

International Ultimatum Bargaining Game on Dividing up an Inheritance Successfully - Difference between Germany and the United States

Marc Piazzo¹
University of Applied Sciences Kaiserslautern

We conducted a three-person Ultimatum Bargaining Game with more than 500 US and European participants. They were asked to split up an inheritance of 1,200 EUR between them. In our basic version the first person proposes one out of 18 split-ups, the second person has the right to accept or reject the proposal, and the third person has no rights at all. As proposer, 42 % vote for an Equal Split, only 9 % for the Homo Oeconomicus. As respondent, the notions of fairness and inequality aversion dominate decision making. US-Americans are more equality oriented than Europeans. Various characteristics of the participants are found to be significant.

INTRODUCTION

In December 2009, we conducted an international research project on human behavior and decision making. We invited students from University of the Incarnate Word (US) and the University of Applied Sciences Kaiserslautern (Germany) in classes and through the internet as well as the general public via newspaper articles to participate in a so-called *Ultimatum Bargaining Game* (UBG). The inheritance of aunt Louise in the amount of 1,200 EUR – app. 1,600 USD - was to be split up between three beneficiaries.

Three randomly selected participants slipped into the roles of the beneficiaries – Andy, Berta and Carlos. Due to the will of aunt Louise, the inheritance is to be divided up according to the following rules: **Andy** has the right to propose the distribution of the 1,200 EUR. **Berta** can accept or reject this proposal. She therefore has the right to veto **Andy's** proposal. If **Berta** accepts **Andy's** proposal, the total amount will be split according to the proposed distribution. If **Berta** rejects **Andy's** proposal, none of the three will receive any money. It will all go to charity, or like in our experiment, three other beneficiaries are to be selected randomly. **Carlos** can neither influence the proposal of distribution nor its acceptance or rejection.² By introducing a third player, the responder (**Berta**) reveals how she cares not only for her own well-being, but also for the well-being of our dummy player **Carlos**.³ In our basic version of the experiment, **Andy's** role as proposer is auctioned off.⁴ All participants were asked to place a bid for their right of proposing.⁵

This basic structure of the experiment was extended by including a second version, in which the role of the proposer was to be selected randomly – only after – the proposer decided on his proposal. The

division of the actual funds is based on the basic version of our three-person *Ultimatum Bargaining Game*.

We were hoping that our research would provide answers to the following questions: (1.) What role does fairness and rationality play, when people got to make a decision on splitting up a considerable amount of funds? (2.) How do participants evaluate different kind of proposals – again taking fairness and rationality into account? (3.) Are there significant differences in human behavior between US-Americans and Europeans?

Basic microeconomic theory in decision making usually assumes that economic agents behave rationally – no matter if they are employees, managers, politicians or students. The concept of a rational decision maker is called *Homo Oeconomicus*. The decision maker aims to maximize his financial wealth or personal utility.⁶ Though, past economic experiments – in the field and in the laboratory – have shown that many participants behave in a reciprocal way (*Homo Reciprocans*). They honor friendly behavior and punish non-cooperative behavior. Often, they are even willing to accept financial losses when punishing non-cooperative behavior.⁷ In our experiment, punishment is reflected by the loss of their proposed share of inheritance.

After a brief introduction on *Ultimatum Bargaining Games* and some experimental results, we sum up the characteristics of our participants in chapter 2. The basic results on the choice of proposals and their acceptances ratios are presented in chapter 3. A comparison with previous field experiments is included. In chapter 4 we discuss the different perceptions of our US- versus European participants. These perceptions seem to level off, the moment the proposer is randomly selected (Chapter 5). By estimating maximum likelihood probit regression models, we filter out the determinants of proposing and accepting the **Homo Oeconomicus** proposal (Chapter 6). Our main findings are presented and discussed afterwards.

ULTIMATUM BARGAINING – INTRODUCTION AND SOME EMPIRICAL RESULTS

The *original Ultimatum Bargaining Game* consists of two subjects that are assigned the role of proposer and receiver. Both of them bargain over a certain sum of money (e.g. 10 USD). The proposer offers a division of this amount of money the responder can either accept the proposal or reject it. If the responder rejects it, then both subjects are left with a payoff of zero. Assuming that both decision makers are self-interested in the sense that they prefer more money to less or any amount to nothing at all, one would expect the following behavior:

The responder should accept all positive offers – no matter how small they are.
The proposer – keeping the behavior of the responder in mind – is going to propose the smallest monetary offer possible.

In the case of the above example of 10 USD and discrete sizes of US-Dollar offers, the proposer should offer a split of 9:1 USD (proposer : responder), which the responder would accept willingly. Generally, in almost all kind of experiments – in the field, the laboratory and the classroom⁸ – as well as in different cultural and economic environments, the proposer offers significantly higher monetary awards. The bulk of proposers in industrial countries offer 40-50 percent of stake size. In field experiments in 17 small-scale societies, all mean offers were within a range of 26 to 58 percent (Henrich, et al., 2001, p. 74).⁹ While the responder in industrial societies rejects offers below 20-30 percent with a probability of around 0.5. The rejection of positive minor offers indicates that subjects view them as unfair (Fehr & Gächter, 2000, p. 161). Interestingly, in some of the small-scale societies rejection rates were “extremely rare”.¹⁰ The 70 % haircut on Greek government debt for private investors was prerequisite for the 2nd financial aid package in 2012. According to Erber (2012) it resembles a macroeconomic ultimatum bargaining game almost perfectly.

One simple variation of the ultimatum bargaining game is the *dictator game*. As the responder has no say at all, the proposer (= dictator) should keep all the money at stake. Experiments show that the offers

by the proposer are heterogeneous and usually positive in value (average 2.4 USD at a 10 USD stake). Though, offers in dictator games are considerably less than in ultimatum games (average of 4.7 USD). Proposers seem to care - a bit at least - about equity. Since offers are higher in ultimatum experiments, the responders' concern for equity seems to drive the larger offers in UBGs.¹¹ As proposers have strong expectations in the responders' beliefs of fairness, they are tilted towards proposing (near) equal splits (Bahry & Wilson, 2006, p. 51).

Fehr et al. (2006, p. 1913) extended the dictator game by introducing a third party with no rights attached. The proposer (dictator) can choose three alternative options for payoffs. While his payoff remains fixed, the payoffs for the two other parties vary. The dictator can redistribute income from the richer party to the poorer one, thereby reducing (but not eliminating!) inequality. The redistribution comes with a loss of efficiency as total payoff drops when reallocation is enforced. They implement two different treatments, first one in which the proposer receives a middle income, and a second one in which he is the poorest of the three parties. The authors find that dictators studying economics and management were significantly less inequality averse than non-economists. On the other hand, female proposers rather redistribute payoffs towards a more equal allocation; political alignment had no influence at all.¹²

Similarly, one can also extend the two-person ultimatum game by integrating a third party that is truly powerless. In our case, it is Carlos that forces the proposer as well as the responder to consider additional social motives when formulating their decision. The *three-person ultimatum game* helps us to analyze how the responder's decision - accepting vs. rejecting a proposal - depends on his own share and on the share allocated to the "hostage" Carlos.¹³ In this case the relative payoffs are focused on. A participant's utility declines significantly as monetary payoffs become sufficiently inequitable. Though, the distaste is larger for disadvantageous inequality than advantageous inequality (Fehr & Schmidt, 1999). As inequality rises utility declines, but it drops faster when the responder receives a smaller portion of the pie. In a small scale UBG experiment with a third party receiving separate payoffs, responders were concerned with disadvantageous inequality. Their rejection rate to an offer of 44 % of total pie rose up to 20 % when the "hostage" was to be rewarded more than twice the amount the responder received from the proposer.¹⁴

At the same time the proposer is also influenced by relative payoff share. In their Equity Reciprocity Competition (ERC) model Bolton & Ockenfels (2000) suggest that the proposer will offer one third of the pie to the responder, and a significantly smaller amount to the powerless third party. Besides his own payoff, the proposer cares for his relative share compared to the two other parties combined. And he does not expect a rejection by the responder when he only offers a small share to the powerless third party (Güth, et al., 2007, p. 451).

