

# The Focality of Dominated Compromises in Tacit Coordination Situations: Experimental Evidence

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## Abstract

We experimentally investigate if subjects in a tacit coordination situation with a conflict of interest tend to choose an equal compromise, even if it is strictly dominated. The data show that this is the case, as long as the compromise payoffs are not too low. Game comparisons suggest that choosing a dominated compromise is a focal point that allows subjects to avoid a costly coordination failure.

Keywords: Coordination; equality; efficiency; focal point; level-k model; inequity aversion.

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# 1 Introduction

Many important strategic situations are characterized by a conflict of interest, and by a variety of ways in which a costly conflict can be avoided. If the decision makers cannot communicate before or while they make their decisions, then they need to *tacitly* coordinate their beliefs and actions. An important theoretical and empirical question (see for example Blume and Gneezy (2010), Crawford et al. (2008), Holm (2000), Isoni et al. (2013), Mehta et al. (1994a), Mehta et al. (1994b), and Schelling (1960)) is if the decision makers will manage to identify a *focal point* that helps them to avoid a costly failure to coordinate.

In this paper we consider tacit coordination situations where there is an outcome that gives equal and strictly positive earnings, and it is an equilibrium – but it is strictly dominated by one or several efficient equilibria offering unequal earnings. We ask: Is the equal dominated equilibrium focal?

To the best of our knowledge the existing literature has, with very few exceptions that we describe below, only considered tacit coordination and bargaining situations with equal and *efficient* earnings outcomes. See for example Holm (2000), Mehta et al. (1992), Nydegger and Owen (1975), Roth and Malouf (1979), Roth and Murnighan (1982), Roth (1995), Schelling (1960), van Huyck et al. (1992), and van Huyck et al. (1995).

We collect data for two types of coordination games. In a Three-Allocation Game there are, in addition to the equal and dominated equilibrium, two efficient unequal earnings equilibria. A Two-Allocation Game has the same equal and dominated equilibrium, but only a single efficient unequal earnings equilibrium. In the first game there is therefore a coordination problem in selecting among efficient equilibria (similar to that in a battle of the sexes game), but not in the second game. This implies that in the Three-Allocation Game the equal and dominated equilibrium can (if its payoffs are not too low) serve as a *compromise* that permits players to avoid a coordination failure in selecting an efficient equilibrium, while in the Two-Allocation Game the equal outcome plays no such role, since there is, by design, no coordination problem in selecting an efficient equilibrium. Thus we might expect less play of the dominated equal equilibrium in the Two than in the Three-Allocation game.

We observe in the Three-Allocation Game that the equal and dominated outcome remains strongly salient, as long it does not offer payoffs

that are very low. Moreover, its salience decreases only gradually as its payoffs decrease. In the Two-Allocation Game, on the other hand, the dominated equal earnings equilibrium is significantly less salient. These findings suggest that in tacitly played coordination situations where there are several efficient equilibria each preferred by a different player, an equal but dominated outcome is, as long its payoffs are not too low, a strong focal point primarily because it offers players a way to avoid the strategic uncertainty due to the multiplicity of efficient equilibria, and hence the increased risk of coordination failure (Crawford (1990), Janssen (2006), and Schelling (1960)).

The rest of the paper is organized as follows. In Section 2 we describe some related literature. Section 3 describes the coordination games, and gives some applications. Sections 4 and 5 outline the experimental logistics and treatments. The data are described in Section 6. We consider the explanatory power of three theoretical approaches, focal point based reasoning, level-k modelling, and social preferences based on inequity aversion, in Section 7. Section 8 concludes.

## 2 Related Literature

Crawford et al. (2008) (from here on abbreviated as CGR) collect data for ‘Pie’ games, where an equal earnings allocation is weakly (but not strictly) Pareto dominated.<sup>1</sup> CGR observe that most subjects choose the equal allocation. In their design the equal allocation was, however, also salient by virtue of being visually distinct from the other allocations<sup>2</sup>, so it is not clear to what extent the observed behavior is driven by the salience of payoff equality or by the visual representation of the game. One of our findings, that weakly dominated equality is as salient as efficient equality in a more neutral frame, thus complements and strengthens their results. Also, we extend the investigation to the case where the equal earnings outcome is

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<sup>1</sup>In one of their games the money allocations are  $(\$5, \$5)$ ,  $(\$5, \$6)$ , and  $(\$6, \$5)$ ; another game offers  $(\$5, \$5)$ ,  $(\$5, \$10)$ , and  $(\$10, \$5)$ . CGR also collect data from ‘XY’ games, but these are two-times-two games with no equal earnings compromise outcome, except the degenerate one giving zero to each player.

