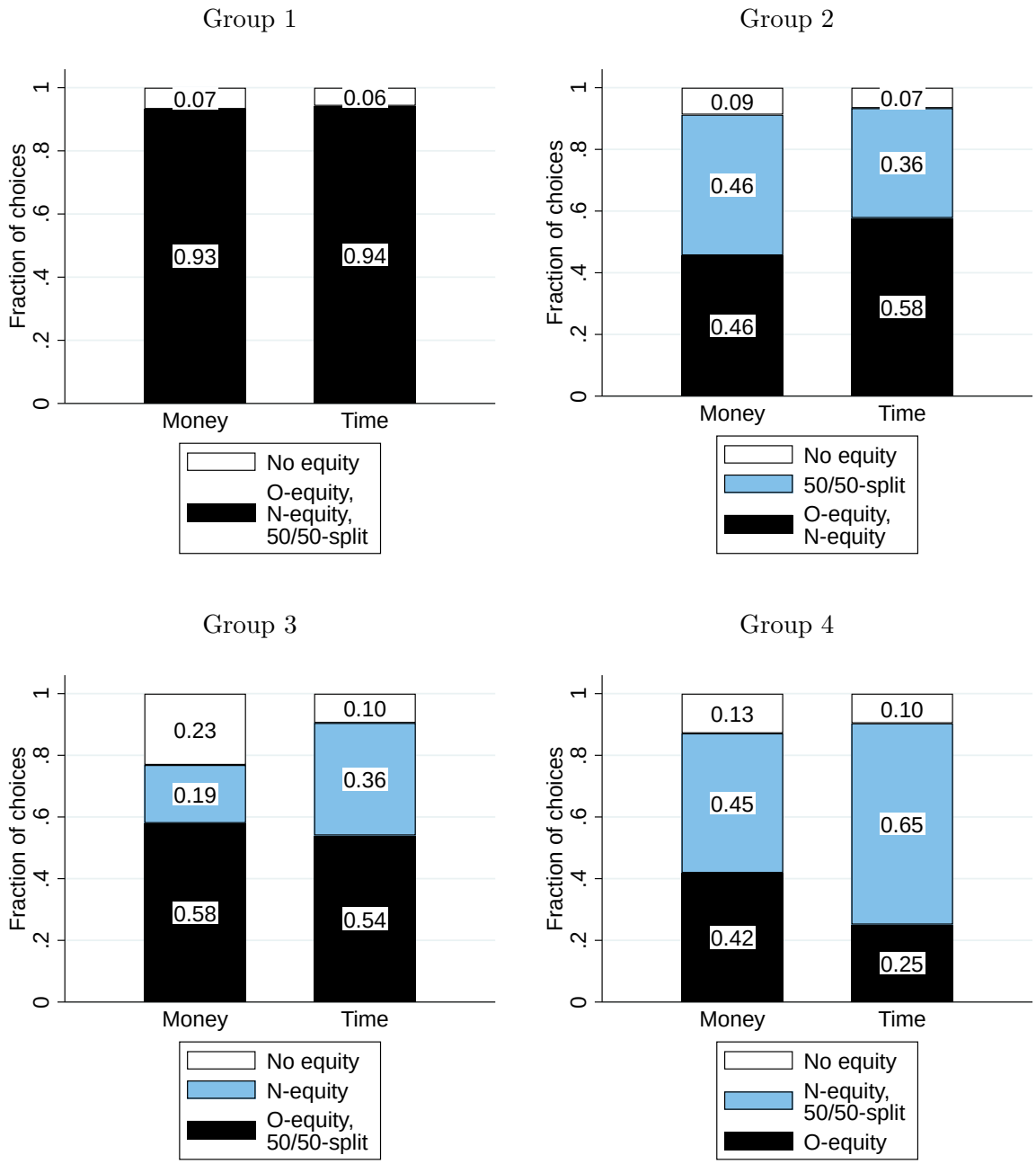
The evidence for narrow equity concerns over money and time is robust. Similar and statistically significant findings arise when we instead consider: the social appropriateness ratings that subjects assign to each allocation (see Panel 2 of Appendix Table A.4), the allocations chosen by subjects who make decisions from the first-person perspective in the *Money & Time, First Person* version (see Panel 3 of Appendix Table A.4), the allocations chosen by subjects who make decisions when the endowments are uncertain in the *Money & Time, Uncertain Endowments* version (see Panel 4 of Appendix Table A.4), and the social appropriateness ratings that subjects assign to each allocation in that version (see Panel 5 of Table A.4).

These results from the *Money & Time* version are very similar to what we observed in the *Tokens* version. When considering money and time, we see similarly sized evidence for narrow equity concerns as in the small and large tokens decisions that were analyzed in Section 3.1.