Kagel & Wolfe (2001) extended the experiment by offering different positive as well as negative consolation prizes to the powerless third party, if the responder rejects the payoff proposal. Even considerable positive consolation prizes, which thereby lead to a disadvantageous inequality for the responder, tend not to influence his or her rejection rate. Negative consolation prizes also had no significant impact on rejection rates. Overall, inequality resulting from an intentional action by a proposer's low offer is treated differently from unintentional income inequality between the responder and the "hostage" as a result of rejecting the offer.¹⁵

In their newspaper experiment on a three-person UBG Güth et al. (2007, p. 453) limited the number of possible proposals for their total amount of 1,200 DM to eighteen, where:

$a \in \{0, 200 \text{ DM}, 400 \text{ DM}, 600 \text{ DM}, 800 \text{ DM}, 1,000 \text{ DM}\}$,
 $b, c \in \{100 \text{ DM}, 200 \text{ DM}, 300 \text{ DM}, 500 \text{ DM}, 600 \text{ DM}\}$, and
 A proposes a vector (a, b, c) with $a + b + c = 1,200 \text{ DM}$.

They received 4,869 valid submissions, which is about 5/1,000 % of total readers. **Equal split** was the modal offer, with 57 % of all offers. The second and third most frequent proposals were the **Power Coalition** (600 DM, 500 DM, 100 DM) with 16 % and the **Homo Oeconomicus** (1,000 DM, 100 DM, 100 DM) with 8 % respectively. At the same time, almost all responders accepted the **Equal Split**,

dropping to 2/3 for the **Power Coalition** and slightly more than 1/5 for **Homo Oeconomicus**. In their econometric analysis, Güth et al. (2007, p. 459f) showed that female participants chose the **Equal Split** significantly more often than males, older subjects accepted fewer proposals, whereas academic professionals as well as participants using the internet had higher acceptance probabilities.¹⁶

In 2006, we conducted a newspaper & internet experiment for 12 (hypothetical) tickets to one of the football matches of the FIFA-World Cup in Germany. It resembled the set-up of the three-person UBG by Güth et al. (2007).¹⁷ In addition to the previous study, we asked our participants questions capturing their cognitive skills (“intelligence”). Only as proposers, did economists and male participants behave differently than non-economists and women. Men, economists and more intelligent participants offered more selfish proposals. On the other hand, female responders accepted the most self-centered payoff structure (**Homo Oeconomicus**) more often than men (Piazzolo, 2007, Tab. 5, 6).

Based on the findings of previous empirical studies as well as on the Equity Reciprocity Competition (ERC) model of Bolton & Ockenfels (2000), we derive the following hypotheses for our three-person *Ultimatum Bargaining Game*.

Hypothesis # 1

Due to inequality aversion, we expect most of the proposers to go for an **Equal Split**. This inequality aversion might stem from their personal views.¹⁸ But, it might also be based on their expectation of reciprocal behavior by equality prone responders. The latter will lead to relative low acceptance ratios for the self-interested, but rational **Homo Oeconomicus** split up - in our case €1,000 (A) - €100 (B) - €100 (C). Essentially every responder will accept the **Equal Split**.

Hypothesis # 2

On average, we expect our proposers to take the largest share of the total payoffs for themselves, while the responder is offered a significantly more than the powerless third party. By increasing the offer to the respondent, while reducing the payoff to the “hostage”, the proposer is expected to successfully lure the respondent in accepting a non-equal distribution - like **Power Coalition** €600 (A) - €500 (B) - €100 (C).

Hypothesis # 3a & b

The responder on the other hand is expected to generally accept offer of a third of the pie or more - in our case this is a payoff of “ \geq €400” to **Berta**.¹⁹ As the offer drops to half of the social norm (1/6) or below, almost all responders will reject the offer.²⁰

Hypothesis # 4

Economists are different in their behavior than the general population. They behave more in line with the concept of a rational decision maker (**Homo Oeconomicus**) trying to maximize financial wealth. As the proposer (**Andy**), they would keep more for themselves - while as the responder (**Berta**), they would accept lower offers.²¹

Hypothesis # 5

The German economic system is based on the so-called “Soziale Marktwirtschaft”. It is a rule-based market economy with strong state that intentionally manages the economy in accordance to open and competitive markets as well as with social priorities. When there is market failure, there is social compensation.²² In addition, the tax system is favoring the redistribution of income. In the United States the economic system is much more laissez-faire in nature - with less government interference and a lower profile of the social security system. Redistribution of income is not a major goal of economic policy. Keeping this in mind, we expect US participants to be more self-interested than their German counterparts. In a study with German and Swedish students, just as expected the Swedes were more inequality averse or fairness prone than the Germans.²³

Hypothesis # 6a-d

We expect some of the socio-demographic factors to influence the decision taken - either as proposer or as responder.

- *Gender* - female participants tend to be more inequality averse - thereby, offering more and rejecting smaller amounts more easily.
- *Age* - older participants also seem to be more inequality averse. The older, sometimes post-war generation might have a stronger moral obligation to share equally. In addition, wealth increases with age, therefore the stakes at hand are relatively minor. Therefore, rejecting a seemingly unfair payoff structure financially does not hurt them much (Güth, et al., 2007, p. 465).²⁴
- *Students* - there is some empirical indication by Güth et al. (2007, p. 463) that the acceptance rates for the **Power Coalition** as well as **Homo Oeconomicus** are higher for students than non-students.
- *Intelligence* - we expect participants with more pronounced cognitive skills, based on the simple cognitive reflection test (Shane, 2005), to better understand the concept of rationality and therefore vote more often as proposers for the self-interested **Homo Oeconomicus**.

In our recent experiment we asked the participants on assessing their risk proneness as well as their willingness to pay for the role of the proposer Andy. We assume that participants willing to take more risks would go for the **Homo Oeconomicus** - thereby, gambling for the highest stake at hand (€1,000). Since the role of the proposer was auctioned off, higher bids - half of which were deducted from the payoff for Andy only - should be submitted by self-interested participants. In addition, the participants had to make their decisions without knowing the roles they were deciding for in advance. Due to the random assignment of roles, we expected the likelihood of **Equal Split** as proposed by Andy to rise significantly. At same instance, acceptance ratios for all proposals should increase as the proposer did not know in advance that he or she is making a proposal (ex post random selection process).