<sup>2</sup>In CGR’s representation, players coordinated by choosing the same ‘slice’ from a ‘pie’, and the equal allocation slice had a different color than the other slices.

strictly dominated by other outcomes.<sup>3</sup>

Isoni et al. (2013) study bargaining games where an equal surplus division can be dominated (however they only consider weak, not strict, domination). They observe that very few subjects coordinate on such a division. This finding is different from ours. It is not straightforward to explain why the results differ, due to the different frames (coordination versus bargaining), but one reason can be that in their set-up there are several surplus divisions that equate earnings, so players not only face a coordination problem regarding the selection of an unequal and efficient allocation, but also with respect to an equal and dominated division. In our coordination frame, there is a unique outcome that offers strictly positive and equal earnings, so there is only a coordination problem regarding which efficient and unequal earnings equilibrium to coordinate on.

There are also some studies that experimentally examine the salience of dominated equitable outcomes in a cooperative bargaining setup, where subjects can make binding agreements. See Galeotti et al. (2015), Herreiner and Puppe (2010), and Isoni et al. (2014). Finally, it is relevant to draw the reader's attention to dictator game experiments that investigate how individuals trade off equality and efficiency – see Kritikos and Bolle (2001) and Engelmann and Strobel (2004).

## 3 The Coordination Games

### 3.1 Three-Allocation Games

In the Three-Allocation Game Player 1 and 2 separately, simultaneously, and without pre-play communication choose one of three feasible money allocations (in British Pounds, £):

- £X for Player 1 and £X for Player 2

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<sup>3</sup>A recent working paper, Faillo et al. (2015), consider coordination under different payoff structures and one of their games has payoffs that are qualitatively similar to some of our three allocation games (although their frame differs). Faillo et al are primarily occupied with testing team versus level-k reasoning across a variety of different games. Moreover, the authors do not make the same game comparisons between two and three allocation games that take centre stage in our paper, and that allow us to assess the extent to which dominated equality is salient because it acts as a compromise between unequal outcomes.

- £6 for Player 1 and £7 for Player 2
- £7 for Player 1 and £6 for Player 2.

We refer to these allocations as  $(X, X)$ ,  $(6,7)$ , and  $(7,6)$ . If the players choose the same allocation, then the allocation is paid out. If the players choose different allocations, neither player receives any money.<sup>4</sup> We assume throughout this section that players are self-interested.

If we for simplicity denote the strategy of choosing the first (second) [third] of these money allocations as A, B, and C, respectively, then this game can be represented as a game in strategic form, with the payoff matrix shown in Table 1, where Player 1 (2) is the Row (Column) player.

	A	B	C
A	X, X	0,0	0,0
B	0,0	6,7	0,0
C	0,0	0,0	7,6

Table 1: Strategic form of the Three-Allocation Game

We can think of this game as representing, in an admittedly highly simplified form, a real world coordination situation where two decision makers need to agree on an allocation of money (or more generally a joint course of action, possibly involving several production and transfer divisions), chosen from a menu of three possible allocations. They earn money if and only if they select the same option. An agreement on B or C imply unequal earnings (B is preferred by Player 2, and C is preferred by 1), while equal earnings can be obtained by agreeing on outcome A. We refer to A as the 'compromise'. If  $X \leq 6$ , the compromise outcome is dominated.

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<sup>4</sup>Our game can be interpreted as a 'mini Nash demand game' (Nash (1953)). Similar games are studied in van Huyck et al. (1992) and van Huyck et al. (1995), but, crucially, in those studies the equal outcome is efficient.