However, while narrow equity is equally likely to be chosen in small-token and large-token decisions, narrow equity is substantially more likely to be chosen in time decisions than in money

decisions. This can be seen most clearly by considering the results shown in Figure 4, which groups scenarios according to the types of equity tradeoffs subjects faced (in an identical manner as detailed in Section 3.2 and presented in Figure 2). Narrow equity is 12 percentage points more likely to be chosen in time than in money in Group 2 ($p < 0.01$), 17 percentage points more likely to be chosen in time than in money in Group 3 ($p < 0.01$), and 20 percentage points more likely to be chosen in time than in money in Group 4 ($p < 0.01$).

Figure 4: *Money & Time* version, allocation choices



The evidence for narrow equity being stronger in time than in money is also robust. Fol-

lowing the same structure as Figure 4, Appendix Figure A.3 presents the results from *Money & Time, First Person* version, and Appendix Figure A.4 presents the results from *Money & Time, Uncertain Endowments* version. Regardless of which set of decisions we consider, narrow equity is always chosen more often in time decisions than in money decisions, suggesting that subjects are systematically more inequity averse in time than in money.

5.3 Discussion of Money-Time Results

There is a growing literature on decisions involving time and how choices differ across the domains of money and time. Much of this work shows that individuals make different decisions and exhibit different preferences in time and money domains due to prosocial motivations (Reed, Aquino and Levy, 2007; Liu and Aaker, 2008; Gino and Mogilner, 2014; Lilley and Slonim, 2014; Davis et al., 2015; Macdonnell and White, 2015; Brown, Meer and Williams, 2016), the use of heuristics (Saini and Monga, 2008), the acceptability of different mediums of exchange (DeVoe and Iyengar, 2010), and signaling preferences (Shaddy and Shah, 2018).[27] Our results contribute to this literature by showing that—even when we elicit exchange rates between time and money to help ensure units of time are comparable to units of money—differences in decisions emerge, and these differences are consistent with stronger narrow equity concerns in time than money.

Our results also contribute to this literature by pointing toward a potential explanation that—in conjunction with the many reasons nicely documented by prior literature—could help unify these empirical findings and help explain other behavioral phenomena. We see high potential returns to future work exploring whether narrow equity concerns can help to improve our understanding of: (i) labor market outcomes, (ii) the structure of public good provision, and (iii) why some transactions that turn money into time may be deemed repugnant.

In terms of labor market outcomes, we note that a 40-hour work week is a well-established norm across workers and across industries.[28] Inside the ivory tower, teaching loads are likely very similar, if not identical, across faculty whose salaries differ. Even committee responsibilities are viewed more favorably when equally distributed. These norms further extend to the household, where—despite any differences in contributions towards the household's financial budgets—equal contributions of household chores are believed to be appropriate if both partners spend equal amounts of time working outside the home.[29] Could more inequity aversion in time than in

[27] See also differences between time and money that emerge in contexts related to pain (Story et al., 2015), bargaining (Ellingsen and Johannesson, 2009), sunk costs (Soman, 2001), loss aversion and risk-seeking behavior (Leclerc, Schmitt and Dube, 1995; Okada and Hoch, 2004; Abdellaoui and Kemel, 2014; Festjens et al., 2015), and discount functions (Olivola and Wang, 2016).

[28] Historically, unions fought for fixed, equal hours for their members or effectively discouraged firms from variation by demanding high rates for overtime pay (Earle and Pencavel, 1990). In tough economic times, unions use work-sharing rules (e.g., cutting hours equally) so that all workers would suffer the same consequences in hours, even if their hourly wages differ.

[29] We ran a Google Consumer Survey (March 2017, n = 211) that asked: "Imagine a married couple where both individuals work the same number of hours outside of the household. Should the spouse who earns less money have to do more housework?" 83% responded "no" and 17% responded "yes." However, unequal contribution

money help to explain these labor market norms?

In terms of the provision of public goods, we note that solicitations often call for equal contributions of time but unequal contributions of money. Citizens are equally likely to be called for jury duty and must spend equal amounts of time going to the polls, but taxes differ dramatically. Schools and churches might ask richer parents or congregants for larger monetary donations but still ask for equal volunteering hours.[30] There is even the "volunteering puzzle" of many high-income individuals spending time volunteering for tasks that generate less value than the money they could earn in the labor market and subsequently donate (Handy and Katz, 2008; Lilley and Slonim, 2014). Could more inequity aversion in time than in money help to explain these phenomena?