Similar to Güth et al. (2007), our own experiment is set outside the laboratory and classroom. The appealing feature of an experiment run in public via newspaper and the internet is that one can gather a more diverse and larger subject pool. The participants vary by several socio-demographic factors like age, gender, profession and occupation - all of which might influence the distribution of inequality aversion. There are costs attached to a public experiment - the most obvious is the selection bias depending on who we were able to address through the newspaper articles in two German regional outlets (readership of app. 40,000) and the internet - mainly university associates (staff, students as well as their friends and relatives). Though, one can anticipate self-selection also for lab experiments, as students are asked to participate on a voluntary base. There might be a critical notion that with lab experiments, the experiment is not known in advance, while our experiment is published in detail beforehand. Since we expected participation to be greatly discouraged, if no one knew what we (they) were up to, we accepted the drawback on the control of the experiment.²⁵ For reasons of comparison, we used exactly the same vector of possible payoff variations as Güth et al. (2007). Also, as stakes seem to matter (Andersen, et al., 2011, p. 3428), we stuck with relatively high payoffs for a lucky few ones by introducing a lottery for determining three beneficiaries.²⁶

CHARACTERISTICS OF OUR PARTICIPANTS

Out of 520 participants, 509 decision sheets were valuable. This is the highest rate of participation for our internet experiments so far. The majority of participants (43 %) live within 100 km of Kaiserslautern, while another 20 % are from other regions in Germany. Almost one third of all participants are US nationals.²⁷ On average, the participants are 29.5 years old – the youngest being 10 and the oldest 76. The relative low average age is due to the fact that just more than half of our participants are still studying at a university. Less than a third are female, while half of the participants are business or economics majors (*Table 1*).

There are several differences in characteristics of participants from **Europe**²⁸ and the **United States**: less females in Europe (25 % vs. 51 %), a larger US-share of highly educated participants (27 % with Master degrees & Ph.D.s vs. 18 %) as well as a larger share of US-participants with a background in business & economics (57 % vs. 47 %). On the other hand, almost one fifth of our German participants have a background in engineering (only 4 % in the US). In addition to our experiment, everyone participated in a simple test of intelligence as well as in describing his or her personal risk preference. Americans seem to be more risk prone, while they underperformed in the cognitive reflection test.²⁹

TABLE 1
CHARACTERISTICS OF PARTICIPANTS

n = 509		Percentage			Percentage	
Age	below 21	11.6	Education	Ph.D.	6.5	
	21 to 25	32.4		University Master	14.9	
	26 to 30	25.7		University of Applied Sciences degree	13.6	
	Mean 29.4	31 to 40		15.3	Bachelor	13.9
	StdDev 10.3	41 to 50		9.3	High School Diploma	46.6
	above 50	5.5	Middle School	3.1		
Gender	Female	32.8	No degree	1.4		
	Male	67.2				
Occupation	Self-employed	4.7	Field of Study	Management/Economics	50.7	
	Government	4.9		Engineering	13.6	
	White collar worker	28.3		Natural Sciences	8.4	
	Blue collar worker	2.4		Other	18.9	
	Student	52.7		Non-University	8.4	
	In school	2.9				
	not employed	3.3				

Coding: Occupation - Self-employed (6) to not employed (0.5); Education - Ph.D. (7) to No degree (0.5); Field of Study - Management/Economics (4) to Non-University (0.5).

Compared to our previous study (Piazolo 2007) with 95 % German participants there are no major difference in the characteristics of participants; there were just slightly less student (48 %) and female (28 %) participants. Half of the subjects were economics or management majors. In Güth et al. (2007) the participants were significantly older (mean age 40.6), with a substantial share of non-academics (24.2 %) and 18.5 % being university students. Almost all public newspaper and internet experiments attract men more often than women - usually around and above 2/3 of all participants are male.³⁰ Compared to previous studies, the distinct feature of our study is its international appeal as more than 36 % of all participants are of non-German decent.

LIST OF PROPOSALS AND DECISION MAKING

Andy and Berta had to choose from 18 individual proposals presented in *Table 2*. First, each participant had to select one proposal in his or her role as Andy. Afterwards, they slipped into the role of Berta. Here, they had to decide to either accept or reject each of the different 18 proposals - columns 7 & 8. In the last column to the right, we made use of the previous acceptance rates for each proposal to calculate the expected payoff for Andy. For putting our results into perspective, we added the information on the main findings of two previous studies on the left hand side of *Table 2*.

TABLE 2
CHOICE OF PROPOSALS AND ACCEPTANCE RATIOS (ROLE KNOWN)

Güth et al. (2007) n = 4,849	Piazolo (2007) n = 381	Internet Experiment on 1,200 EUR							expected Payoff for Andy (EUR)
		All participants n = 509	Andy's Choice	proposals for split up			Berta's reaction		
				Andy	Berta	Carlos	accept	reject	
			0.20%	0	600	600	78%	22%	0
			0	200	400	600	60%	40%	120
			0.79%	200	500	500	81%	19%	162
			0	200	600	400	82%	18%	164
			0	400	200	600	32%	68%	128
			0	400	300	500	42%	58%	168
56.8% (97%)	42% (97%)	Equal Split	42.04%	400	400	400	95%	5%	380
			5.50%	400	500	300	84%	16%	336
			2.75%	400	600	200	81%	19%	324
			0	600	100	500	24%	76%	144
			0	600	200	400	30%	70%	180
			4.52%	600	300	300	50%	50%	300
			10.81%	600	400	200	64%	36%	384
15.9% (64%)	12% (92%)	Power coalition	17.87%	600	500	100	69%	31%	414
			0.20%	800	100	300	24%	76%	192
			1.38%	800	200	200	32%	68%	256
			5.30%	800	300	100	39%	61%	312
8.3% (22%)	14% (39%)	Homo Oeconomicus	8.65%	1,000	100	100	25%	75%	250
			<i>(Acceptance ratios Average inheritance per person of Berta)</i>			<i>in EUR</i>			
				543	391	266			
				<i>Average Bid for of Andy</i>			251		

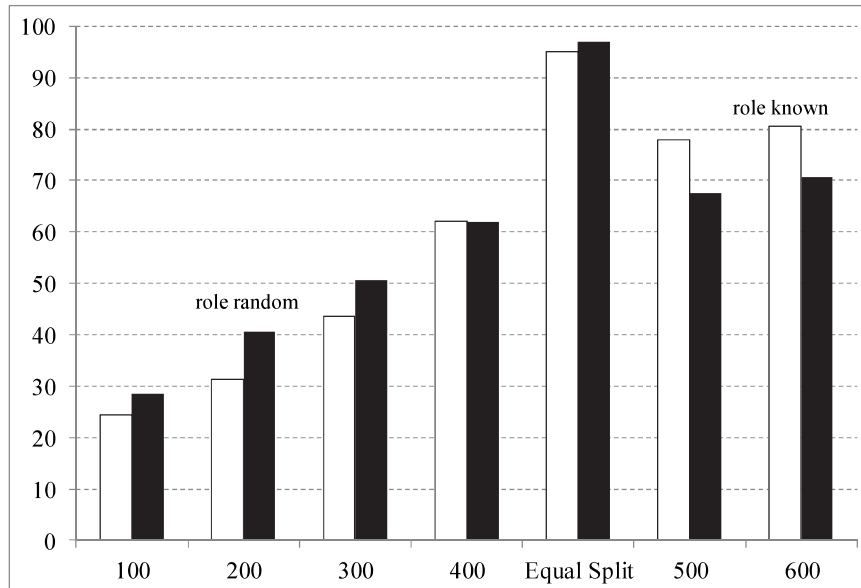
Andy – the Proposer (All Participants)

Most of our participants (42 %, third column in *Table 2*) propose a fair and **Equal Split** of 400 EUR for each of the beneficiaries. The second most important proposals are the so-called **Power Coalition(s)** with 18 % and 11 % of the votes: **Andy** and **Berta** both profit from agreeing bilaterally on a reduced inheritance of **Carlos**, as the latter has no rights at all. Only 8.5 % of our participants propose a split up that leaves **Andy** with the highest payoff possible (1,000 EUR), while **Berta** and **Carlos** only get 100 EUR each. This is the proposal that reflects a profit maximizing **Homo Oeconomicus** the closest. Half of all proposals were either not chosen at all or by less than 1 % of the participants, which was also true for the studies by Güth et al. (2007) and Piazolo (2007). In the newspaper experiment by Güth et al. (2007) a significantly higher share of participants proposed the **Equal Split** (57 %), while the shares for the **Power Coalition** as well as for **Homo Oeconomicus** were almost the same.

