



Equity and bargaining power in ultimatum games[☆]



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ABSTRACT

This paper studies the extent to which offers and demands in ultimatum games are consistent with equity theory when there is a joint endowment to be distributed. Using a within-subject design, we also investigate the importance of the bargaining power by comparing the subjects' behavior in the ultimatum and the no-veto-cost game, which differ in the possible cost of responders rejecting the proposers' offer. Our findings suggest that proposers are willing to reward responders for their contribution to the joint endowment in any of the two games. As for responders, their behavior is consistent with equity theory only in the no-veto-cost game (in which a rejection is costless for them) when the game is first played. When the no-veto-cost game is played after the ultimatum game, we observe that the responders' demands usually exceed their contribution to the endowment. Finally, this paper reports evidence that the ultimatum and the no-veto-cost game differ in terms of efficiency and rejection rates.

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1. Introduction

A team's members all contribute to the production of a joint endowment. Because there might be some external factors influencing the size of the endowment, complete contracts that specify how to distribute the total production are not always feasible ex-ante, and negotiation needs to take place ex-post (Hackett, 1993). In this setting, two elements likely to affect the bargaining outcome are (i) the extent to which subjects care about equity (i.e., their willingness to incur efficiency losses to implement an agreement that reflects their contribution to the joint endowment) and (ii) differences in the bargaining power of subjects (i.e., whether or not their payoffs will be contingent on the bargaining outcome). This paper is an attempt to study how these two elements affect bargaining behavior by using a laboratory experiment.

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In our design, the bargaining phase is preceded by the production of a joint endowment. The value of the endowment depends not only on the subjects' performance in a real effort task, but also on external factors beyond the subjects' control (Konow, 2003; Frohlich et al., 2004; Cappelen et al., 2007, 2010; Almas et al., 2010; Rodríguez-Lara and Moreno-Garrido, 2012). Our aim is to test if equity considerations are relevant so far as subjects' decisions in the bargaining phase are affected by their performance in the production phase. We assess the importance of bargaining power by considering the ultimatum (Güth et al., 1982) and the no-veto-cost game (Fellner and Güth, 2003), which differ in the cost for responders to reject the proposers' offer. More specifically, whereas disagreement results in no payoffs for either the proposer or the responder in the ultimatum game, the proposer is the only one affected in the no-veto-cost game when her offer is rejected by the responder.¹

If subjects care about equity and do not obtain their contribution to the joint endowment, this may result in disagreement and generate efficiency losses, as a result. The discrepancy between what one contributes and what is obtained in return is indeed a major reason for conflict, as has been demonstrated by many revolts, strikes or legal disputes, etc. Arguments of equity were put forward by players during the 2011 NBA lockout that delayed the start of the season with important economic consequences (Coates and Humphreys, 2001). More recently, supporters of the separatist movement in Catalonia (Spain) decided to defy the Spanish Government and initiate the process of independence by declaring that "*Catalonia contributes much more to the Spanish treasury than most regions, but get disproportionately less in return*".² As for the importance of bargaining power, one instance in which this seems to affect the subjects' willingness to implement an agreement reflecting their contributions would be the distribution of TV rights in La Liga. Here, clubs negotiate their own TV contracts and the 'big two' football clubs (Real Madrid and Barcelona) take together about half the money.³