In terms of repugnance, individuals frequently deem repugnant, and protest against, transactions that allow others to turn inequity in money into inequity in time.[31] A prominent example of turning inequity in money into inequity in time, paying for a place in line—common at amusement parks, public events, hospitals, the airport, and even U.S. Supreme Court hearings—is often met with outrage. Similarly, it is the "thought that counts" in gift giving, and social mores frequently deem cash gifts inappropriate (Tuttle, 2011). Some transactions that would allow individuals to turn inequity in money into inequity in time are even prohibited, such as an organ transplant that could add years to a recipient's life but cannot be legally purchased.[32] Could more inequity aversion in time than money help to explain these attitudes, rules, and regulations that relate to repugnance around turning inequity in money into inequity in time?

Another interesting question for future work relates to *why* equity concerns differ across the domains of time and money. On this point, we speculate that part of the effect might be driven by differential beliefs in the existing levels of inequity of money and time. Inequity in money

of household work is reported as appropriate if one partner does not work outside the home and thus has more time to work inside the house. We ran a Google Consumer Survey (March 2017, n = 201) that asked "Imagine a married couple where only one individual works outside of the household. Should the spouse who does not work outside of the household have to do more housework?" 64% responded "yes" and 36% responded "no."

[30] In 2008, the Church of Jesus Christ of Latter Day Saints began asking congregants to clean the church buildings, sometimes assigning individuals to volunteer in alphabetical order, even though it previously used congregant donations to pay janitorial staff to do the same job (Evans, Curtis and Cnaan, 2013).

[31] Negative attitudes towards such transactions are relatively widespread (Leider and Roth, 2010) even though they have been shown to be correlated with happiness (Mogilner, 2010; Mogilner and Norton, 2016; Whillans, Weidman and Dunn, 2016; Whillans et al., 2017). Repugnance arises when a third party prefers that a transaction between others not occur and may thus place a constraint on markets (Roth, 2007). See Roth (2015) for a popular discussion and see a growing literature on what causes transactions to be repugnant (Leider and Roth, 2010; Falk and Szech, 2013; Slonim, Wang and Garbarino, 2014; Ambuehl, Niederle and Roth, 2015; Elias, Lacetera and Macis, 2015*a*,*b*; Ambuehl, 2016). Of particular relevance here is also the literature on "taboo tradeoffs" in Psychology (Fiske and Tetlock, 1997), the discussion of the "ethic of the queue" versus the "ethic of the market" in Philosophy (Sandel, 2012), and the discussion of "sacred values" in economics (Elias, Lacetera and Macis, 2015*b*).

[32] Living donors cannot be compensated for kidneys and the allocation of deceased donor organs is heavily regulated through waiting lists that do not include a price mechanism. Substantial research is devoted to attempting to increase the supply of organs (see, e.g., Kessler and Roth (2014)).

is more obvious and observable than inequity in time.[33] It is very clear that some people are born rich and others are born poor, and the persistence of socio-economic status from birth to adulthood is a well-established empirical fact (Chetty et al., Forthcoming). Meanwhile, inequity in time is less obvious (e.g., everyone has 24 hours in a day), less observable (e.g., life length is unknowable), and, perhaps correspondingly, less acceptable.

6 Conclusion

A large set of components influence our payoffs and, ultimately, our utility. Exploring how individuals make distributional decisions in these multi-dimensional settings is essential to understanding what types of choices are likely to arise in practice. This paper identifies a potentially broadly relevant pattern in how individuals make distributional decisions in the presence of multiple payoff components. Subjects in our studies frequently forgo overall equity, which accounts for multiple payoff components, to instead achieve narrow equity that only considers one. Individuals make these choices when considering arbitrary components of payoffs (i.e., small and large tokens) and when considering important and common components of budgets (i.e., money and time). Results from the latter setting additionally document that individuals are more inequity averse in time than in money.

As discussed in detail in our Introduction and in Section 5.3, we believe many important and promising avenues for future work relate to investigating the extent to which narrow bracketing of equity concerns contribute to various behavioral phenomena and patterns observed in prior work: from contextual effects observed in experiments, to the provision of public goods, to societal norms around repugnance. The potential to identify and compare the extent of narrow equity concerns over different components of payoffs—such as we explored in our money and time results—opens up many new questions about the relative strength of equity concerns across other payoff components. Indeed, recent work in Berry, Dizon-Ross and Jagnani (2020) documents the important insights that can be gleaned by considering how parents may narrowly bracket their equity concerns about investments in their children's education.

Finally, we note that given the complexity inherent to aggregating across dimensions of payoffs outside of simplified laboratory settings (see, e.g., Jones and Klenow (2016)), more work on the role of decision rules, including how such rules may interact with the various principles of fairness studied in the rich prior literature, may prove key to our understanding of distributional decisions.

[33] While the opportunity cost of time, available leisure time, and life expectancy may vary widely across individuals, these differences may be harder to observe. Individuals may believe that time is more equally distributed than money, which may contribute to why individuals deem contributions of time as a better signal of preferences than contributions of money (Shaddy and Shah, 2018).

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