Based on the roles with the various rights attached, it is not very surprising that the average financial sum proposed for **Andy** is more than twice the amount for the powerless **Carlos** (543 EUR vs. 266 EUR).³¹ In an experiment by Kagel & Wolfe (2001: 213), the proposer reserved 44 % to 48 % of total payoff to himself. Our own empirical findings fit Bolton & Ockenfels's (2000) Equity Reciprocity Competition model very well: 1/3 of the stake going to the responder, significantly less to the hostage (22 % of the total amount) and the largest stake remaining with the proposer (45 %).

Summarizing, we find empirical support for a strong inequality aversion (*hypothesis #1√*) as a relative majority proposes the **Equal Split**. While the responder is offered significantly more than the powerless third party, the proposer - on average - allocates the largest share to himself (*hypothesis #2√*).

FIGURE 1
AVERAGE ACCEPTANCE RATIOS BY BERTA (PERCENTAGE, ALL PARTICIPANTS)



Participants know their role in advance (role known). Participants decide first as Andy and as **Berta**, afterwards these roles are randomly assigned to (role random).

Berta – with Veto Power (All Participants)

As responder **Berta**, the acceptance ratio for an **Equal Split** is almost unanimous (*Figure 1*). Only 5 % of all participants rejected the **Equal Split**. On this account, our results are in line with previous studies³² as well as in accordance to expectations (*hypothesis #1√*). For the **Power Coalition** the rate of acceptance drops to 69 % (*Table 2*), while the proposal linked to the concept of **Homo Oeconomicus** is rejected by three quarters of our participants. This reaction is quite irrational, as **Berta** relinquishes an inheritance worth 100 EUR – for the sake of rebuffing Andy’s extremely unfair proposal. Though, our results resemble findings of previous studies in industrial countries (e.g. Güth, et al., 2007).

Matching proposals with acceptance ratios, we calculate the payoffs for **Andy** assuming that he correctly expected the level of acceptance by **Berta**. These expected payoffs are presented in *Table 2* (right hand column). The **Power Coalition**, even though its acceptance rate is relatively low, its’ expected payoff for **Andy** is still the highest of all 18 proposals (414 EUR).³³ So, a super-rational proposer - taking the rejections of **Berta** into account - should not opt for the selfish version of **Homo Oeconomicus**, but rather try to lure **Berta** into accepting a non-equal distribution concerning the “hostage” only.

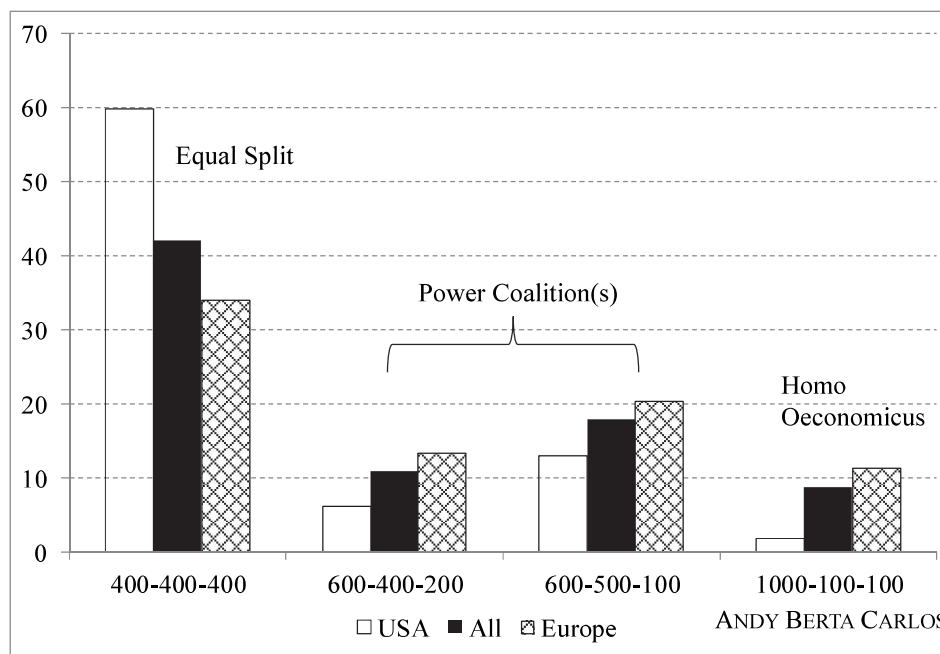
For each payoff for **Berta** (100 EUR to 600 EUR) there are three variations in payoffs for the proposer and the powerless party. *Figure 1* presents the average acceptance ratios of **Berta**. Besides the special case of a fully fair distribution of the inheritance - **Equal Split**, the acceptance ratio increases step-by-step as the amount allocated to herself rises. All of the proposals for which **Berta** receives only 100-200 EUR, are rejected by more than two thirds of all participants. Even 300 EUR are rejected by a majority of participants. Just as in Güth et al. 2007, some participants (10 % - 15%) seem to value a fair distribution above their personal rise in financial wealth - as the acceptance ratios drop for the 500 EUR and 600 EUR cases to approx. 80 %. One could call them the super-equality-prone respondents.

Summarizing, almost all participants accept the **Equal Split** - the fully fair distribution - just as expected (*hypothesis #1*). Low payoffs - up to a share of 25 % - for the respondent are rejected by a majority of participants, while payoffs of 1/3 of the total or more are accepted by most respondents. Both findings therefore give support to the expectations based on the ERC model (*hypothesis #3*).³⁴

DIFFERENT INTERNATIONAL PERCEPTIONS – US-AMERICANS VS. EUROPEANS

Almost one third of participants are citizens of the United States, the remaining being Europeans (mainly Germans). In their role as proposers in *Figure 2*, the US-Americans selected the **Equal Split** at a significantly higher rate than their European counterparts (60 % vs. 34 %). Females also prefer the **Equal Split** and a higher share of Americans are women, but this cannot explain the large discrepancy to full extent.³⁵ Just as many Europeans propose the **Power Coalition(s)** to the **Equal Split**, and even 11 % of them suggested the wealth maximizing version of **Homo Oeconomicus**. For the USA, this rate is a meager 2 %.

FIGURE 2
ANDY'S PROPOSALS FOR 1,200 EUR (PERCENTAGE, ROLE KNOWN)



Number of Participants: USA 162, All 509, and Europe 340.

Due to the profound difference in proposals made by Americans, the average amount of Euros being allocated to **Andy** himself is substantially less than the one by Europeans (461 EUR vs. 576 EUR). For the additional characteristics of our participant, it does not come as a surprise that business and economics majors vote the most for **Homo Oeconomicus** (14 %). Though, economists also suggest **Equal Split** and **the Power Coalition(s)** to a much higher extent (35 % and 31 % respectively) than the purely rational proposal.