Although the importance of equity and bargaining power should be clear from previous discussion, there currently exists no systematic investigation of how both elements affect behavior in bargaining games when there is a joint endowment to be distributed. Our paper pertains to recent research on fairness that studies behavior using games with production. Using evidence from dictator games, Konow (1996), Frohlich et al. (2004), Cappelen et al. (2007, 2010), Almas et al. (2010) or Rodríguez-Lara and Moreno-Garrido (2012), among others, identify a non-negligible fraction of dictators that rely on equity theory in distributional problems. This is in line with recent experimental evidence using impartial observers (Fischbacher et al., 2012; Luhan et al., 2014), and recent findings in ultimatum games that highlight the importance of the equity principle when the endowment to be divided is not a windfall but produced by participants (Gächter and Riedl, 2005, 2006; Königstein, 2000; Gantner et al., 2001; Fischbacher et al., 2012; Bediou et al., 2012; Franco-Watkins et al., 2013; Feng et al., 2013).⁴ One common feature in this literature is the existence of entitlements over the endowment to be distributed. In Gächter and Riedl (2005), Gächter and Riedl (2006) these entitlements are determined by performance in a quiz, while the size of the endowment depends on individual choices (rather than on subjects' performance in a real effort task) in Königstein (2000) and Gantner et al. (2001). The closest paper to ours, then, is Fischbacher et al. (2012), where subjects have to answer one question to determine the size of the joint endowment.⁵ Fischbacher et al. (2012) highlight the importance of equity in bargaining games using evidence from an ultimatum game and a dictator game in which a third party distributes the joint production. We complement their findings by looking at the importance of bargaining power when subjects may receive asymmetric payments in case of disagreement.

Our within-subject design is suited to capture the interplay between equity concerns and the power to influence the final outcome when one of the players is giving or taking away more power in the bargaining process (see Bediou et al., 2012; Feng et al., 2013; Hennig-Schmidt et al., 2013; Ubeda, 2014; Rustichini and Villeval, 2014, or Ridinger, 2015, for other within-subject studies).⁶ While other studies investigate how outside options influence bargaining behavior (Ciampaglia et al., 2014; Hennig-Schmidt et al., 2013; Anbarci and Feltovich, 2013; Ridinger, 2015), we consider a setting in which the joint endowment to be distributed depends on the subjects' performance in a real-effort task, thereby using a framework in which equity theory can be tested directly. The study of the bargaining power in games with production relates our paper

¹ This game is inspired by Suleiman (1996) where the endowment to be shared is decreased by $\delta \in [0, 1]$ after a rejection. The δ -ultimatum game has been useful to study all the intermediate situations between the ultimatum game ($\delta=0$) and the dictator game ($\delta=1$). The no-veto-cost game in Fellner and Güth (2003) makes $\delta=0$ for the proposer and $\delta=1$ for the responder. In the impunity game (Bolton and Zwick, 1995), the proposer always keeps the share she decided to keep for herself. Güth and Kocher (2014) summarize some recent findings in these variants of the ultimatum game.

² See the article in The Guardian: <http://www.theguardian.com/commentisfree/2013/sep/10/spain-catalonia-independent-referendum> (Last accessed March 2016).

³ The matches of Real Madrid and Barcelona are really the ones sought after by TV companies in Spain. In the past, the clubs have threatened to run away from La Liga and commence a competition with other European clubs if they do not have a financial advantage in the share of TV rights. Thus, the two clubs have drawn the attention to the fact their earnings would not be much affected if there were a disagreement.

⁴ Along similar lines, García-Gallego et al. (2008) show that behavior in the ultimatum game is affected by whether or not responders perform a real-effort task after accepting the offer (see also List and Cherry (2000) for the effects of entitlements in ultimatum bargaining). The work of Karagözoğlu (2012) and Konow and Schwettmann (2016) summarize behavior when there is a joint endowment to be distributed. See Conte and Moffatt (2014) and Moffatt (2015) for the economic modeling of social preferences and fairness ideals and Elster (1989), Miller et al. (2011) or Birkeland and Tungodden (2014) discuss how the existence of different fairness motivations can result in disagreement.

⁵ Importantly, subjects may be informed about the correct answer to the question in their design. The opportunity of allowing subjects to study the answer of some questions is interpreted as the possibility of education in Eisenkopf et al. (2013).

⁶ The FIFA (International Federation of Association Football) has recently sanctioned some clubs with a transfer ban that disallows them to make any signings. This decision has modified the bargaining power of the sanctioned clubs, whose situation resembles the no-veto-cost game described above. In the presence of the transfer ban, disagreement with a football whose contract is about to expire would have different costs for the footballer and the sanctioned club: while the footballer can still sign a contract with another club, the sanctioned club will not be able to replace the footballer.

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