**Two Applications** The research presented in this paper could be applied to a number of settings. Suppose, for example, that two siblings inherit two paintings. Each sibling prefers the same painting. However, they are liquidity constrained, so the sibling that gets the preferred painting cannot compensate the sibling that gets the other painting. They may agree to get one painting each (cf. outcomes B or C in the game), or they may sell them and divide the proceeds equally (outcome A). Depending on how marketable the paintings are, the proceeds from the sale may be quite low, and so outcome A may be dominated by B and C, where payoffs are unequal. As another application, consider a couple who must agree on how each should allocate their time between earning money and doing household work. Suppose both prefer one of these activities over the other (this could be due to each having a comparative advantage in the same activity). They can agree that they should both have jobs and share household work (Option A), or that one of them should spend most of his or her time earning money and the other should be at home; if some transfers of money take place afterwards, this can give rise to outcomes such as B or C that dominate (A,A).

Assume  $0 < X < 7$ . Any outcome where both players choose the same allocation is then a pure strategy Nash equilibrium, so the game has three such equilibria, (A,A), (B,B), and (C,C). The (B,B) and (C,C) equilibria are efficient, while (A,A) is dominated when  $X \leq 6$ . Note that the game with strategies B and C only is a battle of the sexes game. There is also a mixed equilibrium where players randomize over strategies B and C. Here each player chooses his or her preferred allocation with probability  $7/13 \approx 0.54$ , and the expected payoff to each player in this equilibrium is  $42/13 \approx 3.23$ .<sup>5</sup> It follows that when  $X$  exceeds 3.23, the equal earnings equilibrium Pareto dominates the mixed equilibrium.

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<sup>5</sup>There is another mixed equilibrium where players randomize over all three allocations; here each player chooses A with probability  $42/(13X + 42)$  and the least preferred unequal allocation with probability  $7X/(13X + 42)$ . Each player's expected payoff in this equilibrium is strictly below the one in the equilibrium where players mix over B and C. There are also mixed equilibria with randomization over the equal and one of the unequal outcomes. For example, if players mix over A and B, then Player 1 chooses the equal allocation with probability  $6/(6 + X)$  and Player 2 chooses the equal allocation with probability  $7/(7 + X)$ . Note that all the mixed equilibria involving the equal allocation have the feature that the lower the earnings  $X$  in the equal outcome are, the *more* likely players are to choose the equal outcome. As we shall see, the data does not support this prediction.

### 3.2 Two-Allocation Games

The Two-Allocation Game is identical to the Three-Allocation Game, except that there are only two feasible allocations:

- £ $X$  for Player 1 and £ $X$  for Player 2
- £6 for Player 1 and £7 for Player 2.

Denoting these strategies as A and B, and again letting Player 1 (2) be Row (Column) player, the strategic form is shown in Table 2.<sup>6</sup>

	A	B
A	X, X	0,0
B	0,0	6,7

Table 2: Strategic form for the Two-Allocation Game.

As before, when  $X > 0$  both (A,A) and (B,B) are equilibria. If  $X \leq 6$  only (B,B) equilibrium is efficient. If  $6 < X < 7$ , both equilibria are efficient.

The Two-Allocation Game differs by design from the Three-Allocation Game in that there is no longer a coordination problem in selecting among efficient and unequal earnings equilibria.<sup>7</sup>

It follows that if, for a given  $X$ , behavior in the Three and Two Allocation Game differs significantly, the difference can be attributed to the absence or presence of such a coordination problem. Intuitively, in the Three-Allocation Game a player may decide to choose the equal allocation (and hope that the other person reasons the same way) because he or she fears that they may otherwise fail to coordinate on one of the two efficient

<sup>6</sup>If we return to the examples given earlier, the deceased person's will now specifies that the siblings can only decide between a certain pre-specified division of the paintings, or selling both and sharing the proceeds. In the household setting, one person is prevented from working full-time in the labor market.

<sup>7</sup>A referee pointed out that a more fundamental difference is that the number of strategies differ. We agree that this could affect behavior per se, for example by making it more or less likely that a player will use a heuristic or rule of thumb. This could be investigated in future work.

equilibria. The person has no reason to fear this in the Two-Allocation Game. If subjects prefer to settle on an efficient but unequal outcome instead of an equal and dominated one, then we would expect more subjects to choose an unequal allocation in the Two than in the Three-Allocation game since it is much easier for them to settle on an efficient allocation in the former than in the latter game.