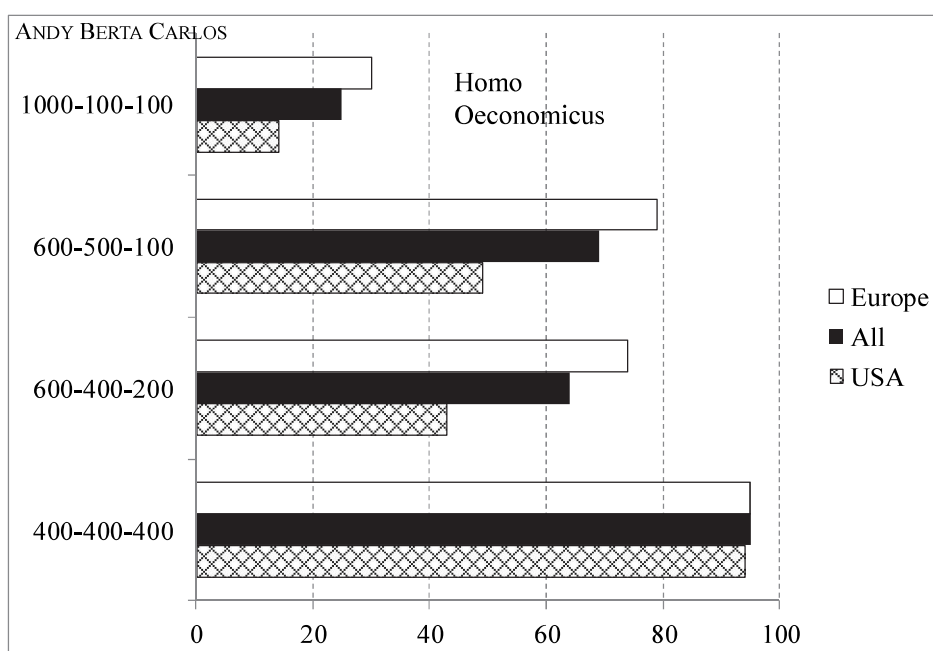
High Aversion of US-Americans towards Inequality

In their role as respondent (**Berta**), only 109 of all participants (21 %) do accept each of the 18 different proposals. This would give them at least 100 EUR – instead of relinquishing these funds and receiving nothing at all. Consequently, for participants offering the **Homo Oeconomicus** distribution to

the respondent the acceptance rate stands at 80% for each of the options. A quarter of the European participants decide rationally in accepting all proposals; for *US-Americans* this rate is a mere 10%. Therefore, just 14% of the US-participants accept the proposal of **Homo Oeconomicus**. Even for the **Power Coalition** there is no majority among US-participants (*Figure 3*). Due to the low US-acceptance rates, the expected US-payoff for the **Equal Split** (376 EUR) is substantially above the one for the **Power Coalition** (294 EUR).

Homo Oeconomicus is accepted by *Europeans* at rate of 30%. Though, the expected payoff as Andy is higher for the **Power Coalition** (479 EUR) – as this proposal registers a high acceptance rate of 79%. Females and non-business majors accept a 1,000-100-100 split significantly less often (20%) than business majors and Europeans.

FIGURE 3
ACCEPTANCE RATIOS AS BERTA (PERCENTAGE, ROLE KNOWN)



Number of Participants: USA 162, All 509, and Europe 340.

Summarizing the basic descriptive variation of our **European vs. American** participants, we note that the cultural differences in splitting up an inheritance are remarkable. While the Americans are strongly inequality averse this seems “significantly” less so for the Europeans - coming at full contradiction to *hypothesis #5*. If this first impression holds statistically, we will look into more depth with a chi-square test (Ch. 5) and econometric modelling with taking the other characteristics of participants into account (Ch. 6).

RANDOM SELECTION OF THE PROPOSER – INTERNATIONAL GAP LEVELS OUT

In the second version of our experiment, the participants were asked to make the same decisions - though, none of the three beneficiaries would know in advance, which role they play, when the inheritance is to be split up. So, the proposer – Andy – does not know in advance, if he will benefit from his own proposal. He might end up as **Berta** or even **Carlos**. Due to this change in conduct, we expect the rates of proposal for an **Equal Split** to increase substantially. The empirical data in *Table 3* support our expectations. Now, almost three quarters of our participants propose the **Equal Split**. At same instance,

the intercontinental differences in proposal rates decline substantially from 26 to 9 percentage points. The reason is the marked difference in decision making by the German or European participants. Therefore, the average inheritance per person is equalized substantially: the difference between Andy and Carlos drops from 277 EUR to 105 EUR (see bottom lines in *Table 2* and *Table 3*).

TABLE 3
CHOICE OF PROPOSALS AND INTERNATIONAL ACCEPTANCE RATIOS
(RANDOM PROPOSER & RESPONDENT)

ALL (n = 509) USA (n = 162) EUROPE (n = 340)	Division of 1,200 EUR			ALL		USA		EUROPE		Expected Payoff for Andy EUR (all participants)
	Andy	Bert a	Carlos	proposing Andy	accepting Berta	proposing Andy	accepting Berta	proposing Andy	accepting Berta	
Equal Split	400	400	400	73,08%	97%	79,01%	97%	70,00%	98%	388
	400	500	300	1,96%	75%	3,70%	60%	1,18%	82%	300
	600	300	300	5,11%	59%	2,47%	39%	6,47%	69%	354
	600	400	200	5,30%	56%	4,94%	40%	5,59%	64%	336
Power Coalition	600	500	100	4,13%	48%	0,62%	34%	5,59%	55%	288
Homo Oeconomicus	1,000	100	100	3,93%	27%	1,85%	15%	5,00%	33%	270
<i>ALL – average inheritance per person in EUR</i>										
	459	388	353							
<i>Average bid for role of Andy in EUR</i>										
	192									

Overall, the acceptance rates of the respondent (**Berta**) do not change much. Europeans still accept non-equal distributions far more often than their US-counterparts. Though, the acceptance ratio for the true **Power Coalition** (600-500-100 EUR) drops from 69 % to 48 %. The highest payoff for **Andy** in the whole sample is reached with the **Equal Split** (388 EUR). So, if expectations were anticipated correctly, proposing the fair distribution would be a financially rational decision. For Europeans only, the highest expected payoff for **Andy** in Europe is 414 EUR for the following proposal: 600-300-300 EUR. Compared to our version with predetermined roles, now they seem to punish an unfair treatment of (powerless) **Carlos**.³⁶

After descriptive differences between US-Americans and Europeans, we checked for statistically significant variations in behavior by applying Chi-square Tests. *Table 4* looks at three set of pairs. We started with the *cultural background*: for all 18 combinations of payoff distribution there is a significant difference between US and European participants for the proposer as well as for the responder when the roles are known in advance. The proposals even differ significantly when the role of the proposer is not revealed beforehand - e.g. when **Andy**'s role is randomly assigned to after he made his decision.

TABLE 4
TAKING DECISIONS DIFFERENTLY - χ^2 -TESTS

	Proposer		Responder
	fixed	random	fixed
US vs. Europe	1.2E-09***	0.004***	1.3E-05***
female vs. male	0.07*	0.31	0.92
economist vs. non-economist	0.001***	0.77	0.71

Probabilities of χ^2 -tests for all 18 proposals. * significantly different at 10% level, ** significantly different at 5% level; *** significantly different at 1% level.