## 4 Experimental Logistics

The experiments were conducted at the Centre for Behavioural and Experimental Social Science, at University of East Anglia (Norwich, United Kingdom). In total 380 subjects took part over 21 sessions, with an average of 18 subjects in each session. Each subject took part in only one session, was presented with only one game, and made only one decision. Thus each subject's choice is an independent observation.

Subjects received a hardcopy of the instructions (see Appendix) which were read out by the experimenter. The instructions explained that each subject had been matched in a pair as either Player 1 or 2, that each subject had to choose an allocation individually, and that they would only earn money if they chose the same allocation.<sup>8</sup>

After the instructions had been read out, any questions were answered. Subjects then made their decisions, received their earnings from the game (including a £2 show up fee), and left the lab. As previously mentioned, each subject encountered and made a decision in one game only. A typical session lasted 20 minutes.

## 5 Experimental Treatments

We collected data for games with five different values of  $X$ , and that had either one or two efficient and unequal equilibria (two versus three allocations). These treatment variables were varied independently in a between

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<sup>8</sup>Upon arrival, subjects were randomly assigned a seat number (player ID). This player ID determined the role (1 or 2). Subjects were then informed that they would be matched with another participant in the other role. The experimenters had already determined which Player 1s and 2s would be matched, but the participants did not know this. Thus, although the matching procedure was deterministic and decided a priori, it was from the participants' point of view equivalent to a random matching procedure.



subjects design, so there are ten treatments. The parameter  $X$  (measured in British pounds) took one of the following values: 6.5, 6, 5, 4, and 3.<sup>9</sup>

We ran some additional treatments, in order to assess the robustness of the results from the main treatments.

First, in order to assess the effects of a higher payoff inequality in the efficient equilibria we collected data for a Three-Allocation Game with  $X=5$  and where the unequal outcomes offer £6 to one and £9 to the other player, as opposed to £6 and £7 used in the main treatment. We recruited 54 subjects for this game. We also collected data for a Two-Allocation Game with allocations (5,5) and (6,9). 28 subjects took part in this treatment.

Second, in the instructions the equal earnings allocation was always listed at the top (see Appendix). A potential concern is that this could have made the equal allocation more salient, compared to the case where this allocation appeared at, for example, the bottom of the list. In order to measure any order effects we designed two additional treatments, using the  $X=5$  Three-Allocation Games: In the "Equal in Middle" condition the allocations are listed as (from top to bottom) 67, 55, and 76; In the "Equal at Bottom" condition, the allocations appear in the order 67, 76, and 55. We recruited 16 subjects for the first, and 20 for the second treatment.

Table 3 shows all treatments and the number of subjects that took part in each. Each subject took part in only one treatment, and made only one decision.

## 6 Data

### 6.1 Three-Allocation Games

Table 4 shows the data for Three-Allocation Games. For each treatment (columns), and each allocation (rows) we report the percentage of Player 1 and Player 2 subjects who chose that allocation. The expected coordination rate (ECR) is the probability, given the observed behavior, that there is coordination on any of the three allocations.<sup>10</sup>

When the equal allocation is efficient ( $X=6.5$ ), everyone coordinates on it, as has been observed in all the other experiments described in the Introduction. The same is true when equality is weakly dominated ( $X=6$ ).

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<sup>9</sup>At the time of the experiment, £1 equalled \$1.60 or €1.20.

<sup>10</sup>For example, in the game  $X = 4$ ,  $ECR = .529 \times .471 + .294 \times .353 + .176 \times .176$ .

		Value of X				
		6.5	6	5	4	3
Main Games	Three Allocations	16	18	36	34	34
	Two Allocations	14	40	38	18	14
Robustness Checks	Three Allocations, High Payoff Asymmetry	-	-	54	-	-
	Two Allocations, High Payoff Asymmetry	-	-	28	-	-
Order Effect Checks	Three Allocations, Equal in Middle	-	-	16	-	-
	Three Allocations, Equal at Bottom	-	-	20	-	-

Table 3: Treatments and subject numbers.

When  $X=5$ , the (5,5) equilibrium is strictly Pareto dominated by each of the two other outcomes, but is chosen by more than three quarters of Player 1 and 2 subjects. When equality is even less efficient ( $X=4$ ), it remains the modal choice, and about half of Player 1 and 2s continue to choose it. Finally, when equality offers only three pounds ( $X=3$ ), the equal allocation remains the modal choice for Player 1s, and almost a third of Player 2s choose it.