Concerning behavior based on *gender*, with roles fixed in advance our female and male participants state proposals as Andy differently. This difference is eliminated when the role of proposer is not known beforehand. As responder there is no difference in behavior. An even significantly stronger difference in behavior is found to exist between *economists* versus non-economists. Though, only for decision making when their role as proposer is fixed.

Summarizing, as proposer (fixed assignment) we find significant differences in behavior based on the *cultural background*, *gender* and the *academic field of concentration on Economics or Management*. These differences level out when the participants do not know their specific role as proposer or respondent in advance (random assignment). The cultural background seems to determine significantly strong differences in behavior even when the role of proposer is randomly assigned to. Also, the respondents (fixed assignment) decide differently across the Atlantic divide. All three findings give rise to support of *hypothesis #4*, *hypothesis #5* and *hypothesis #6a*. How these differences translate into positively or negatively influencing certain proposals, we'll see to in the following part.

ECONOMETRIC ANALYSIS ON THE DETERMINANTS OF PROPOSING AND ACCEPTING HOMO OECONOMICUS

As the dependent variable is binary, we estimate *maximum likelihood binary probit regression models*. First, we are looking for the determinants of the choice of **Homo Oeconomicus**, when the participants actually knew that they had the right to make a proposal as Andy. Our best models are presented in *Table 5*. In *model I*, participants, who scored better on the Cognitive Reflection Test (CRT), with a higher level of formal education as well as more advanced job-wise, are more likely to propose the fully rational **Homo Oeconomicus** 1,000-100-100 EUR split-up. Older participants are less likely to propose this economically rational approach.³⁷ Though, with a McFadden R² of 0.39, *model II* seems to explain quite a bit more of the total variance in proposing **Homo Oeconomicus**. In this case, management- or economics-oriented participants with a higher level of rationality, more formal education as well as a higher bid for the role as Andy are more likely to propose **Homo Oeconomicus**. In addition, US-Americans are significantly less likely to vote for the rational split-up of inheritance, while the jobs held by participants as well as their cognitive skills are of no significance anymore. Comparing *model II* with the more extensive *model III*, the coefficients of the significant explanatory variables remain stable. So, our findings seem to be robust. Gender and risk proneness have no explanatory power for proposing the most non-equal split-up of financial wealth.

TABLE 5
DETERMINANTS FOR THE CHOICE OF HOMO OECONOMICUS
(ROLE OF ANDY KNOWN)

Dependant Variable - Proposal 1,000/100/100 EUR (= 1); n ₁ = 43						
All Other Proposals (= 0); n ₂ = 462						
	Model I		Model II		Modell III	
Constant	-2.44	(0.38) ***	-5.25	(0.65) ***	-5.42	(0.77)***
CRT-Score (0-3)	0.23	(0.08) ***			-0.11	(0.13)
Education	0.24	(0.08) ***	0.27	(0.08) ***	0.23	(0.10)**
Age in years	-0.04	(0.01) **				
Occupation	0.17	(0.10) *			0.15	(0.15)
Field of Study			0.31	(0.11) ***	0.33	(0.11)***
Bid in € for ANDY			0.002	(0.0003) ***	0.002	(0.0003)***
Rationality (1-18)			0.10	(0.02) ***	0.11	(0.02)***
US (= 1)			-0.64	(0.33) *	-0.80	(0.37)**
Risk proneness					0.004	(0.11)
Gender (male = 1)					-0.22	(0.26)
<i>McFadden R²</i>	<i>0.09</i>		<i>0.39</i>		<i>0.40</i>	

coefficient (standard error) *, **, *** level of significance 90 %, 95 %, 99 %.

CRT – cognitive reflection test; Rationality is measured by the number of choices that a participant accepts as Berta – 18 is considered to be fully rational.

Secondly, we are interested in the factors that influence the acceptance of **Homo Oeconomicus** – when Berta actually knows that she has the power to accept or reject Andy’s proposal. In *model I* of Table 6, older participants are less likely to accept an extremely unequal distribution of inheritance, the same being true for more “intelligent” ones (CRT-Score). As the level of rationality increases, participants are more likely to accept the 1,000-100-100 EUR split-up. Interestingly when incorporating different explanatory variables *in model II*, “intelligent” participants seem to opt more for **Homo Oeconomicus** in their role as Berta. The influence of cognitive skills seems to be not of a very robust nature.³⁸ Europeans, management-oriented participants as well as ones that place higher bids for the role of Andy, are more likely to accept a non-equal distribution of inheritance. Risk proneness seems to have of no influence on the respondents’ behavior. Both models have relatively little explanatory power.

TABLE 6
DETERMINANTS FOR ACCEPTANCE OF HOMO OECONOMICUS
(ROLE OF BERTA KNOWN)

Dependant Variable - Proposal 1,000/100/100 EUR (= 1); n ₁ = 128				
All Other Proposals (= 0); n ₂ = 377				
	Model I		Model II	
Constant	-4.45	(0.43) ***	-1.24	(0.27) ***
CRT-Score (0-3)	-0.21	(0.10) **	0.22	(0.06) **
Rationality (1-18)	0.38	(0.03) ***		
Age in years	-0.02	(0.01) *		
Field of Study			0.11	(0.05) **
Risk Proneness			-0.09	(0.06)
Bid in € for ANDY			0.0007	(0.0002) ***
US (= 1)			-0.64	(0.33) *
<i>McFadden R²</i>	<i>0.07</i>		<i>0.09</i>	

coefficient (standard error) *, **, *** level of significance 90 %, 95 %, 99 %.

CRT – cognitive reflection test; Rationality is measured by the number of choices that a participant accepts as Berta – 18 is considered to be fully rational.

In the extended version of our experiment, participants are asked to make the same decisions under the premise that their roles (**Andy**, **Berta**) are randomly assigned to after having made their decisions. This change has led to a substantial levelling out of the difference between US-American and European behavior (*Table 3*). Though, the cultural background still seems to be of significance when decisions on the various proposals were made (column 2 in *Table 4*).

How is this change of the set-up reflected in the econometric results? In total, only 38 participants propose the strong version of **Homo Oeconomicus** (1,000-100-100 EUR) or one of the three weaker ones with 800 EUR for him/herself. Our two models in *Table 7* have moderate explanatory power – with a McFadden R² of 0.25 to 0.28. In both models, a higher bid for the role of **Andy** as well as a higher level of rationality increases the likelihood for proposing a (weak) **Homo Oeconomicus**. Participants with a higher CRT-score and being US-American are less likely to opt for a non-equal and more selfish distribution of inheritance. The influence of age on the weak version of **Homo Oeconomicus** is contradictory to our previous findings, but its' level of significance is low too. Overall, the determinants of proposing **Homo Oeconomicus** seem to remain especially robust for bids for **Andy**, the level of rationality as well as the cultural background - no matter if the participants actually knew or if they had to speculate for their role as proposer.