## 6.2 Two-Allocation Games

The data for Two-Allocation Games are shown in Table 5. When  $X=6.5$ , almost everyone chooses the equal allocation. When  $X=6$ , such that the equal outcome is weakly Pareto-dominated, a majority (60%) of subjects now avoid the equal allocation and instead choose (6,7), whereas everyone chose the equal allocation in the Three-Allocation Game. When  $X=5$  an even larger majority of subjects avoid the equal allocation, whereas the opposite was observed in the Three-Allocation Game. When  $X=4$  only one subject chooses the equal allocation, while about half chose it in the

	X=6.5	X=6	X=5	X=4	X=3
Allocation (X,X)	100%,100%	100%,100%	77.8%,77.8%	52.9%,47.1%	47.1%,29.4%
Allocation (6,7)	0%,0%	0%,0%	5.6%,22.2%	29.4%,35.3%	35.3%,29.4%
Allocation (7,6)	0%,0%	0%,0%	16.7%,0%	17.6%,17.6%	17.6%,41.2%
ECR	100%	100%	61.7%	38.4%	31.5%
(N,N)	8,8	9,9	18,18	17,17	17,17

Table 4: Data for Three-Allocation Games. Columns are treatments, and rows allocations. Each cell contains the percentages of Player 1 and 2 subjects choosing the allocation. ECR: Expected coordination rate; N: Number of subjects in the role of Player 1 and 2.

Three-Allocation Game. Finally, when  $X=3$ , almost everyone chooses the unequal and efficient allocation.

### 6.3 Comparing Three and Two-Allocation Games

For each  $X$  we compare the proportions of subjects who choose the equal allocation in the Three and Two-Allocation Games. We find that the difference is strongly significant ( $p < .0001$  for  $X = 6, 5, 4$  and  $p = .0395$  for  $X = 3$ , Fisher's Exact Test, two-sided).

Since the only difference between the games is whether or not there is a coordination problem in selecting an efficient unequal earnings equilibrium, these findings support a hypothesis that subjects in the Three-Allocation Games seek to coordinate on an equal allocation primarily because they wish to avoid the risk of coordination failure in selecting an efficient equilibrium.

### 6.4 High Payoff Asymmetry Treatments

Consider now the two High Payoff Asymmetry treatments. In the Three-Allocation Game we observe that 19 (70%) Player 1s choose allocation (5,5), 2 (7%) choose allocation (6,9), and 6 (23%) choose allocation (9,6). For Player 2 the numbers are 19 (70%), 1 (4%), and 7 (26%), respectively.

	X = 6.5	X=6	X=5	X=4	X=3
Allocation (X,X)	86%,86%	40%,40%	31.6%,15.8%	0%,11.1%	14%,0%
Allocation (6,7)	14%,14%	60%,60%	68.4%,84.2%	100%,88.9%	86%,100%
ECR	77%	52%	62.6%	88.9%	86%
(N,N)	7,7	20,20	19,19	9,9	7,7

Table 5: Data for Two-Allocation Games. Each cell contains the percentages of Player 1 and 2 subjects choosing the allocation. ECR: Expected coordination rate; N: Number of subjects in the role of Player 1 and 2.

The expected coordination rate is 56%. The difference between the number of players choosing the equal outcome in each game is not statistically significantly different (Fisher’s Exact Test,  $p = .47$ , two-sided).

In the Two-Allocation Game we observe that 2 (14%) of Player 1s choose allocation (5,5) and 12 (86%) choose allocation (6,9). The Player 2 frequencies are the same. The expected coordination rate is 76%. More players thus choose the efficient outcome when payoff inequality is 6–9 than when it is 6–7. However, the difference between the number of players choosing the equal outcome in each game is not statistically significantly different (Fisher’s Exact Test,  $p = .53$ , two-sided). These findings suggest that the findings are robust to increases in the payoff inequality in the efficient outcomes.

## 6.5 Order Effect Treatments

We next consider if there are order effects. In the Equal in Middle condition, we observe that 5 (62.5%) Player 1s choose allocation (5,5), 3 (37.5%) chose allocation (6,7), and none chose allocation (7,6). The corresponding Player 2 frequencies are 5 (62.5%), 2 (25%), and 1 (12.5%).

In the Equal at Bottom condition, 8 (80%) Player 1s choose allocation (5,5), 1 (10%) chose allocation (6,7), and 1 (10%) choose allocation (7,6). The Player 2 frequencies are 9 (90%), 1 (10%), and 0 (0%).

A majority of players thus chose the equal allocation regardless of the order with which the options were listed. If we compare the total number of players choosing the equal allocation, we find that there are no

statistically significant differences between the three choice distributions (a Fisher's Exact Test comparing the main data with the data for Middle gives  $p = 0.31$ , two-sided, a comparison between the main data and the data for Bottom gives  $p = .72$ , and a comparison between Middle and Bottom gives  $p = 0.15$ ). Thus we find no evidence of an order effect.

## 7 Connections to Theory

### 7.1 Focal Point Reasoning

In the Three-Allocation Game with  $X \leq 6$ ,  $(X, X)$  is dominated. This property should make it unattractive per se. Nevertheless,  $(X, X)$  stands out because it is the *unique* equal outcome, and the players have no way of selecting  $(6,7)$  or  $(7,6)$  without a risk of coordination failure. This is due to the absence of salient player labels or any other contextual aspect that could help the players to distinguish between the two asymmetric outcomes. Thus, if  $X$  is not too low, both players can (as shown in Section 3.1) expect to earn more money if they choose  $X$  than if they try to coordinate on  $(6,7)$  or  $(7,6)$ .

This focal point based reasoning (see for example Schelling (1960), Crawford et al. (2008), Isoni et al. (2013)), Bardsley et al. (2010), Casajus (2000), Janssen (2001), and Sugden and Zamarron (2006)) predicts that the subjects choose  $(X, X)$  in the Three-Allocation Game when  $X$  is sufficiently large, and that no one will choose a dominated  $(X, X)$  outcome in the Two-Allocation Game, since the latter game does not present subjects with the problem of selecting between two unequal outcomes. More precisely, consider for the Three-Allocation Game the 'reduced' two-strategy game where each player either chooses the  $(X, X)$  equilibrium or mixes over the  $(6,7)$  or  $(7,6)$  outcomes. When  $X$  is sufficiently large ( $X \geq 3.23$ , cf. Section 3.1),  $(X, X)$  is the payoff dominant (Harsanyi and Selten (1988)) equilibrium of this game. The prediction for the Three-Allocation Game is therefore that the experimental subjects select the mixed equilibrium for  $X \leq 3$  and choose  $(X, X)$  for  $X \geq 4$ . Of course, since subjects were not allowed to submit mixed strategies we cannot observe this. A weaker prediction is that the overall attraction of the equal earnings equilibrium should increase in  $X$ , and this is indeed what the data show. When  $X \leq 6$  subjects

are predicted to never choose  $(X, X)$  in the Two-Allocation Game.<sup>11</sup> The data are qualitatively consistent with these predictions.<sup>12</sup>

## 7.2 Other-Regarding Preferences

The equal compromise option can be attractive not only because it offers players a way to avoid a costly coordination failure, but also because players may be inequity averse, as modelled in Fehr and Schmidt (1999) and Bolton and Ockenfels (2000). Note however that a preference for equality would make the compromise outcome relatively more attractive in *both* the two and the three allocation game, so inequity aversion cannot by itself explain the differential salience of the compromise option in the two and three allocation games.

## 7.3 Level-k Modelling

We can also consider to what extent a level-k model (see e.g. Crawford et al. (2013), Crawford et al. (2008), Nagel (1995), and Stahl and Wilson (1995)) can explain our findings from Three-Allocation Games.<sup>13</sup> Let  $X \leq 6$ . Suppose first, as is often assumed (see Crawford et al. (2013)), that the Level Zero (L0) player randomizes uniformly over the three allocations,  $(X, X)$ ,  $(6, 7)$ , and  $(7, 6)$ . This specification cannot explain why fewer subjects choose  $(X, X)$  when  $X$  decreases.<sup>14</sup> For the level-k model to organize the data it is necessary that Level Zero chooses  $(X, X)$  with a suffi-

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<sup>11</sup>When  $6 < X < 7$  both equilibria are efficient. In this case the most salient equilibrium can be taken to be the one offering equal earnings. Thus the prediction is that all (no) subjects choose  $(X, X)$  for  $X > 6$  ( $X \leq 6$ ).