TABLE 7
DETERMINANTS FOR THE CHOICE OF (WEAK) HOMO OECONOMICUS
(ANDY RANDOM ROLE)

Dependant Variable - Proposal 1,000/100/100 EUR & 800/././.. ⁺ EUR (= 1); n ₁ = 38				
All Other Proposals (= 0); n ₂ = 467				
	Model I		Model II	
Constant	-2.49	(0.24) ***	-4.94	(0.84) ***
Bid in € for ANDY	0.002	(0.0003)	0.004	(0.0006) ***
Rationality (1-18)	0.04	(0.02) **	0.10	(0.04) ***
CRT-Score (0-3)			-0.37	(0.20) *
Age in years			0.03	(0.02) °
US (= 1)			-0.79	(0.54) °
<i>McFadden R²</i>	<i>0.25</i>		<i>0.28</i>	

⁺ three different proposals: 800/100/300 EUR | 800/200/200 EUR | 800/300/100 EUR.

coefficient (standard error) °, *, **, *** level of significance 85 %, 90 %, 95 %, 99 %.

CRT – cognitive reflection test; Rationality is measured by the number of choices that a participant accepts as Berta – 18 is considered to be fully rational.

FINAL REMARKS

More than 500 people took part in this unique mixed classroom, newspaper and internet experiment of a multiple-person *Ultimatum Bargaining Game*. Three beneficiaries had to decide, how to split up an inheritance of 1,200 EUR (or 1,600 USD). One third of the participants were US-Americans – mainly from the University of the Incarnate Word in San Antonio, Texas, the remaining ones were Europeans (respectively Germans).

When the participants are assigned to their roles beforehand, 42 % of all participants vote as proposer (**Andy**) for an **Equal Split** (400 EUR each), followed by 18 % for the **Power Coalition** (600 EUR – 500 EUR – 100 EUR). Only 8,5 % of all participants select the wealth maximizing alternative of **Homo**

Oeconomicus (1,000 EUR – 100 EUR – 100 EUR). The (relative) majority of participants proposing **Equal Split** resemble empirical results of previous studies as well as our own expectations (*hypothesis # 1*). While the responder is offered significantly more than the powerless third party, the proposer - on average - allocates the largest share to himself, thus giving additional support to the expected payoff according to Bolton & Ockenfels's (2000) Equity Reciprocity Competition model (*hypothesis # 2*).³⁹ On average, the participants are willing to bid 251 EUR for the role as proposer.

As respondent (**Berta**), the notions of *fairness* and *inequality aversion* dominate decision making. Every proposal, which result in 200 EUR or less for **Berta**, is rejected by 68 %-76 % of the participants. These individuals relinquish up to 260 USD, rather than accepting an unequal distribution of inheritance.⁴⁰ Only one fifth of our economic agents behave fully rational by accepting each of the 18 different proposals. The average acceptance ratios increase with the amount allocated to the respondent (*Figure 1*), though the **Equal Split** is the only distribution that is accepted by essentially everyone. These results give empirical support *hypothesis #1* and *hypothesis #3a&b*.

On the *cultural background*, there are statistically significant differences in behavior of US-Americans and Europeans (*Table 4*). Based on *hypothesis # 5*, we expected the US-Americans to be less equality oriented. But exactly the opposite seems to be the case: US-Americans are much more equality oriented. 60 % of them propose an **Equal Split**, while they reject in their role as **Berta** non-equal distributions of inheritance far more often than Europeans. Just as many Europeans vote for the two **Power Coalition(s)** as for the **Equal Split** (*Figure 2*). Consequently, the Europeans are bidding substantially more for their role as proposer (270 EUR vs. 203 EUR). In all of the maximum likelihood binary probit regression model of *Table 5 & 6*, being US-American has a statistically significant negative influence on proposing as well as accepting **Homo Oeconomicus**.

Aversion against inequality in splitting up an inheritance of 1,200 EUR is much stronger among US-Americans. This is a result, the author would have expected from the Germans living in a social market economy with substantial characteristics of a welfare state and being less risk-prone than their US-counterparts. The role of the cultural and ethnic background of Hispanics studying at a catholic institution – which represent the majority of our US-participants – might explain some of the unexpected intercontinental divide. These empirical results give plenty of room for additional research to be undertaken in the future. Specific cultural characteristics like religious affiliation, the population group and income levels should separately be taken into account - the nationality (US-American) might individually or jointly have just picked these characteristic(s) up.

On the other hand, the *US-Americans* might have expected the strong inequality aversion of their peers. In that case, it may be rational to propose an **Equal Split** – since the expected payoff for Andy is the highest for the **Equal Split** with 376 EUR.⁴¹ This gives support to the notion that there is a tight link between fairness and reciprocity.⁴² For the *Europeans* only, the **Power Coalition** had by far the highest expected payoff for the proposer (474 EUR) as the acceptance rate of the respondents is 79 %. So, a super-rational European should have proposed the non-equal distribution that lures the respondent into acceptance.

The moment the role of the beneficiaries is randomly assigned to each of the three – only after placing their decisions - the proposal rate for the **Equal Split** rises substantially (> 70 %). At same instance, the intercontinental divide vanishes almost totally. Even though, US-Americans are still less likely to propose the **weak Homo Oeconomicus** distributions of 800 EUR and more reserved for the proposer.⁴³

As a result of our econometric analysis, a higher level of *rationality* increases the probability of proposing as well as of accepting the non-equal distribution of **Homo Oeconomicus** (*Table 5 & 6*). This is true, even when the role of **Andy** is randomly assigned to our participants (*Table 7*). Thus, it gives empirical support to *hypothesis # 6d*.

In addition, older participants (*age* in years) are more inequality averse and therefore significantly less likely to propose as well as to accept **Homo Oeconomicus** (*hypothesis # 6b*). While - not surprisingly - a higher *bid* (in EUR) for the role of **Andy** increases the likelihood of opting for an unequal distribution. As expected, higher bids - half of which were deducted from the payoff for **Andy** - should

only be submitted by self-interested participants. This seems to be the case. The two remaining determinants of proposing **Homo Oeconomicus**, are a higher level of formal *education* and more *management or economics-oriented* participants (*models I & II* in *Table 5*). The latter influence does not come as a surprise, since these participants are often taught the concept of rational behavior explicitly (*hypothesis # 4*).

For our two *hypothesis # 6a & # 6c* on *gender* and being a *student*, we did not find empirical support in our data set. Even though, female participants (one third of total) were more likely to propose **Equal Split** than males (53 % vs. 37 %) under fixed roles, and less likely to accept **Homo Oeconomicus** (20 % vs. 28 %) as respondents. The difference in behavior in *Table 4* did not carry through to representing a significant explanatory variable when other variables are incorporated. Slightly more than half of our participants were students, but this characteristic exerted no significant influence in our econometric analysis.