<sup>12</sup>Our finding that a hypothesis based on focal point based reasoning organizes the data well can also be seen as supporting a related hypothesis, known as team reasoning – see Bardsley et al. (2010) and Faillo et al. (2015).

<sup>13</sup>A referee pointed out that any test of a level-k model ultimately requires collecting data on subjects' beliefs about the opponent's choice, and we do not have such evidence.

<sup>14</sup>To see this, observe that a Player 1 Level 1 (L1) type then responds to L0 by choosing  $(7, 6)$ , and Player 2 L1 chooses  $(6, 7)$ . Player 1 L2 consequently chooses  $(6, 7)$  and Player 2 L2 chooses  $(7, 6)$ . Thus only L0s choose  $(X, X)$ , and since this proportion is assumed constant, the model cannot explain the change in the choice frequency of  $(X, X)$ . It is also clear that an assumption that L0 chooses its preferred outcome,  $(7, 6)$  when Player 1 and  $(6, 7)$  when Player 2, does not organize the data for the Three Allocation Game, since L1s and L2s would then never choose outcome  $(X, X)$ .

ciently large probability that is increasing in the value of  $X$ , even though the  $(X, X)$  outcome is strictly dominated. This in turn suggests that the L0 type is either influenced by some preference for equality, or must find it salient to choose  $(X, X)$  because of this outcome's uniqueness and conspicuousness. Such a L0 specification clearly differs from those normally assumed (see Crawford et al. (2013) and Hargreaves-Heap et al. (2014)).

## 8 Conclusion

When a group of subjects need to coordinate their behavior in order to avoid conflict, how focal is a compromise outcome that offers equal but dominated earnings? We experimentally observe that a dominated equal outcome is highly salient as long its payoffs are not too low. We also observe, however, that the salience of a dominated equal outcome significantly depends on whether subjects face a coordination problem in selecting among efficient equilibria or not. If there is only a single efficient and unequal earnings equilibrium, then subjects are much less likely to settle on an equal and dominated equilibrium. This suggests that the salience of equality in coordination situations is mainly due to the fact that its uniqueness and conspicuousness (Schelling (1960)) offers players a way to reduce the strategic uncertainty and avoid a costly coordination failure.

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## Appendix: Instructions

*This Appendix shows the instructions used for the Three-Allocation Game with  $X=5$ . The instructions for the corresponding Two-Allocation Game were identical, except that there were only two allocations (i.e., the line describing allocation (7,6) had been removed).*

Your ID number: \_\_\_\_\_

Thank you for taking part in this experiment. Please do not communicate with any other participant. You will be matched with one of the other participants. The two of you will play anonymously. That is, no one will learn who they are matched with.

One of you will be Player 1, and the other will be Player 2. If your ID number is odd (1,3,5 etc), you are Player 1. If it is even (2,4,6 etc), you are Player 2. In your case:

Your ID is an \_\_\_\_\_ number, so you are Player \_\_\_\_\_, and the participant you are matched with is Player \_\_\_\_\_.

Your earnings will be paid to you in cash at the end of the experiment. In addition, you receive £2 for taking part in the experiment.

What must Player 1 and 2 do?

Each person chooses one of the following three allocations of money between Player 1 and 2:

- £5 for Player 1 and £5 for Player 2
- £6 for Player 1 and £7 for Player 2
- £7 for Player 1 and £6 for Player 2

How to earn money:

If both persons choose the *same* allocation, then each person gets the money that the chosen allocation says he or she should get. But if they choose *different* allocations, each person gets no money (= £0). It is therefore in the interest of both persons to choose the same allocation.

Are there any questions?

Your decision:

Please now think carefully about this, and then make your decision by circling or underlining the allocation you choose.

When you are done, please turn this sheet face down and wait for one of the experimenters to come and collect it.

We then calculate your money earnings, and you will receive them shortly afterwards. Thank you for participating in this experiment.