ENDNOTES

1. Fall semester 2009, Marc Piazolo spent a sabbatical at the catholic University of the Incarnate Word (UIW), San Antonio, Texas. Funding for the experiment was provided by the University of Applied Sciences Kaiserslautern, Germany. The valuable comments of seminar participants and discussants to the presentations at international conferences in Budapest (Obuda 2010), Pittsburgh (Robert Morris University, 2011), Istanbul (Bahcehir University, IAES 2012) and a 2013 research seminar at Stellenbosch University as well as in Santa Fe, Argentina (Universidad Nacional de Litoral, 2016) are greatly acknowledged. Incorporating the feedback, this paper presents an in depth econometric analysis rather than the brief descriptive analysis of Piazolo 2010.
2. The general set-up of the experiment is based on Güth et al. (2003). Additional variations of the Ultimatum Bargaining Games can be found in Holt (2007).
3. See Güth et al. (2007, p. 464) for a short discussion on confirming the theory of inequality aversion in the case of high rejection rates by Berta through the introduction of a dummy player. Though, the personal presence of a third party seems to exert only a limited influence on the monetary allocation that the proposer Andy suggests for this third party (Sääksvuori, Ramalingam, 2015, p. 23).
4. Andreoni, Blanchard (2006) employed a tournament-style variation of a basic ultimatum game instead of an auction.
5. In the appendix, we show how the inheritance of 1,200 EUR was actually split up.
6. The closest living “relatives” to humans - chimpanzees - seem to be a good example for self-interested rational maximizers. When it comes to food neither are they sensitive to fairness nor do they hardly reject very low offers (Jensen et al. 2007).
7. In a study on 17 small-scale societies in 12 countries with a wide variety of economic and cultural conditions Henrich et al. (2001, Table 1) showed that this behavior is even true for half of these economically poor societies. Rejection rates in industrial countries are usually higher.
8. Holt (2007, p. CE-27) proposes a simple classroom ultimatum game.
9. E.g. in two multi-ethnic Russian republics the offers were on average 47 percent of total. The total at stake is roughly equal to a day’s wage (Bahry, Wilson 2006, p. 44).
10. Henrich et al. (2001, p. 75) as well as for industrial countries: Forsythe et al. (1994) in Bolten, Ockenfels (2000, p.169). A thorough discussion on the driving forces of generous behavior like altruism, concern for fairness or fear of reciprocity provide Dixit, Nalebuff (2010, p. 49ff).
11. Bolten, Ockenfels (2000, p. 169) refer to numerical results of a previous study by Forsythe et al. (1994); the median offers in the cited experiment were 2 USD (dictator) and 5 USD (ultimatum bargaining).
12. For the treatment in which the proposer remains the poorest person of the three, economists strive even harder for efficiency (Fehr, et al., 2006, p. 1915).
13. Güth et al. 2007: 450. The powerless third party is hostage to the decisions taken by the proposer as well as the responder (Shupp, et al., 2006, p. 400).
14. Introducing a powerless third party reduced rejection rates to 3-7 % as long as the extra payoffs to the “hostage” were approximately in line with the payoffs for the respondent. Shupp et al. (2006, p. 404, p. 406).

15. In their experiment, Equal Split was the modal offer - with slightly less than a third of all 680 offers proposed (Kagel, Wolfe 2001, p. 210, p. 216).
16. 61 % of all valid submissions of the 2001 newspaper experiment were provided through the internet (Güth, et al., 2007, p. 454).
17. One ticket had a monetary value of €10 - adding up to a total of €120. Out of 381 participants, we randomly selected nine to actually play the game in three separate groups (Piazolo 2007).
18. In Bolton, Ockenfels (2006, p. 1909), German students showed a much greater demand for equity than social efficiency in a three person distribution experiment.
19. 1/3 is based on the model by Bolton, Ockenfels (1998) in: Kagel, Wolfe (2001, p. 206).
20. Kagel, Wolfe (2001, p. 210). In general, offers below 30 % of the pie, tend to be rejected by a majority of responders time in developed countries. In our experiment this translates to payoffs of €100-€300 for Berta.
21. See Carter, Irons (1991, p. 173f.). In their study on college students, they showed that “economists are born, not made”.
22. Underprivileged are supported by state institutions through welfare and education policy. For a more in depth discussion of the German Social Market Economy see Konrad-Adenauer-Stiftung (2009) and Goldschmid, Wohlgemut (2008).
23. Braun, Kohlmorgen (2010) in: Braun et al. (2011, p. 511).
24. Though, the size of the pie (stake) often does not influence the experimental results of UBGs (in Fehr, Gächter 2000, p. 162).
25. In addition, Güth et al. (2007, p. 452) mentioned the inviting - non-neutral - way the experiment is presented in the newspaper. List (2011) presents the spectrum of experiments in economics from laboratory to artefactual and natural field experiments. He discusses the drawbacks as well as the strengths of field experiments.
26. The highest possible payoff for Andy was €1,000. This represents app. the equivalent to three weeks of income at the minimum wage level in Germany (€8.00 per hour, depending on the branch of industry). In 2006, in total €120 were at stake (Piazolo 2007) - therefore, we expect a higher participation in the 2009 experiment.
27. The remaining five percent are mainly from Austria and Switzerland - in addition to individuals from Argentina, China, Hungary and Indonesia.
28. 95 % of the 340 European participants are German residents.
29. Shane (2005). All participants should describe their risk proneness on a scale of 1 (risk averse) to 5 (risk prone). On average, US-Americans were statistically significant more risk prone than Germans (3.4 vs. 2.9). A result that resembles the one of Fehr et al. (2002) in: Falk et al. (2009).
30. In Güth et al. (2007) 68.4 % as well as in Piazolo (2007, 2009) these came up to 71.9 % and 67.2 % respectively.
31. The amounts for the proposer Andy are similar to the ones in Güth et al. (2007) with 516 EUR and in Piazolo (2007) with 552 EUR.
32. E.g. Bahry, Wilson 2006, p. 45; Güth, et al., 2007, p. 457; Piazolo 2007.
33. In our field experiment of 2006, 92 % of all 381 participants accepted the Power Coalition as Berta. Thus, the expected payoff for Andy was significantly higher: 552 EUR (Piazolo 2007).
34. See Kagel, Wolfe (2001, p. 206, p. 210).
35. 53 % of all women vote in their role as proposer for an Equal Split – men only at a rate of 36 %. Though, the female proposal rate is still less than that of all US-Americans with 60 %.
36. Looking at all participants, it is interesting to note that in Figure 1 the average acceptance ratios for random respondents are slightly more evened out across all levels of payoff; e.g. the acceptance ratios are lower for high payoffs to Berta and vice versa for low payoffs.
37. Güth et al. (2007, p. 458) also gives support to the notion that higher age (number of years) increases the frequency of proposing Equal Split.
38. Though, looking at the results for proposing (model I in Table 5) and accepting Homo Oeconomicus (model II in Table 6) simultaneously, higher cognitive skills seem to facilitate a more rational approach towards the most non-equal split-up of inheritance.
39. In the full sample of 509 participants the proposer allocates on average 266 EUR to the hostage, 391 EUR to the respondent and 543 EUR to himself (Table 2).
40. Bolton, Ockenfels (2000, p. 189) state evolutionary biology as a reason for this kind of behavior: “For a vast time, people lived in small groups. People may have a propensity to contribute because a successful group was necessary to individual success. A propensity to punish non-contributors might be the way

evolution (partially) solves the free-riding problem inherent in such an arrangement. So, people care about relative standing and they are willing to sacrifice a little to defend egalitarianism.

41. Güth (2009) mentioned this also.
42. Bolton, Ockenfels (2006, p. 1910) refer to this tight linkage.
43. Model II of Table 7 shows US-Americans to be of low explanatory significance (15 % level).

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APPENDIX

We randomly chose the following three participants as potential beneficiaries: Erika T. (Germany), Jose J. (US) und Mathias R. (Switzerland). The role of the proposer is based on their bids for Andy. In our case Jose bid 400 EUR, while Mathias only placed 100 EUR and Erika no cent at all. Jose's proposal as Andy was 400-500-300 – a proposal that was chosen by only 6% of all participants. Jose apparently wanted to make sure, that Berta is going to accept his proposal. Erika was drawn for the role as Berta. She accepted the proposal of Jose. As half of the bid for the role of the proposer (Andy) had to be paid by the winning Andy (Jose), 200 EUR went to the US, 300 EUR to Switzerland and 500 EUR remained in Southern Germany.